



Roseville Electric Building
116 S. Grant Street, 1st Floor

roseville.ca.us

The City of Roseville welcomes your participation.

Meeting Schedule: Regular meetings of the Planning Commission are held on the second and fourth Thursday of the month at 6:30 p.m.

Public Comment: Speakers have three (3) minutes under Public Comment to address the Chair of the meeting on issues that are not listed on the agenda and are within the City's jurisdiction. Please submit a yellow speaker card to the Secretary before the item is heard if you wish to make a comment.

Brown Act: The Planning Commission cannot discuss or act on items not listed on the agenda.

Agenda Items: Speakers have five (5) minutes to address items that are listed on the agenda.

Levine Act Provisions: If you've made a campaign contribution totaling more than \$500 (\$250 prior to January 1, 2025) to City Council Members in the last twelve (12) months, you must disclose it before addressing an item on the agenda. Please visit [Levine Act – City of Roseville](#) for updated forms and information.

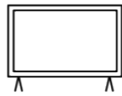
Audio/Visual Presentations: If making a presentation regarding an agenda item, audio/visual materials must be submitted to the Secretary for consideration at least 72 hours in advance.

Americans with Disabilities Act: If special assistance is required to participate in a meeting including the need of auxiliary aids or services, please notify the City Clerk at least 72 hours in advance of the meeting.

City Clerk 311 Vernon Street cityclerkroseville@roseville.ca.us 916-774-5263 TDD: 916-774-5220

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

Viewing Options: The City of Roseville provides three options for viewing meetings:

In person	Online	On TV
 Meetings take place at the Roseville Electric Building, First Floor 116 S. Grant Street	 Watch meetings live on the City's YouTube channel or at roseville.ca.us/watch. Past meetings are also available on the City's YouTube channel.	 Watch live on government access channel (Comcast 14).



Clifford Haggenjos, Jr., Chair
Erich Brashears, Vice Chair
Bruce Hagler, Commissioner
Einar Maisch, Commissioner
John Prior, Commissioner
Kim Ryan Unidad, Commissioner
Lupe Nelson, Secretary
Greg Bitter, Liaison

AGENDA

Planning Commission Meeting
December 11, 2025
6:30 PM
Roseville Electric Building
116 S. Grant Street, 1st Floor

- I. CALL TO ORDER**
- II. ROLL CALL**
- III. PLEDGE OF ALLEGIANCE**
- IV. PUBLIC COMMENTS**
- V. CONSENT CALENDAR**

Items appearing on the Consent Calendar are considered routine and may be approved by one motion of the Planning Commission. Any person may request an item be removed from the Consent Calendar for further discussion.

- 1. Minutes of October 23, 2025**
- 2. Douglas-Sunrise Corridor Specific Plan, Parcel DS-42 – Ismaili Center Expansion, 1836 Sierra Gardens Dr, File # PL25-0564**

Request: The project is a request for a Conditional Use Permit Modification to increase the area of the existing religious use at 1836 Sierra Gardens Drive by approximately 2,000 square feet. An Administrative Permit is also requested to allow a reduction in the required number of parking spaces.

Applicant: Navid Shirooei, Comstock Johnson Architects

Property Owner: STG Sierra Garden LLC

CONTACT: Kinarik Shallago 916-746-1309 kshallago@roseville.ca.us

The Planning Commission will consider the recommendation to:

1. Adopt the two (2) findings of fact and approve the Conditional Use Permit Modification subject to five (5) conditions of approval; and
2. Adopt the three (3) findings of fact and approve the Administrative Permit subject to three (3) conditions of approval.

VI. REQUESTS/PRESENTATIONS

1. Infill Parcel 241 - John Adams Expansion, 13 Sierragate Plaza, File # PL25-0627

Request: The applicant, John Adams Academy Charter School, requests a Conditional Use Permit to allow the expansion of a legal nonconforming use. John Adams Academy Charter School proposes to occupy the property and existing 6,795 square foot building located at 13 Sierra Gate Plaza for classroom and play area use.

Applicant: Athena Eriksson, Comstock Johnson Architects

Property Owner: Helena Geng, Petunia Flower, LLC

CONTACT: Greg Bitter 916-774-5294 gbitter@roseville.ca.us

The Planning Commission will consider the recommendation to:

1. Adopt the three (3) findings of fact and approve the Conditional Use Permit subject to nine (9) conditions of approval.

VII. STAFF/COMMISSIONER REPORTS

1. Election of Design Committee Alternate

VIII. ADJOURNMENT



Planning Commission Communication

Meeting Date: 12/11/2025

Item #: V.1

Item ID: 2025-948

Title: Minutes of October 23, 2025

Contact: Lupe Nelson 916-774-5281 lnelson@roseville.ca.us

REQUEST

Approve the Minutes of October 23, 2025.

RECOMMENDATION

The Planning Division recommends that the Planning Commission take the following actions:

1. Approve the Minutes of October 23, 2025

Respectfully Submitted,
Lupe Nelson, Administrative Assistant

Greg Bitter, Planning Manager

ATTACHMENTS:

None

REVIEWERS:

Lupe Nelson, Development Services Department

Created -



Clifford Haggenjos, Jr., Chair
Erich Brashears, Vice Chair
Bruce Hagler, Commissioner
Robert Jensen, Commissioner
Einar Maisch, Commissioner
John Prior, Commissioner
Kim Ryan Unidad, Commissioner
Lupe Nelson, Secretary
Greg Bitter, Liaison

DRAFT MINUTES

Planning Commission Meeting
October 23, 2025
6:30 PM
Roseville Electric Building
First Floor Conference Room
116 S. Grant Street

I. CALL TO ORDER

Chair Haggenjos called the meeting to order at 6:30 p.m.

II. ROLL CALL

Present: Hagler, Jensen, Prior, Unidad, Haggenjos

Absent: Maisch, Brashears

III. PLEDGE OF ALLEGIANCE

Chair Haggenjos led those in attendance in the Pledge of Allegiance.

IV. PUBLIC COMMENTS

Chair Haggenjos opened the Public Comment period. Hearing none, Chair Haggenjos closed the Public Comment period.

V. CONSENT CALENDAR

1. Minutes of September 25, 2025

Motion by Commissioner Prior, seconded by Commissioner Unidad, to approve the Consent Calendar.

Roll call vote:

Ayes: Hagler, Unidad, Prior, Jensen, Haggenjos

Noes: None

The Motion passed.

VI. REQUESTS/PRESENTATIONS

1. Multi-Hazard Mitigation Plan Resolution, File # PL16-0336

Request: The request is the adoption of a Resolution affirming the Multi-Hazard Mitigation Plan dated December 2023 is adopted and incorporated by reference as part of the Safety Element of the City of Roseville General Plan.

Senior Planner, Lauren Hocker, presented the staff report.

Chair Haggenjos opened the Public Hearing and public comment. Hearing none, Chair Haggenjos closed the public comment and Public Hearing.

Motion by Commissioner Prior, seconded by Commissioner Hagler, to:

1. Recommend City Council adopt the Resolution.

Roll call vote:

Ayes: Jensen, Unidad, Hagler, Prior, Haggenjos

Noes: None

The Motion passed.

2. Zoning Ordinance Amendment – Kitchens, File # PL25-0452

Request: The request is an update to Title 19 (Zoning Ordinance) of the Roseville Municipal Code (RMC) to clarify the City's definitions for "kitchens" with the purpose of defining how dwelling units are classified in the Municipal Code. The request includes amendments to the following Zoning Ordinance sections: Section 19.08.080 (Residential Use Types) and 19.95.030 (Definitions).

Associate Planner, Eric Singer, presented the staff report.

Commissioner Discussion

- A Commissioner asked about the provision of the stove and 220-volt amp. Staff responded that the building code requires a 220 volt for a full kitchen and that a 110 volt would limit options for large kitchen appliances.
- A Commissioner asked if a wet bar precludes a hot plate. Staff responded that a 110-volt outlet is permitted in the wet bar area, which would make it possible to plug in a hot plate, blender or other item. Staff also stated that although food preparation was not permitted in a wet bar, staff would only enforce on a complaint basis. This way, if someone is improperly renting the space as a living area and using the wet bar as a kitchen the City has a means of enforcement.
- A Commissioner asked if partial housing credits are issued for accessory dwelling units (ADUs) and junior accessory dwelling units (JADUs). Staff responded that ADUs and JADUs receive full credit.

Chair Haggenjos opened the Public Hearing and public comment. Hearing none, Chair Haggenjos closed the public comment and Public Hearing.

Motion by Commissioner Jensen, seconded by Commissioner Unidad to:

1. Consider the two (2) findings of fact and recommend City Council approve the Ordinance Amendment to Title 19 of the Roseville Municipal Code.

Roll call vote:

Ayes: Jensen, Unidad, Hagler, Prior, Haggenjos

Noes: None

The Motion passed.

3. Infill Objective Design Standards, File # PL25-0450

Request: The project is a request to adopt Objective Design Standards for multi-family and single-family medium density residential projects for use within the City's Infill Planning Area. The Infill Planning Area includes older areas of the City that do not fall within a Specific Plan and therefore do not have the same level of design standards and other development criteria as areas that fall within a Specific Plan. Staff is proposing Objective Design Standards that regulate the following: site planning and building siting; edge and boundary treatments; topography and grading; access, circulation, and parking; service and storage; architectural design; landscaping; lighting; and signage. These standards are intended to ensure that development within the Infill Planning Area is designed for compatibility with future residents as well as existing neighborhoods.

Associate Planner, Eric Singer, presented the staff report.

Commissioner Discussion

- A Commissioner asked whether the standards would apply to areas in Specific Plans where Development Agreements have expired. Staff responded that no, they would not, because although the Development Agreements have expired in those areas the Specific Plans and the adopted standards within them still apply.
- A Commissioner asked about noticing procedures for a project like this. Staff responded that noticing for this type of project, which doesn't apply to a specific parcel or project, requires a citywide notice. That's also why for items like this staff goes to the Roseville Coalition of Neighborhood Associations (RCONA) Board, so they can ask questions and provide information to their communities.

Chair Haggenjos opened the Public Hearing and public comment. Hearing none, Chair Haggenjos closed the public comment and Public Hearing.

Motion by Commissioner Prior, seconded by Commissioner Hagler, to:

1. Recommend the City Council consider and adopt a Resolution approving the Infill Objective Design Standards.

Roll call vote:

Ayes: Jensen, Unidad, Hagler, Prior, Haggenjos

Noes: None

The Motion passed.

VII. STAFF/COMMISSIONER REPORTS

Staff Reports

- There will not be a Planning Commission meeting in November.
- There will be a Planning Commission meeting on December 11, 2025.
- At the October 1, 2025, City Council meeting the City Council approved the Zoning and Subdivision Tolling Provisions - Roseville Municipal Code Amendments which will be effective November 14, 2025.
- Planning Manager, Greg Bitter, presented outgoing Planning Commissioner Jensen with a golden gavel and extended appreciation for his years of service to the City of Roseville citizens.

Commissioner Reports

- Commissioner Jensen stated that it has been an honor to serve the City, and how much he appreciates the dedication and care displayed by City staff and appreciates and thanks his fellow Commissioners.
- Chair Haggenjos extended appreciation to Commissioner Jensen for his mentorship to incoming Commissioners.

VIII. ADJOURNMENT

Motion by Commissioner Jensen, seconded by Commissioner Prior, to adjourn the meeting. The Motion passed unanimously at 7:04 p.m. with a voice vote.



Planning Commission Communication

Meeting Date: 12/11/2025
Item #: V.2
Item ID: 2025-949

Title: Douglas-Sunrise Corridor Specific Plan, Parcel DS-42 – Ismaili Center Expansion, 1836 Sierra Gardens Dr, File # PL25-0564
Contact: Kinarik Shallago 916-746-1309 kshallago@roseville.ca.us

REQUEST

The project is a request for a Conditional Use Permit Modification to increase the area of the existing religious use at 1836 Sierra Gardens Drive by approximately 2,000 square feet. An Administrative Permit is also requested to allow a reduction in the required number of parking spaces.

Applicant: Navid Shirooei, Comstock Johnson Architects
Property Owner: STG Sierra Garden LLC

RECOMMENDATION

The Planning Division recommends that the Planning Commission take the following actions:

1. Adopt the two (2) findings of fact and approve the Conditional Use Permit Modification subject to five (5) conditions of approval; and
2. Adopt the three (3) findings of fact and approve the Administrative Permit subject to three (3) conditions of approval.

Respectfully Submitted,
Kinarik Shallago, Associate Planner

Greg Bitter, Planning Manager

ATTACHMENTS:

1. Staff Report
2. Attachment 1 Parking Table
3. Attachment 2 Parking Survey
4. Exhibit A Operational Description
5. Exhibit B Plans

REVIEWERS:

Lupe Nelson, Development Services Department

Created -

ITEM 5.2: Conditional Use Permit Modification and Administrative Permit – 1836 Sierra Gardens Drive – DSCSP PCL DS-42 – Ismaili Center Expansion – File #PL25-0564

REQUEST

The project is a request for a Conditional Use Permit Modification to increase the area of the existing religious use at 1836 Sierra Gardens Drive by approximately 2,000 square feet. An Administrative Permit is also requested to allow a reduction in the required number of parking spaces.

Applicant – Navid Shirooei, Comstock Johnson Architects
Property Owner – STG Sierra Garden LLC

SUMMARY RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the two (2) findings of fact and approve the Conditional Use Permit Modification subject to five (5) conditions of approval; and
2. Adopt the three (3) findings of fact and approve the Administrative Permit subject to three (3) conditions of approval.

SUMMARY OF OUTSTANDING ISSUES

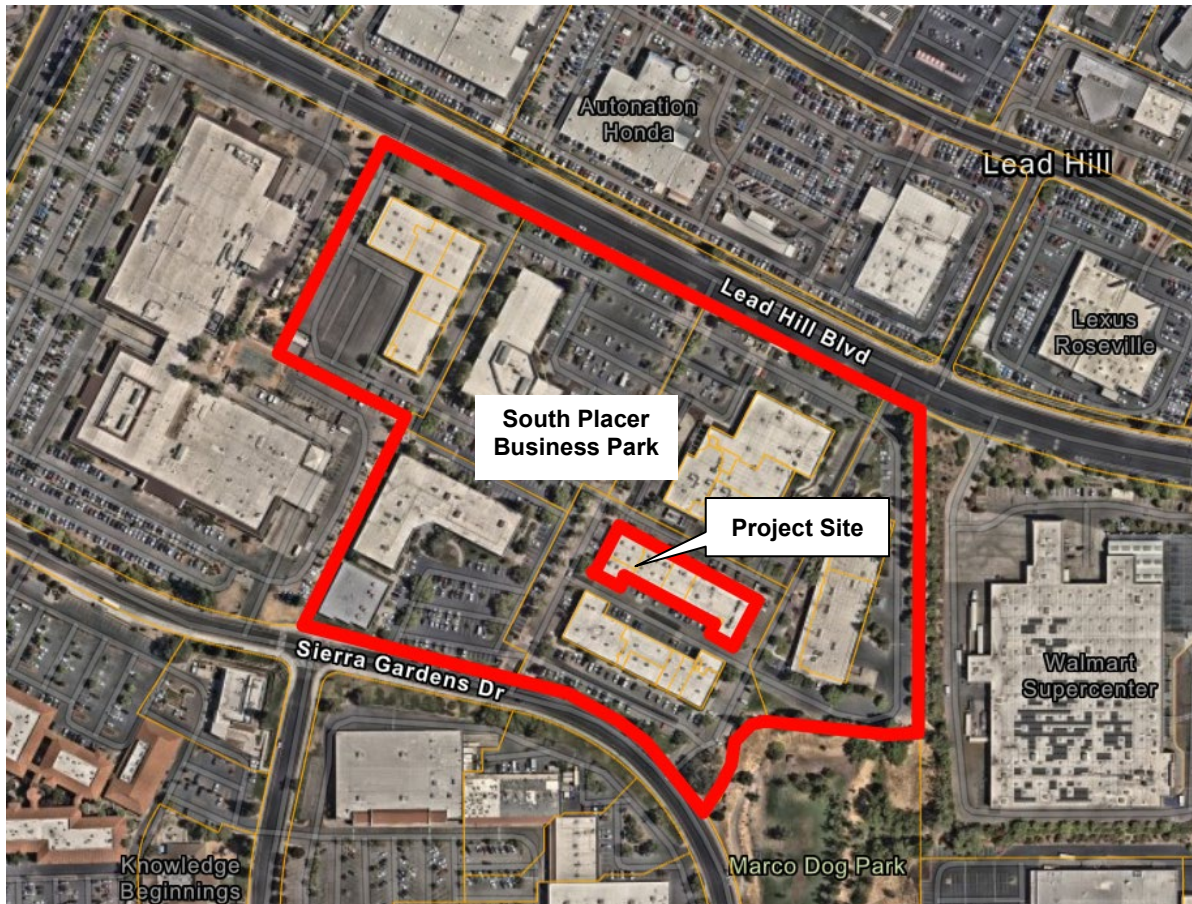
There are no outstanding issues associated with this request. The applicant has reviewed and is in agreement with all recommended conditions of approval.

BACKGROUND

The project is located within the South Placer Business Park complex, between Sierra Gardens Drive and Lead Hill Boulevard within the City's Douglas-Sunrise Corridor Specific Plan (DSCSP) area. The complex is adjacent to the US Postal Service building to the west and Walmart to the east (see Figure 1 below). The complex includes six parcels that have a land use designation of Community Commercial (CC) and a zoning designation of Community Commercial/Special Area-Douglas-Sunrise (CC/SA-DS). The South Placer Business Park was originally approved with a Use Permit by the Project Review Commission in 1989 (file #UP 89-24). The six parcels are currently developed with eight buildings occupied with a mix of office, medical, commercial and warehouse uses. All six parcels are owned and managed by one property owner and have a shared parking agreement.

On August 9, 2018, the Planning Commission approved a Conditional Use Permit (CUP) (file # PL17-0367) for a community assembly use for the Tarbiya Institute to occupy approximately 6,000 square feet (Suite 100) within the approximately 23,425-square-foot building located at 1836 Sierra Gardens Drive (see Figure 1). The remainder of the building is currently occupied by offices, a dialysis clinic, and vacant office area. On November 12, 2020, the Planning Commission approved a CUP Modification (file #PL20-0217) for the Ismaili Education and Worship Center ("Ismaili Center"), which is also a community assembly use, to occupy the prior Tarbiya Institute space. The CUP Modification approved minor changes to the operational characteristics of the use and minor interior alterations to the site.

Figure 1: Project Location



The Ismaili Center is currently requesting a subsequent CUP Modification to expand their use by approximately 2,000 square feet by occupying the adjacent suite 90. The additional square footage will be utilized as a social hall and classrooms. The purpose of the CUP Modification is to evaluate the appropriateness of the use at the proposed location and minimize any potential conflicts between adjacent uses. Typically, the primary issue to address with community assembly uses is ensuring adequate parking is available to support the higher parking demand generated from the use. In November 2025, an Administrative Permit for a parking reduction (file #PL25-0594) was approved by the Planning Division to allow THE STUDIO, a martial arts and fitness use, to occupy a portion of 1390 Lead Hill Boulevard, which is also located within the South Placer Business Park. The Administrative Permit approval was for a reduction of 50 spaces for the overall center. The proposed Ismaili Center expansion will require an additional nine (9) parking spaces than what is currently allocated to the building. Given there is no surplus parking available based on the current tenant mix, a request for a subsequent Administrative Permit for a reduction in shared parking is included with the proposed project.

EVALUATION – CONDITIONAL USE PERMIT MODIFICATION

Section 19.78.060(J) of the City of Roseville Zoning Ordinance requires two findings of fact be made in order to approve a Modification for a Conditional Use Permit. The required findings are listed below in ***italicized bold*** print and are followed by an evaluation.

1. The proposed modification is substantially consistent with the intent of the original approval.

The original approval (file #PL17-0367) was a CUP for a community assembly use. The subsequent CUP Modification (file #PL20-0217) for the Ismaili Center was found to be substantially consistent with

the intent of the original approval. With the proposed expansion, the Ismaili Center will continue to have the same hours of operation as approved with the prior CUP Modification, and the hours of religious assembly will remain before 8 a.m. and after 5 p.m. on weekdays. The proposed use will not conflict with surrounding businesses. Staff finds that the proposed modification is substantially consistent with the intent of the original approval.

2. The proposed modification complies with all applicable standards and requirements of the Zoning Ordinance, with the applicable goals, policies and objectives set forth in the General Plan, the applicable Community Design Guidelines, and the applicable specific plan.

The project site has a land use designation of Community Commercial (CC). The CC land use designation is intended to include retail stores and businesses with a full range of goods and services that are provided to an expanded service area. Although community assembly uses are not specifically listed as typical uses within the CC land use, they are considered a commercial use type and are typically located on parcels with a commercial land use designation. The General Plan relies on the Zoning Ordinance to determine the appropriate location and design of community assembly uses through the Conditional Use Permit process. Therefore, the proposed project is consistent with the General Plan.

As mentioned, the project is located in the CC zone district in the Douglas-Sunrise Corridor Specific Plan (DSCSP). Consistent with the Zoning Ordinance, the DSCSP requires a CUP for a community assembly use to operate within a CC zone district. The proposed use will occupy an existing building and will not include any exterior modifications to the building. Therefore, there are no specific development standards outlined in the DSCSP or the Zoning Ordinance, other than parking requirements, for the community assembly use.

The parking requirement for community assembly uses is one parking space per every 50 square feet of assembly use (1:50) and one space for every classroom. Space dedicated to restrooms, office space, and other ancillary spaces are excluded from the parking calculation. The Ismaili Center will occupy Suite 90, which is approximately 2,000 square feet. The suite will be created from a portion of Suite 80, which is currently occupied by an office use. The additional space will add 764 square feet of assembly area and two (2) classrooms to the Ismaili Center's operations. Currently, the building (1836 Sierra Gardens Dr.) has 120 allocated parking spaces.

As shown in Table 1 below, the total parking requirement for the Ismaili Center including the existing and proposed tenant space will be 67 spaces. This is an additional nine (9) parking spaces than what is currently allocated to the building. Given there is no surplus parking available within the South Placer Business Park based on the current tenant mix, an Administrative Permit for a parking reduction is required. Further discussion on parking is included in the Administrative Permit section of this report. With approval of the Administrative Permit, the project will comply with the Zoning Ordinance requirements.

Table 1 - Parking Requirement for 1836 Sierra Gardens Drive

Suite	Tenant	Square Feet	Use	Parking Ratio	Proposed Parking Required	PL20-0367 Parking Allocation
150	Davita Dialysis	9,060	medical	1:200	45	45
100	Ismaili Center (Existing)	2,105 + 8 classrooms	assembly	1:50 + 1:class	42 + 8 = 50	50
90	Ismaili Center (Proposed)	764 + 2 classrooms	assembly	1:50 + 1: class	15 + 2 = 17	n/a
80	Office	6,303 4,303	office	1:250	25 17	25
Total					129	120

EVALUATION – ADMINISTRATIVE PERMIT

Section 19.78.060(A) of the City of Roseville Zoning Ordinance requires that three findings be made prior to the approval of an Administrative Permit. The required findings are listed below in ***italicized, bold*** text and are followed by an evaluation in relation to each finding.

1. The proposed use or development is consistent with the City of Roseville General Plan and any applicable specific plan.

The project site has a land use designation of Community Commercial (CC). The CC land use designation is intended to include retail stores and businesses with a full range of goods and services that are provided to an expanded service area. Although community assembly uses are not specifically listed as typical uses within the CC land use, they are considered a commercial use type and are typically located on parcels with a commercial land use designation. The General Plan relies on the Zoning Ordinance to determine the appropriate location and design of community assembly uses through the Conditional Use Permit process. Therefore, the proposed project is consistent with the General Plan.

2. The proposed use or development conforms with all applicable standards and requirements of the Zoning Ordinance.

Section 19.26.030(C)(3) of the City of Roseville Zoning Ordinance contains provisions for requesting and evaluating parking reductions. It states that when an application for a parking reduction is filed, the applicant has the burden of proof for providing documentation substantiating the request. Reduced parking shall only be approved by the Planning Commission if four (4) criteria can be met. The required criteria are listed below in *italics* and are followed by an evaluation.

a) A sufficient number of spaces are provided to meet the greatest parking demand of the participating uses.

The South Placer Business Park was developed with a total of 1,098 parking spaces. Attachment 1 identifies the current parking requirement for each building based on the existing use types. The total parking requirement with the proposed Ismaili Center expansion will be 1,155 spaces. As discussed in item b) below, the typical hours of operation for uses in the South Placer Business Park are Monday through Friday 8 a.m. to 5 p.m. and often closed during the noon lunch hour. The Ismaili Center will operate outside of these hours.

As part of the prior parking reduction approval completed for THE STUDIO, a parking survey of the site was conducted over a 10-day period at various times in the afternoon and evenings (see Attachment 2). The survey observed the parking lots located adjacent to 1386 & 1390 Lead Hill Boulevard and 1836 Sierra Gardens Drive. The survey demonstrates that the surveyed area, which encompassed 580 spaces total had on average approximately 556 parking spaces available at the various hours documented. The greatest parking demand of THE STUDIO was determined to be 30 spaces based on the business's operational description. With THE STUDIO in operation, it is anticipated that there would still be at least 500 parking spaces available. Therefore, there is a sufficient number of parking spaces to accommodate the proposed Ismaili Center expansion and the remainder of the uses. Based on these factors, the number of spaces that are generally available throughout the day will meet the greatest parking demand for the uses within the center.

b) Satisfactory evidence is provided describing the nature of the uses and the times when the uses operate so as to demonstrate the lack of potential conflict between them.

The South Placer Business Park is occupied by a mix of commercial, office, and light industrial tenants. Typical hours of operation for such uses are Monday through Friday 8 a.m. to 5 p.m. and

often closed during the noon lunch hour. The Ismaili Center is a church (community assembly) use. The operations plan is provided as Exhibit A. Consistent with its current operations, the Ismaili Center will have church services Monday through Sunday from 3:30 a.m. to 5:30 a.m. and from 7:00 p.m. to 9:00 p.m. All events associated with the services will occur inside the tenant space. It is estimated that attendees of the services will generate the need for no more than 20 parking spaces in the morning and 40 parking spaces in the evening. As these service times occur outside of the typical hours of operation for other tenants in the business park, and the number of parking spaces needed is less than those allocated to the use, no parking impacts are anticipated to adjacent businesses. In addition to church services, the Ismaili Center will continue to offer classes on Saturday and Sunday from 2 p.m. to 6 p.m. These classes range in size and will have an anticipated parking demand of no more than 40 parking spaces. All activities associated with the classes will occur inside. Again, as these classes will be held outside of typical peak business hours and the class size is smaller than the allocated number of parking spaces for the tenant space, no parking impacts are anticipated to occur.

c) Overflow parking will not impact any adjacent use.

There are existing reciprocal access and parking agreements in place for the center. The Zoning Ordinance does not permit designating or reserving parking spaces for specific uses within a center or complex. Although tenants will have a number of stalls allocated to them, there is no designated parking within the center. As such, patrons of the center can use any available stalls located on-site. It is not anticipated that overflow parking will occur due to the operational characteristics of the mix of uses.

d) Additional documents, covenants, deed restrictions, or other agreements as may be deemed necessary by the Planning Manager are executed to assure that the required parking spaces provided are maintained and uses with similar hours and parking requirements as those uses sharing the parking facilities remain for the life of the project.

As mentioned above, there are existing reciprocal access and parking agreements in place to ensure the access and parking spaces are shared among the center. Conditions of approval to this Administrative Permit indicate that the permit will no longer be valid if the mix, square footage, and operating characteristics described herein are changed.

3. The location, size, design, and operating characteristics of the use or development is compatible with and shall not adversely affect or be materially detrimental to the health, safety, or welfare of persons residing or working in the area, or be detrimental or injurious to public or private property or improvements.

The request for a parking reduction is based on the fact that a sufficient number of spaces are provided to meet the greatest parking demand of the participating uses, and the nature of the uses and times when the uses operate demonstrate the lack of potential conflict between them. Staff finds the project is compatible with and shall not adversely affect or be materially detrimental to the health, safety, or welfare of persons residing or working in the area, or be detrimental or injurious to public or private property or improvements.

PUBLIC OUTREACH

The proposed project was distributed to all internal and external agencies and departments who have requested such notice, and all comments or recommended conditions of approval have been incorporated into the project, as appropriate. Early notification of the project was posted on the Roseville Coalition of Neighborhood Associations (RCONA)'s website. A notice of the public hearing was published in the Roseville Press Tribune on November 28, 2025, and was also distributed to all property owners within 300 feet of the site, interested persons, and posted on the RCONA website. No comments have been received as of publication of the staff report.

ENVIRONMENTAL DETERMINATION

The project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15305, which includes minor alterations in land use limitations in areas with an average slope of less than 20%, which do not result in any changes in land use or density. The project includes a minor modification to the conditionally permitted use of the property and is therefore exempt.

RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the two (2) findings of fact as listed in the staff report and approve the **CONDITIONAL USE PERMIT MODIFICATION – 1836 SIERRA GARDENS DRIVE – DSCSP PCL DS-42 – ISMAILI CENTER EXPANSION – FILE #PL25-0564** subject to five (5) conditions of approval; and
2. Adopt the three (3) findings of fact as listed in the staff report and approve the **ADMINISTRATIVE PERMIT – 1836 SIERRA GARDENS DRIVE – DSCSP PCL DS-42 – ISMAILI CENTER EXPANSION – FILE #PL25-0564** subject to three (3) conditions of approval.

CONDITIONS OF APPROVAL FOR THE CONDITIONAL USE PERMIT MODIFICATION – FILE #PL25-0564

1. This Conditional Use Permit Modification approval shall be effectuated within a period of two (2) years from **December 11, 2025** and if not effectuated shall expire on **December 11, 2027**. Prior to said expiration date, the applicant may apply for an extension of time. (Planning)
2. The activities and services approved in conjunction with this Conditional Use Permit Modification shall be as identified in Exhibits A—B. No expansion of the use beyond what is outlined in these exhibits shall be permitted without prior approval from the Planning Commission. (Planning)
3. The project is subject to the previously approved conditions of approval for the Tarbiya Institute Conditional Use Permit (file #PL17-0367) and subsequent Ismaili Education and Worship Center Conditional Use Permit Modification (file #PL20-0217), except as conditioned or modified below. (Planning)
4. The Conditional Use Permit shall be effectuated upon issuance of an occupancy permit by the Building Department. (Planning, Building)
5. If the project requires a change in occupancy classification, the existing Fire Alarm System and Fire Sprinkler System requires a separate Fire Systems Permit. Information on the permit application and submittal requirements can be obtained on the City of Roseville's webpage. For more information, please contact Jordan Paul, Fire Marshal at jpaul@roseville.ca.us or (916) 774-5802. (Fire)

CONDITIONS OF APPROVAL FOR THE ADMINISTRATIVE PERMIT – FILE #PL25-0564

1. The Administrative Permit for a parking reduction is approved based on the proposed mix, square footage, and operating characteristics of tenants and tenant spaces, as described in this staff report and in Attachment 1 and Exhibits A—B, and as conditioned below. Should the Ismaili Center vacate the space or modify their operations, the parking reduction will no longer be valid. (Planning)
2. This Administrative Permit approval shall be effectuated within a period of two (2) years from **December 11, 2025** and if not effectuated shall expire on **December 11, 2027**. Prior to said expiration date, the applicant may apply for an extension of time. (Planning)

3. The applicant shall submit plans to the Building Division and secure a building permit for any proposed tenant improvements. (Building)

ATTACHMENTS

1. South Placer Business Park Parking Table
2. File #PL25-0594 Parking Survey

EXHIBITS

- A. Operational Description
- B. Plans

Note to Applicant and/or Developer: Please contact Planning Division staff at (916) 774-5276 prior to the Commission meeting if you have any questions on any of the recommended conditions for your project. If you challenge the decision of the Commission in court, you may be limited to raising only those issues which you or someone else raised at the public hearing held for this project, or in written correspondence delivered to the Planning Manager at, or prior to, the public hearing.

Unit (s)	Tenant	Net Leasable	Use	Parking Req	# of Spaces Required	# of Actual Spaces
1376 Lead Hill						128
100	Vacant	11,939	Office	1/250	48	
150 - 180	Vacant	10,535	Office	1/250	42	
190	No Rep LLC dba Crossfit Determination	3,225	Office	1/250	13	
Ste 190 Warehouse	No Rep LLC dba Crossfit Determination	3,255	Gym	1/150	22	
1380 Lead Hill						315
100	Dignity Health	8,000	Medical	1/150	53	
100B	Vacant	4,666	Office	1/250	19	
104	Vacant	1,833	Office	1/250	7	
106	Apex Office Centers, LLC	1,097	Office	1/250	4	
108	Independent Capital Management	1,103	Office	1/250	4	
110	Terri Sears, Kina A Johnson-Clark and Bonnie Blue	929	Office	1/250	4	
120	GHS Interactive Security	2,717	Office	1/250	11	
160	Sean Davis, Marriage and Family Therapist	1,330	Office	1/250	5	
165	Vacant	1,827	Office	1/250	7	
200	Quick Quack Carwash Management, LLC	4,897	Office	1/250	20	
201	Riverside Management & Financial Services, Inc.	3,838	Office	1/250	15	
205	Certified Business Service/Unlimited, Inc.	1,152	Office	1/250	5	
207	Vacant	4,332	Office	1/250	17	
210	Stratton Agency	2,108	Office	1/250	8	
211	Quick Quack Carwash Management, LLC	929	Office	1/250	4	
255	General Services Administration	2,997	Office	1/250	12	
245	Quick Quack Carwash Management, LLC	1,370	Office	1/250	5	
260	Vacant	2,843	Office	1/250	11	
1386 Lead Hill						172
100		42,300	MOB	1/200	212	
200						
300						
1390 Lead Hill						132
100	THE STUDIO Martial Arts & Fitness	2,668 office & 5,874 mat area	Martial arts	1/250 office & 1/50 mat area	58	
XO Warehouse	XO Communications Services, LLC	14,960	Office	1/250	60	
1830 Sierra Gardens						198
10	Turning Point Community Services	1,253	Office	1/250	5	
20	Turning Point Community Services	2,785	Office	1/250	11	
30	Joel Choe & Matt Lee - MRI	2,080	Low Trfc Med	1/200	10	
40	Gary W. Prout, an individual and O & P Services	1,363	Office	1/250	5	
Ste 40 Warehouse	Gary W. Prout, an individual and O & P Services	309	Warehouse	1/1000	1	
80	Visions of Peace	2,881	Office	1/250	12	
85	Vacant	1,837	Office	1/250	7	
Ste 85 Warehouse	Vacant	1,840	Warehouse	1/1000	2	
90-100	Medical Vision Technology, Inc.	8,581	Medical	1/150	57	
1836 Sierra Gardens						
150	Davita Dialysis,	9,060	Low Trfc Med	1/200	45	
100	Ismaili	2,105 +8 clss	Assembly	1/50 +1/clss	50	
80	Vacant office	6,303	Office	1/250	25	151
1840 Sierra Gardens	Kaiser Medical	30,000	MOB	1/200	150	
1850 Sierra Gardens						
	Sola Salon	9,060	Salon	1/300	30	
		233,941			1,146	1091

Available Stalls: -50 parking reduction file #PL25-0594

1390 Parking Reduction Application Submission

Type of Business : Martial Arts & Fitness

Existing Business in Roseville California

Currently Operating in 2 rooms (1944 sf and 1258) totaling 3,202sf of workout floor

Monday- Thursday Classes run 4-8pm (Average class size is 16)

Tuesday and Thursday 9-11am (Average class size is 8)

Friday 5:30-7pm (Average class size is 8)

Saturday 8-12pm (average class size is 8)

Largest class is ~30 people on Monday and Wednesday at 7pm (many get dropped off for this class)

Class duration 45 minutes

Peak time is Mon-Thursday 6:15pm

We have 6 part-time employees

2 work Monday thru Thursday

The other 4 work 2 days a week (ie m/w or t/th)

The following was surveyed between 9/29-10/14/2025 amongst the parking of subject building (1390) and the 2 closest buildings (building 1386 and 1836) .

1386 has 212 parking allocations

1836 has 150 parking allocations

1390 has 118 parking allocations

Total of 580 parking spaces

Monday 9/29 4pm # of spaces occupied 36 occupied, with balance of 544 open spaces

Tuesday 9/30 4:15pm # of spaces occupied 32, with balance of 548 open spaces

Wednesday 10/1 4:30pm # of spaces occupied 29, with balance of 551 open spaces

Thursday 10/2 5pm # of spaces occupied 24, with balance of 556 open spaces

Monday 10/6 5:30pm # of spaces occupied 19, with balance of 561 open spaces

Tuesday 10/7 6pm # of spaces occupied 14, with balance of 566 open spaces

Wednesday 10/8 6:30pm # of spaces occupied 14, with balance of 566 open spaces

Thursday 10/9 7pm # of spaces occupied 6, with balance of 574 open spaces

Monday 10/13 – Columbus Day parking not reflective of normal occupancy

Tuesday 10/14 4:15pm # of spaces occupied 29, with balance of 551 open spaces

Wednesday 10/15 3:30pm # of spaces occupied 33, with balance of 547 open spaces

Sept. 29, 2025

City of Roseville Development Services - Planning
311 Vernon St.
Roseville CA 95678
DOgden@Roseville.CA.US
916-746-1348

Confirmation of Proposed Use at Existing CUP Location

Project Description:

PROPOSED TENANT: His Highness Shia Imami Ismaili Council for Western USA

PROPERTY OWNER: STG Group, LLC

ADDRESS: 1836 Sierra Gardens, Suite 90 & 100
Roseville, CA 95661

This letter is submitted in response to email received regarding the CUP (PL-PREAPP25-0204) at 1836 Sierra Gardens, Suites 90 & 100, and how the proposed addition may affect the required parking spaces.

This modification to the CUP application is intended to revise the already approved CUP (PL17-0367) for Suite 100. The revised tenant area will encompass the full 8,000 sq. ft. previously occupied by the Tarbiya Institute. Importantly, the additional area will not increase the overall occupant load, as it will not be used concurrently with the other areas included in the original scope.

1- **Intended Use**

The proposed use is Community Assembly, which is consistent with the existing CUP approval. The Ismaili Council for Western USA will utilize the space as a place of worship (community assembly) and education center.

2- **Hours of Operation**

Church services are planned Monday through Sunday from 3:30 a.m. to 5:30 a.m. for morning meditation and from 7:00 p.m. to 9:00 p.m. for evening service, with religious education classes between 2:00 p.m. and 6:00 p.m. on Saturdays and Sundays. All events will occur entirely within the tenant space. As with the previous tenant, the hours of use fall outside the normal business hours of neighboring tenants, thereby eliminating potential impacts to shared parking.

3- **Parking Demand**

Average daily attendance is anticipated to be fewer than 70 patrons, primarily families of three to four people. It is estimated that services will generate demand for approximately 20 to 40 parking spaces, which is comparable to the parking utilization of the previous tenant.

In summary, all services and typical uses of the facility will occur outside of the normal hours of operation for other tenants in the business park. We do not anticipate any parking impact or any impact on the operations and access of the adjacent businesses.

Respectfully Submitted,

Daniel P. Eriksson
Architect

Kevin L. Wilcox
Architect



A handwritten signature in blue ink, appearing to read "J. Reilly", is positioned above the printed name.

Jeff Reilly, AIA, CSI
Project Architect
CA Lic# C-37247
COMSTOCK JOHNSON ARCHITECTS, INC.

Daniel P. Eriksson
Architect

Kevin L. Wilcox
Architect

Proposed Operations Plan

Project Description:

PROPOSED TENANT: His Highness Shia Imami Ismaili Council for Western USA

PROPERTY OWNER: STG Group, LLC

ADDRESS: 1836 Sierra Gardens, Suite 90 & 100
Roseville, CA 95661

Proposed Daily Hours (Monday-Sunday):

3:30 AM – 5:30 AM - Morning Meditation

Average Cars Expected: 20

7:00 PM – 9:00 PM – Evening Service

Average Cars Expected: 40

Proposed Weekend Hours (Saturday-Sunday):

2:00 PM – 6:00 PM – Religious Education

Average Cars Expected: 40

Ismaili Center General Business Hours:

Monday thru Friday – 10:00 AM-9:00 PM

Sundays – 10:00 AM – 3:00 PM

PARKING TABULATION		
PARKING ALLOCATION FOR THE CONDITIONAL USE PERMIT		
FUNCTION OF SPACE	AREA/PARKING RATIO	NUMBER OF PARKING SPACES REQUIRED
PLACE OF WORSHIP SUITE #90 &100	2,286.23 S.F. / 1:50 S.F.	43 SPACES
PLACE OF WORSHIP SUITE #90 & 100 CLASSROOM	9 CLASSROOMS (1 SPACE PER CLASSROOM)	9 SPACES

REQUIRED SPACES	PROVIDED EXISTING SPACES
52 SPACES	217 SPACES (INCLUDING 12 ACCESSIBLE SPACES)

USE ZONE DESCRIPTION
COMMUNITY COMMERCIAL (CC)

BUILDING AREA ANALYSIS – SEPARATED MIXED OCCUPANCY BUILDING

ACTUAL AREAS:

A-3 (SUITES 90+100): 8,207 SF

B (SUITE 80): 4,303 SF

B (SUITE 150): 9,069 SF

ALLOWABLE AREAS (TABLE 506.2, TYPE V-B, SPRINKLERED):

A-3 = 24,000 SF

B = 36,000 SF

CALCULATION:

A-3 (STE 90+100) = 8,207 / 24,000 = 0.342

B (STE 80) = 4,303 / 36,000 = 0.120

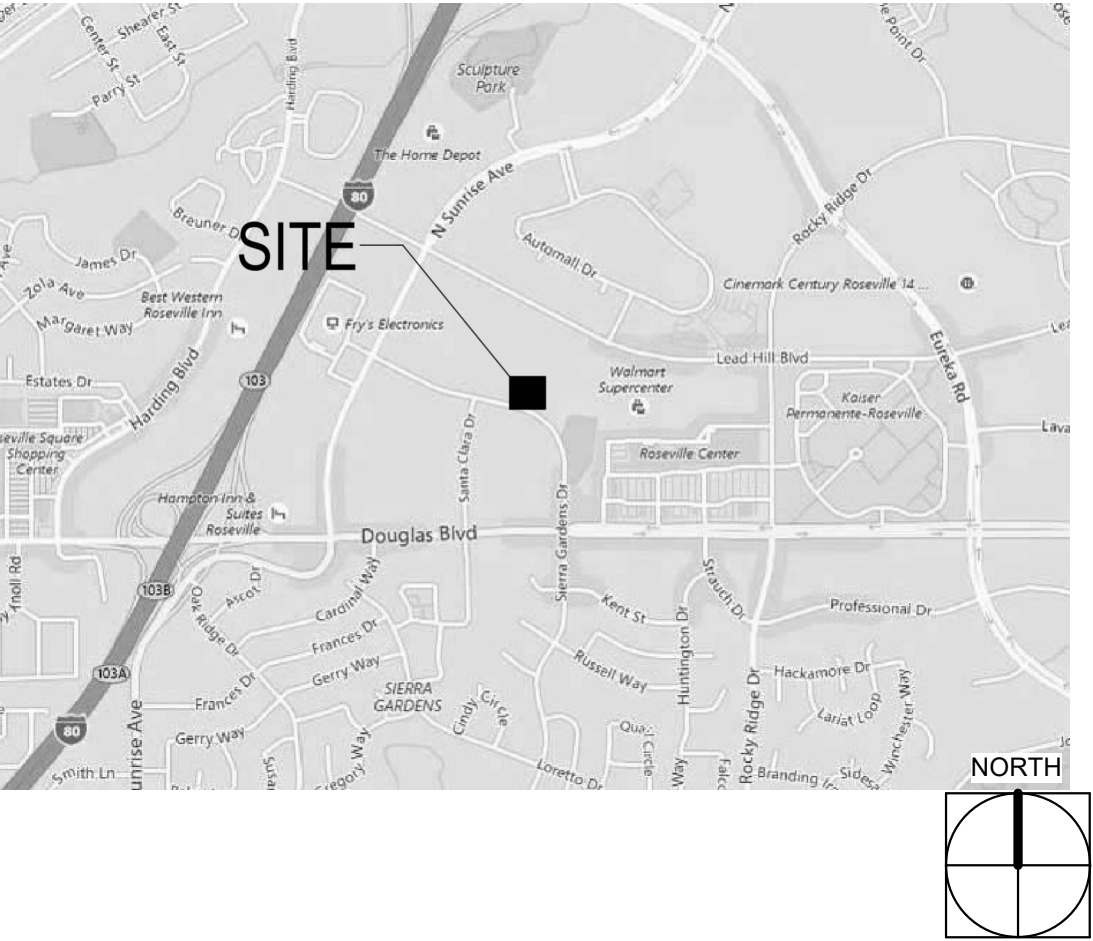
B (STE 150) = 9,069 / 36,000 = 0.252

SUM = 0.342 + 0.120 + 0.252 = 0.713 ≤ 1.00 → COMPLIES

CONCLUSION: THE EXPANSION OF THE ASSEMBLY OCCUPANCY COMPLIES WITH CBC §§506 & 508.4.2.

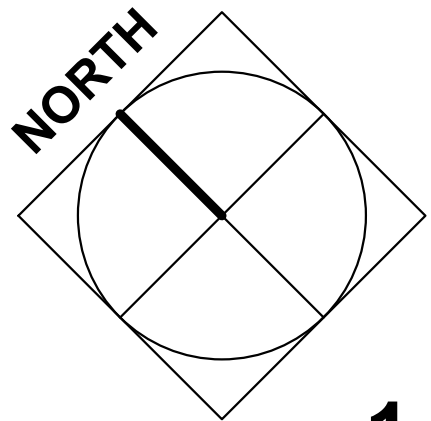
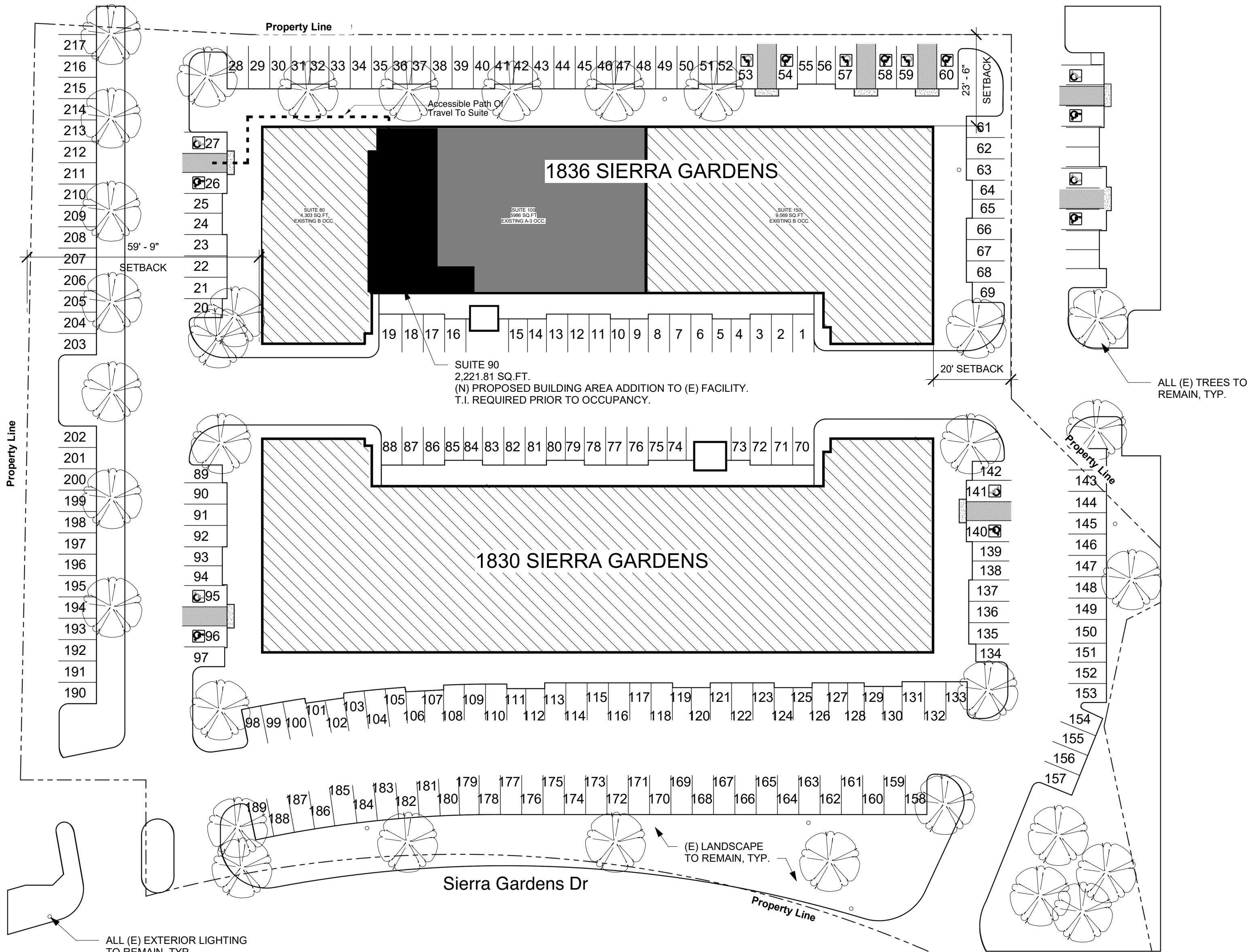
VICINITY MAP

PC EXHIBIT B



SITE LEGEND

- HATCH INDICATES (E) BUILDING AREA OUT OF SCOPE
- HATCH INDICATES (E) BUILDING AREA UNDER PREVIOUSLY APPROVED CUP
- HATCH INDICATES (N) PROPOSED BUILDING AREA ADDITION TO (E) FACILITY



1 SITE PLAN

SCALE: 1" = 20'-0"

Preliminary Design For:
ISMAILI CENTER
1836 SIERRA GARDENS DR, STE 90
ROSEVILLE, CA 95661



OCCUPANCY ANALYSIS BY INDIVIDUAL SPACE

ROOM #	ROOM NAME	OCC. TYPE	FUNCTION OF SPACE PER CBC TABLE 1004.1.1	AREA	FLOOR AREA (SQ. FT.) PER OCCUPANT PER CBC TABLE 1004.5	CALC. OCC. LOAD
01	LOBBY	A-3	ASSEMBLY W/O FIXED SEATING- STANDING SPACE	571 SF	15 NET	39
02	STORAGE	S-1	ACCESSORY STORAGE	202 SF	300 GROSS	1
03	VESTIBULE	A-3*0	ASSEMBLY W/O FIXED SEATING- STANDING SPACE	90 SF	15 NET	6
04	PANTRY	S-1	ACCESSORY STORAGE	171 SF	300 GROSS	1
05	MK OFFICE	B	BUSINESS	119 SF	150 GROSS	1
06	PRAYER HALL	A-3	ASSEMBLY W/O FIXED SEATING- CONCENTRATED	1,565 SF	7 NET	224
07	HALL	-	CIRCULATION	496 SF	-	
08	CLASS 1	A-3*0	CLASSROOM	84 SF	20 NET	5
09	CLASS 2	A-3*0	CLASSROOM	82 SF	20 NET	5
10	RR	-	ACCESSORY	173 SF	-	
11	RR	-	ACCESSORY	122 SF	-	
12	CLASS 3	A-3*0	CLASSROOM	89 SF	20 NET	5
14	CLASS 4	A-3*0	CLASSROOM	97 SF	20 NET	5
15	CLASS 5	A-3*0	CLASSROOM	116 SF	20 NET	6
16	CLASS 6	A-3*0	CLASSROOM	116 SF	20 NET	6
17	CLASS 7	A-3*0	CLASSROOM	112 SF	20 NET	6
18	OFFICE	B	BUSINESS	132 SF	150 GROSS	1
19	SOCIAL HALL	A-3	ASSEMBLY W/O FIXED SEATING- STANDING SPACE	764 SF	15 NET	51
20	CLASS 8	A-3*0	CLASSROOM	193 SF	20 NET	10
21	CLASS 9	A-3*0	CLASSROOM	183 SF	20 NET	10

*1- EXCLUDED FROM OCCUPANCY CALCULATIONS PER CBC "FLOOR AREA, NET" DEFINITION-
*NOT INCLUDING UNOCCUPIED ACCESSORY AREAS SUCH AS CORRIDORS, STAIRWAYS,
TOILET ROOMS, MECHANICAL ROOMS, AND CLOSETS.*

EXITING & OCCUPANT LOAD ANALYSIS

CRITICAL ASSUMPTIONS/ NARRATIVE FOR EGRESS ANALYSIS:
ALL OCCUPANT LOAD FACTORS ARE PER CBC TABLE 1004.5.

CORRIDOR/ HALLWAY MINIMUM WIDTH REQUIRED BY CBC 1020.2: 36" CLEAR

CORRIDOR/HALLWAY MINIMUM WIDTH PROVIDED: 60" CLEAR

SUITE (INTERIOR) OCCUPANT LOAD ANALYSIS:

AREA	O.L.F.	O.L.
ASSEMBLY - STANDING:	1,425 SF	15 NET
ASSEMBLY - CONCENTRATED:	1,565 SF	7 NET
CONCENTRATED O.L. > STANDING O.L. = *CONCENTRATED O.L.		224

ASSEMBLY - CONCENTRATED: 1,565 SF 7 NET 224

CLASSROOM: 1,072 SF 20 NET 54

OFFICE: 251 SF 150 GROSS ±2 =280

TOTAL EXITS REQUIRED: 2

TOTAL EXITS PROVIDED: 6

TOTAL EGRESS WIDTH REQUIRED: 45.6" (206 OCC. x 0.2 IN. PER 1 OCC.) < 64"

EXIT DOORS AND OTHER EGRESS COMPONENTS ANALYSIS:
NO SINGLE DOOR EXIT PROVIDES LESS THAN 32" CLEAR WIDTH.

MAX. OCC. LOAD ACCOMODATED:

AT SINGLE DOOR EXIT: 160 OCC. (32" / 0.2 PER OCC.)

AT DOUBLE DOOR EXIT: 320 OCC. (64" / 0.2 PER OCC.)

** 'ASSEMBLY - CONCENTRATED' SPACE NOT USED CONCURRENTLY WITH 'ASSEMBLY - STANDING' SPACE.

PC EXHIBIT B

EXITING KEY

INDICATES NUMBER OF OCCUPANTS EXITING AT THIS LOCATION FOR VERIFICATION OF EXIT WIDTH REQUIREMENTS. (SHOWN AT POINT OF GREATEST OCCUPANT LOAD WHEN CUMULATIVE)

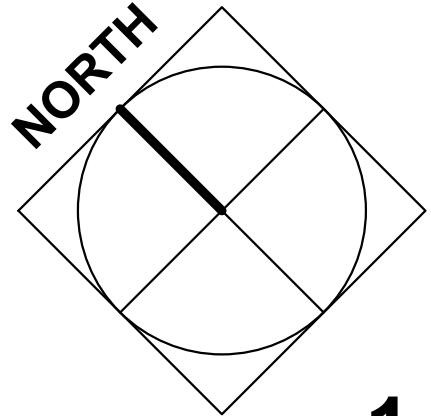
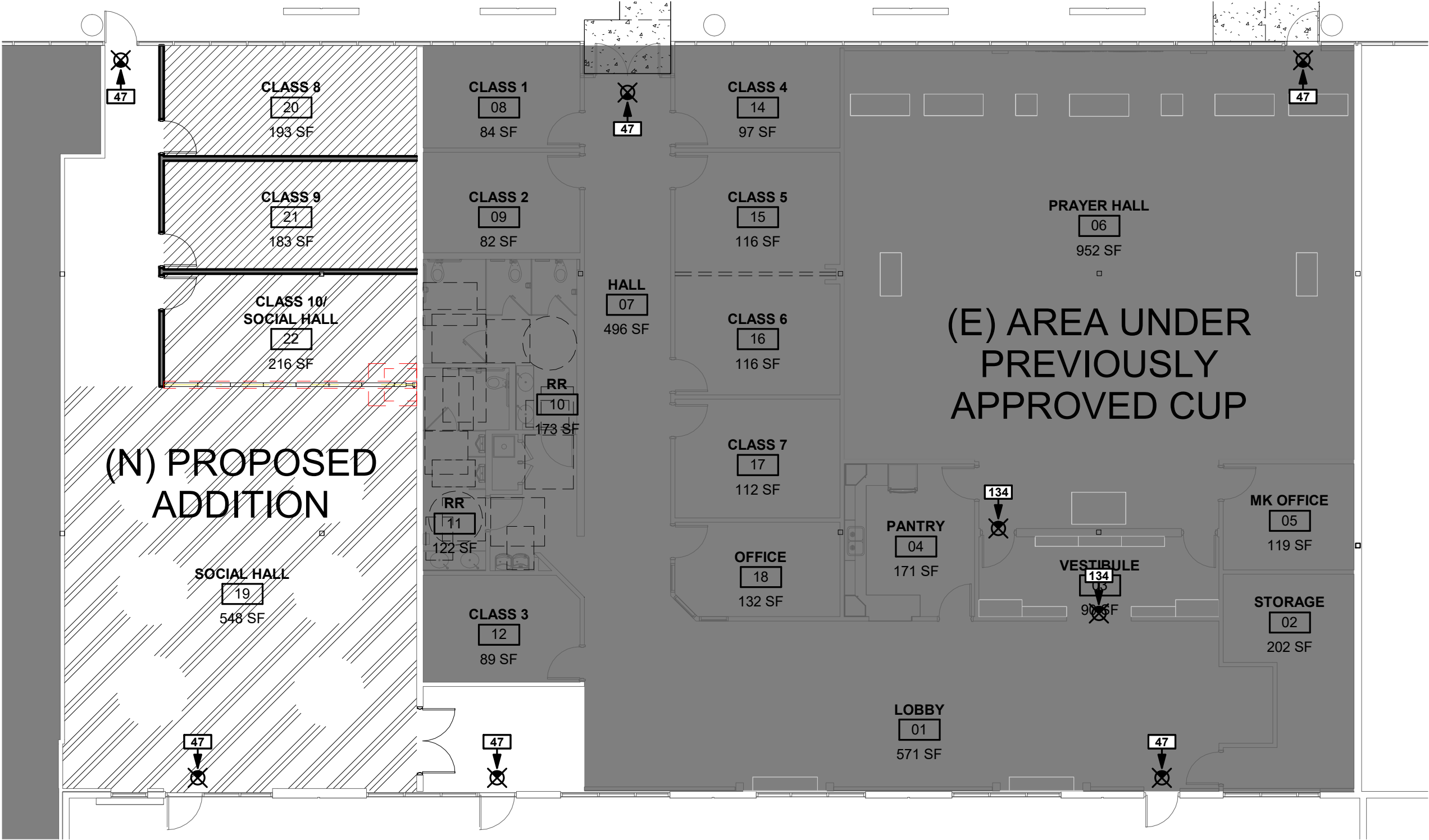
DIRECTION OF EGRESS TRAVEL

ILLUMINATED EXIT SIGNAGE

HATCH INDICATES AREA NOT IN CONTRACT (N.I.C.)

HATCH INDICATES MEASURED NET AREA OF ASSEMBLY USE - STANDING SPACE

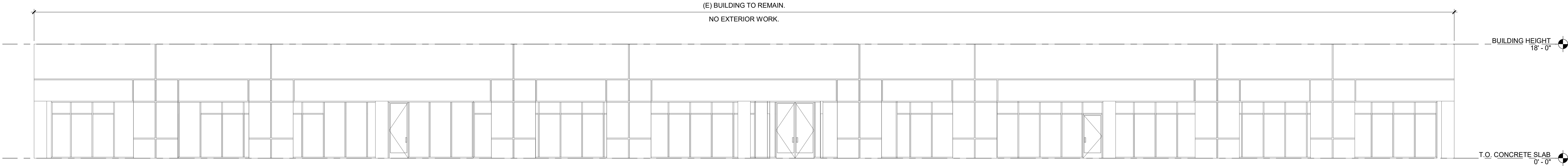
HATCH INDICATES MEASURED NET AREA OF CLASSROOM USE



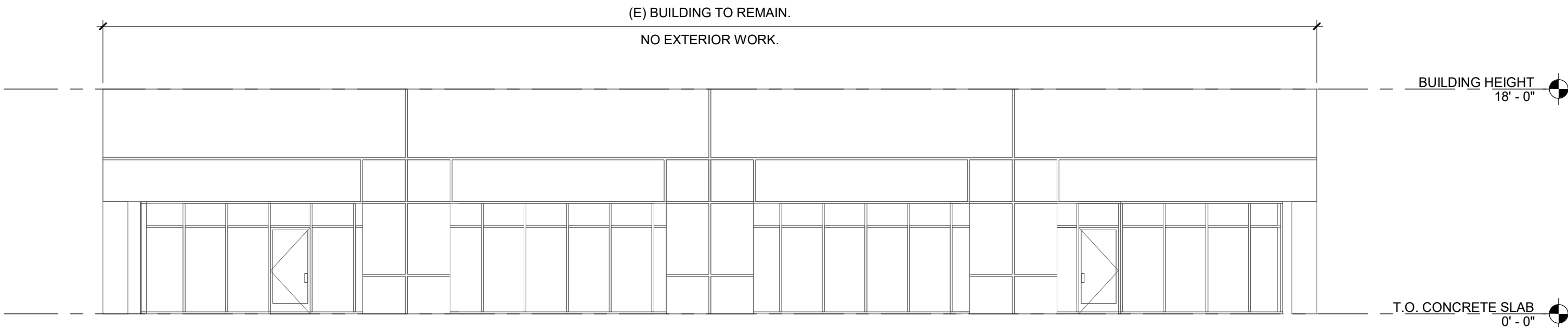
1 FLOOR PLAN

SCALE: 1" = 10'-0"

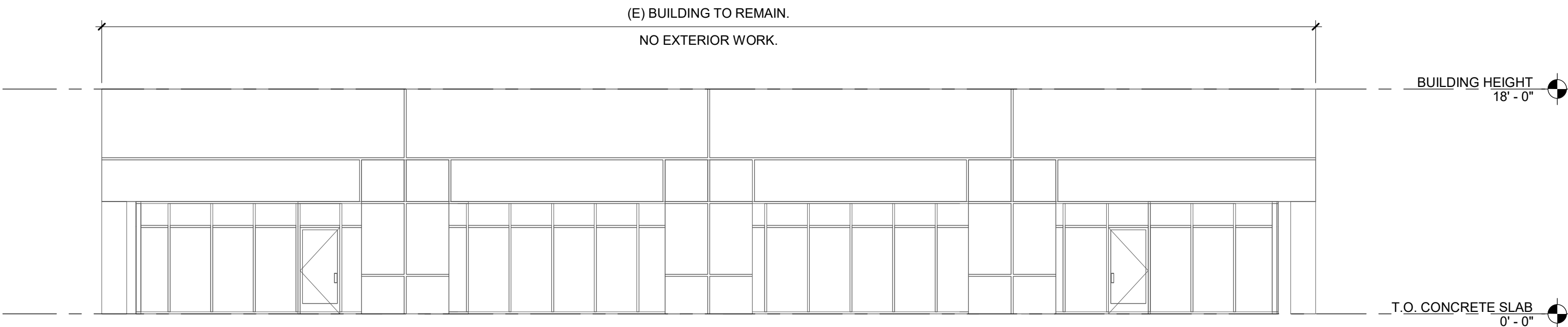
Preliminary Design For:
ISMAILI CENTER
1836 SIERRA GARDENS DR, STE 90
ROSEVILLE, CA 95661



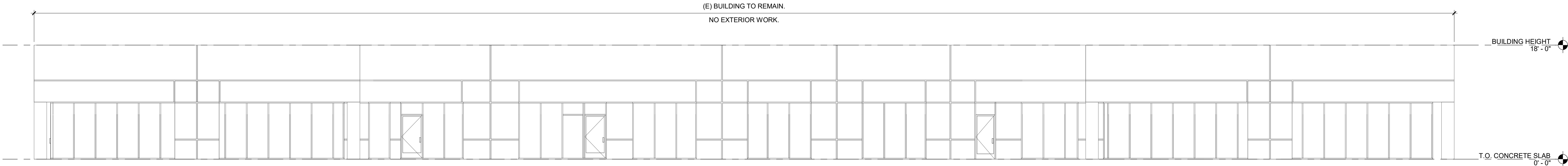
1 NORTH
SCALE: 1/8" = 1'-0"



2 WEST
SCALE: 1/8" = 1'-0"



3 EAST
SCALE: 1/8" = 1'-0"



4 SOUTH
SCALE: 1/8" = 1'-0"

Preliminary Design For:
ISMAILI CENTER
1836 SIERRA GARDENS DR, STE 90
ROSEVILLE, CA 95661

VVM / NS 2024227 08/26/2025





Planning Commission Communication

Meeting Date: 12/11/2025

Item #: VI.1

Item ID: 2025-950

Title: Infill Parcel 241 - John Adams Expansion, 13 Sierragate Plaza, File # PL25-0627

Contact: Greg Bitter 916-774-5294 gbitter@roseville.ca.us

REQUEST

The applicant, John Adams Academy Charter School, requests a Conditional Use Permit to allow the expansion of a legal nonconforming use. John Adams Academy Charter School proposes to occupy the property and existing 6,795 square foot building located at 13 Sierra Gate Plaza for classroom and play area use.

Applicant: Athena Eriksson, Comstock Johnson Architects

Property Owner: Helena Geng, Petunia Flower, LLC

RECOMMENDATION

The Planning Division recommends that the Planning Commission take the following actions:

1. Adopt the three (3) findings of fact and approve the Conditional Use Permit subject to nine (9) conditions of approval.

Respectfully Submitted,
Greg Bitter, Planning Manager

Greg Bitter, Planning Manager

ATTACHMENTS:

1. Staff Report
2. Attachment 1 (PL15-0283 JAA staff report from 7.27.17)
3. Attachment 2 (PL15-0283 JAA staff report from 6.22.17)
4. Attachment 3 (PL15-0283 IS MND from 7.27.17)
5. Attachment 4 (KH Traffic 1.13.16)
6. Attachment 5 (KH Traffic 6.28.17)
7. Attachment 6 (PL25-0180 staff report from 6.26.25)
8. Exhibit A (JAA Operations Plan)
9. Exhibit B (JAA Campus Map)

REVIEWERS:

Lupe Nelson, Development Services Department

Created -

ITEM 6.1: **Conditional Use Permit Modification – 13 Sierra Gate Plaza – INFILL PCL 241 – John Adams Expansion – File #PL25-0627**

REQUEST

The applicant, John Adams Academy Charter School, requests a Conditional Use Permit to allow the expansion of a legal nonconforming use. John Adams Academy Charter School proposes to occupy the property and existing 6,795 square foot building located at 13 Sierra Gate Plaza for classroom and play area use.

Applicant – Athena Eriksson, Comstock Johnson Architects
Property Owner – Helena Geng, Petunia Flower, LLC

SUMMARY RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the three (3) findings of fact and approve the Conditional Use Permit subject to nine (9) conditions of approval.

SUMMARY OF OUTSTANDING ISSUES

There are no outstanding issues associated with this request. The applicant has reviewed and agrees with all recommended conditions of approval.

BACKGROUND

The project site is located within the Sierra Gate Plaza office complex, north of Lead Hill Boulevard, east of Harding Boulevard, south of Dry Creek and west of Interstate 80, within the City's Infill area. The project is an expansion of the existing John Adams Academy Charter School campus from its current footprint into the building and property of 13 Sierra Gate Plaza, as illustrated in Figure 1. The subject property has both zoning and General Plan land use designations of Business Professional (BP).

On May 5, 2011, Planning staff approved a Design Review Permit Modification (2011PL-023) to allow John Adams Academy (JAA) to construct a play area and install a six-foot tall steel fence around the play area. At this time the Zoning Ordinance listed Public Elementary and Secondary Schools as an allowed use within the BP zoning district. As noted in the staff report, charter schools were classified as public elementary and secondary schools and therefore JAA was in compliance with the Zoning Ordinance at the time.

On July 27, 2017, the Planning Commission adopted a Mitigated Negative Declaration and approved a Design Review Permit Modification and Tree Permit (PL15-0283) to allow construction of a 11,600-square-foot multi-purpose building (MPR) and associated site improvements, including a new concrete plaza area, landscaping, and lighting. Copies of the Supplemental Planning Commission staff report dated July 27, 2017, the original Planning Commission staff report, dated June 28, 2017, and the Initial Study/Mitigated Negative Declaration can be found in Attachments 1, 2 and 3, respectively. During the review of project PL15-0283, there were two (2) traffic analyses prepared. In 2016, a Traffic Access and Circulation Evaluation (Attachment 4) was completed by Kimley-Horn to evaluate the existing traffic patterns and impacts, as well as potential traffic/circulation modifications that may need to be constructed to improve the traffic flow in and out of the JAA campus during peak drop-off and pickup times. This study

evaluated the access and circulation within, and in the vicinity of the JAA campus. The study analyzed the addition of a 11,600-square-foot multi-purpose building to the campus and the purchase and use of building 7 Sierra Gate Plaza for classroom purposes. Due to a discrepancy in this study, as detailed in the Supplemental Planning Commission staff report (Attachment 1), a Traffic Impact Study was completed by Kimley-Horn on June 28, 2017 (Attachment 5). This study analyzed an ultimate student capacity of 1,650 students and recommended mitigation measures to ensure any traffic impacts to intersections remained less than significant.

Following approval of the JAA entitlements, the Roseville City Council in 2020 considered and adopted amendments to the City's Zoning Ordinance (Title 19 of the Roseville Municipal Code). As part of these amendments, public and private elementary and secondary schools were combined into the same category within the zoning land use tables. The effect of this amendment is that both of these use types are now either principally permitted, conditionally permitted or prohibited consistent within each zoning district. Based on this amendment to Title 19, JAA's operation became a legal nonconforming use, because public and private elementary and secondary schools are not an allowed use within the Business Professional (BP) zone district.

Pursuant to the City of Roseville Municipal Code Chapter 19.24 (Nonconforming uses, structures, and parcels), a nonconforming use may continue, provided that no such use shall be enlarged or increased, nor extended to occupy a greater area than which it lawfully occupied before becoming a nonconforming use. A nonconforming use in a commercial, industrial, or PD zone may be expanded or modified provided that a Conditional Use Permit (CUP) is obtained.

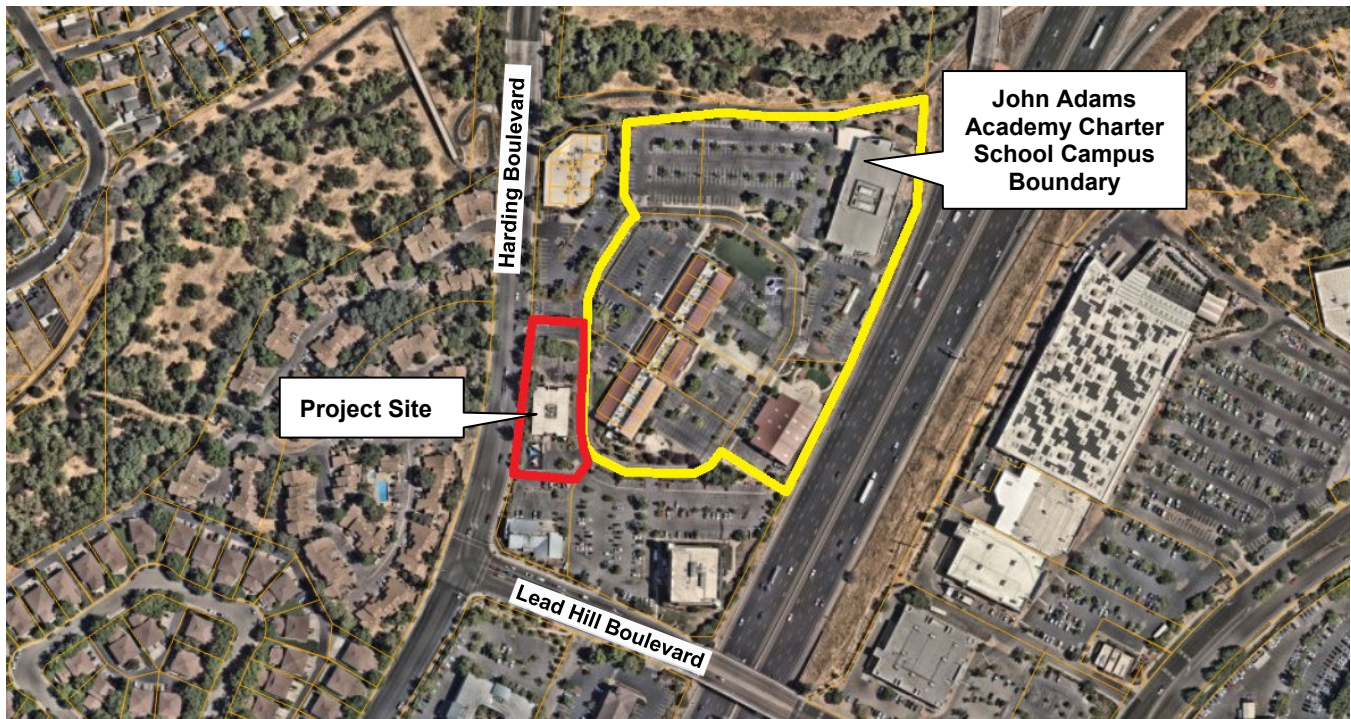
On June 28, 2025, the Planning Commission approved a CUP (PL 25-0180) for JAA to allow the expansion of a legal nonconforming use into the first floor of 5 Sierra Gate Plaza (Attachment 6). This expansion would have allowed for classroom and other educational space to be located within the office building of 5 Sierra Gate Plaza.

Since the Planning Commission hearing, JAA has been presented with the opportunity to purchase the property and building located at 13 Sierra Gate Plaza (see Figure 1). In May 2022, Planning staff approved a Design Review Permit (DRP) Modification (PL22-0335) for 13 Sierra Gate Plaza that allowed the conversion of an existing 6,795 square-foot office building into a daycare facility. The DRP Modification allowed the existing building to be renovated to include four (4) classrooms and two (2) indoor play areas, as well as removing seven (7) parking spaces to accommodate an outdoor playground area of 3,445 square feet. The daycare facility is a principally permitted use within the BP zone and is consistent with the BP land use designation.

JAA now intends to purchase the building at 13 Sierra Gate Plaza to relocate its lower elementary transitional kindergarten and kindergarten (TK and K) programming as well as its state mandated Expanded Learning Opportunities Program (ELOP) before and after school care programming from the main campus to this building. This proposal requires the approval of a modification to JAA's CUP to allow for the further expansion of a legal nonconforming use onto the 13 Sierra Gate property. If approved, JAA would no longer use the previously approved space at 5 Sierra Gate Plaza for classroom purposes.

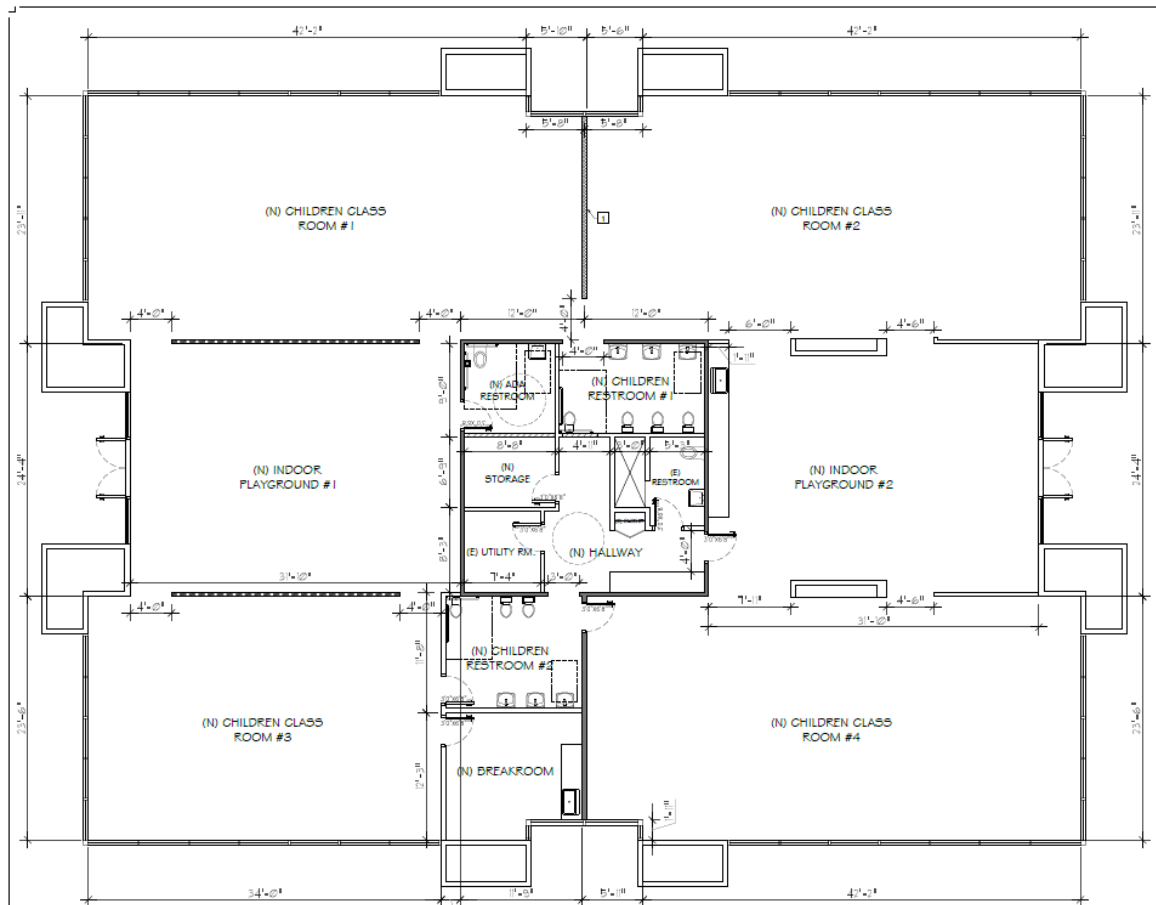
As such, JAA requests a CUP Modification to allow the expansion of a legal nonconforming use into the building and property at 13 Sierra Gate Plaza. The CUP modification would allow JAA to utilize this property as part of their elementary and secondary school use (TK-K program). At this time, JAA does not expect to make any interior modifications to 13 Sierra Gate Plaza, as that building has recently been renovated to include classroom space and indoor and outdoor play areas.

Figure 1: Project Location



As detailed in the Business Operations Plan (Exhibit A), JAA has operated a transitional kindergarten through 12th grade education program at the campus since 2011. Since the beginning of JAA's operation, the school has retrofitted office space into educational classrooms for its students. The school's operation has expanded into four (4) of the original eight (8) buildings in the Sierra Gate Plaza. While earlier this year, JAA was proposing to expand their operation into the first floor of 5 Sierra Gate Plaza, they are now modifying those plans and are proposing to purchase and utilize the building and property at 13 Sierra Gate Plaza. This proposal would utilize the building at 13 Sierra Gate Plaza in its current configuration as shown in Figure 2. The proposed expansion will not increase the student capacity of 1,650 students or change the drop off and pick up procedures that are now in place. After the expansion into 13 Sierra Gate Plaza, the operation of the JAA campus will remain consistent with the 2017 Kimley-Horn Traffic Impact Study (Attachment 5). Similar to the rationale for the June 2025 proposal, this proposed expansion into 13 Sierra Gate Plaza will allow JAA to provide more after school programing and before and after school care opportunities for all grade levels. An increase in before and after school programing will have the impact of reducing drop-off and pick-up peak traffic.

Figure 2: Proposed Floor Plan



CONDITIONAL USE PERMIT EVALUATION

Section 19.78.060 of the City of Roseville Zoning Ordinance requires that three findings be made in order to approve a CUP. The three findings are listed below in ***italicized, bold print*** and are followed by an evaluation of the proposal in relation to each finding.

1. The proposed use or development is consistent with the City of Roseville General Plan and any applicable specific plan.

The project site has a land use designation of BP. Primary uses allowed in the BP land use designation include administrative, professional, government, and medical offices, and research and development (not including any manufacturing or assembly), hospitals, clinics, and general medical may also be permitted. In order to provide the flexibility necessary to achieve the General Plan's land use policies, the General Plan land use designations define allowable uses broadly, when compared to zoning designations, which provide more specific standards to ensure compatibility among adjacent land uses. As discussed, above, based on the 2020 amendments to the Zoning Ordinance, JAA is currently a legal nonconforming use and legally operates within Sierra Gate Plaza office complex. The Zoning Ordinance requires a CUP in order to expand a legal nonconforming use. With approval of this CUP Modification, the proposed expansion into 13 Sierra Gate Plaza would be consistent with the provisions of the Zoning Ordinance and therefore, the policies of the General Plan.

2. *The proposed use or development conforms with all applicable standards and requirements of the Zoning Ordinance.*

The project is located in the BP zone district. Public/Private Elementary and Secondary schools are not an allowed use within the BP zone district and, as described above, JAA is considered a legal nonconforming use. The proposed CUP Modification for this project will be considered to cover JAA's entire operation within the Sierra Gate Plaza as well as the proposal to occupy 13 Sierra Gate Plaza. No modifications to the exterior of 13 Sierra Gate Plaza or to the site design are proposed with this application. There are currently no proposed modifications to the interior of the building at 13 Sierra Gate Plaza, as that building includes classroom and play area space. As detailed in the staff report for the 2017 project (PL15-0283) all of the buildings within the Sierra Gate Plaza meet the Zoning Ordinance standards for building setbacks, landscape setback, height and lot coverage. In 2017, it was determined that the JAA campus exceeded the minimum parking requirements by 14 spaces. The proposed expansion into 13 Sierra Gate Plaza will not increase the student capacity and is not proposed to increase faculty staffing. While the driveway on Lead Hill and the parking area associated with 5 Sierra Gate Plaza will not be used for drop-off or pick-up, or student parking, there will be additional parking stalls available to the JAA faculty and administrative staff. Based on this understanding, the JAA campus and surrounding office buildings within the Sierra Gate Plaza complex will continue to exceed the minimum parking requirements.

3. *The location, size, design and operating characteristics of the proposed use or development is compatible with and shall not adversely affect or be materially detrimental to the health, safety, or welfare of persons residing or working in the area, or be detrimental or injurious to public or private property or improvements.*

The purpose of this CUP Modification is to evaluate and place operating conditions of approval on the JAA campus, including the proposed expansion into 13 Sierra Gate Plaza. Overall, JAA will continue to operate consistent with previous entitlements. The maximum student capacity will be set at 1,650 students. Currently, the combined attendance is approximately 1,400 students. The Business Operations Plan (Exhibit A) provides a detailed description of JAA's use of the property. This operation plan is designed to ensure that, with the proposed expansion, the JAA campus will comply with the requirements for Finding #3, above. Some of the more important operating characteristics to note, include access to the campus, on-site circulation, drop-off and pick-up times, and operation of 13 Sierra Gate Plaza. Access to the site will remain the same, as no changes to the on-site circulation are proposed at this time. Access into the campus will continue to occur from Harding Boulevard, pick-up and drop-off zones will remain the same throughout the campus. Parents will be notified at the beginning of the school year, as well as pick up/drop off information being included in the Family-Scholar handbook. The pick-up and drop-off schedule will remain the same with staggered schedules. Below is the schedule:

Elementary TK/K Monday through Thursday: Morning starts at 8:00am and ends at 11:50am. Elementary Afternoon TK/K starts at 11:15am and ends at 3:05pm.

1st-6th Grade: Monday through Thursday: 8:10am-2:45pm.
Friday: 8:10am to 12:30pm.

Middle School (7-8th Grade): Monday through Thursday: 8:30am to 3:40pm.
Friday: 8:30am to 1:05pm.

High School (9-12th Grade): Monday through Thursday: 8:30am to 3:40pm.
Friday: 8:30am to 1:05pm.

While JAA does operate consistent with the findings and recommendations found in the 2017 Kimley-Horn Traffic Study (Attachment 5), it is recognized that traffic does back up on Harding Boulevard during

the morning drop-off and afternoon pick-up times. As mentioned above, the proposed expansion into 13 Sierra Gate Plaza, with TK and Kindergarten classrooms, will allow JAA to provide more after school programming and before and after school care opportunities. An increase in before and after school programming will have the impact of reducing drop-off and pick-up peak traffic. The benefit of this expansion will be to flatten peak hour traffic.

The approval of a CUP to allow JAA to expand a legal nonconforming use will result in negligible changes to the current operation of the existing school campus. This expansion is compatible with the surrounding uses and will not result in any adverse impacts or be detrimental to the general health safety and welfare.

PUBLIC OUTREACH

The proposed project was distributed to all internal and external agencies and departments who have requested such notice, and all comments or recommended conditions of approval have been incorporated into the project, as appropriate. A notice of the public hearing was published in the Roseville Press Tribune on November 28, 2025, and a notice of the hearing was also distributed to all property owners within 300 feet of the site and posted on the RCONA website. No comments have been received as of publication of the staff report.

ENVIRONMENTAL DETERMINATION

As required by the California Environmental Quality Act (CEQA), the City of Roseville, acting as Lead Agency, prepared an Initial Study/Mitigated Negative Declaration (IS/MND) for the originally approved John Adams Multi-Purpose Building project to evaluate the environmental effects of the project (Attachment 3). The proposed project is substantially consistent with the approved project and the existing student capacity. The proposed John Adams Academy Expansion Project will not result in any new environmental impacts. Therefore, no further environmental review is required.

RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the three (3) findings of fact and approve the **CONDITIONAL USE PERMIT MODIFICATION – 13 SIERRA GATE PLAZA – INFILL PCL 241 – JOHN ADAMS EXPANSION – FILE #PL25-0627** subject to nine (9) conditions of approval.

CONDITIONS OF APPROVAL FOR THE CONDITIONAL USE PERMIT, FILE #25-0627

1. This Conditional Use Permit is to allow the expansion of a legal nonconforming use at the John Adams Academy Charter School campus and provide conditions of approval for the overall school campus and is approved based on the Business Operation Plan in Exhibit A, and as conditioned below. (Planning)
2. The building and property of 13 Sierra Gate is allowed to be utilized for lower elementary classrooms and associated educational uses, as detailed in the Business Operations Plan. (Planning)
3. The John Adams Academy Charter School campus shall have a maximum student capacity of 1,650 students. (Planning)
4. The typical pick-up and drop-off times shall be consistent with those found in the Business Operations Plan in Exhibit A, subject to the requirements in Condition #6. (Planning)

5. There shall be no pick-up or drop off utilizing the driveway on Lead Hill Boulevard and the parking lot adjacent to 5 Sierra Gate. There shall be no student parking within the parking lot adjacent to 5 Sierra Gate. (Planning and Engineering)
6. Any further expansion of the John Adams Academy Charter School campus within the Sierra Gate Plaza center shall require the approval of a Conditional Use Permit Modification, consistent with the provisions of the Roseville Municipal Code. (Planning)
7. Any modification to the Business Operations Plan found in Exhibit A that causes a change in the typical drop-off and pick-up times and has the potential to increase traffic generation, shall require the approval of a Conditional Use Permit Modification, consistent with the provisions of the Roseville Municipal Code. State mandated changes to the school's operation that require a modification to the Business Operations Plan are exempt from the provisions of this condition. John Adams shall notify the City of any State mandated changes to allow the Business Operations Plan to be updated. (Planning)
8. The applicant shall consult with the Building Division to determine if a building permit for a tenant improvement is required. At a minimum the applicant shall secure a Certificate of Occupancy for the change in use. (Building)
9. This Conditional Use Permit approval shall be effectuated within a period of two (2) years from this date and if not effectuated shall expire on **December 11, 2027**. Prior to said expiration date, the applicant may apply for an extension of time. (Planning)

ATTACHMENTS

1. PL15-0283 JAA Staff Report from July 27, 2017
2. PL15-0283 JAA Staff Report from June 22, 2017
3. PL15-0283 JAA IS/MND from July 27, 2017
4. Kimley-Horn Traffic Access and Circulation Evaluation dated January 13, 2016
5. Kimley-Horn Traffic Impact Study dated June 28, 2017
6. PL 25-0180 JAA Staff Report from June 28, 2025

EXHIBITS

- A. JAA Business Operation Plan
- B. JAA Campus Map

<u>Note to Applicant and/or Developer:</u> Please contact Planning Division staff at (916) 774-5276 prior to the Commission meeting if you have any questions on any of the recommended conditions for your project. If you challenge the decision of the Commission in court, you may be limited to raising only those issues which you or someone else raised at the public hearing held for this project, or in written correspondence delivered to the Planning Manager at, or prior to, the public hearing.

**PLANNING DIVISION STAFF REPORT****PLANNING COMMISSION MEETING****July 27, 2017**

Prepared by: Ron Miller, Associate Planner

SUPPLEMENT TO JUNE 22, 2017 PLANNING COMMISSION STAFF REPORT FOR ITEM V-B – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE #PL15-0283

ITEM V-C: DESIGN REVIEW PERMIT MODIFICATION & TREE PERMIT, AND ADOPT A MITIGATED NEGATIVE DECLARATION – 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283

REQUEST

John Adams Academy Charter School proposes to construct an 11,600 square foot multi-purpose building (MPR) within an existing paved parking lot at the eastern edge of the school campus. The project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard. The project entitlements requested include a Design Review Permit Modification (DRPMOD) and a Tree Permit (TP) for construction of the MPR and associated site improvements, including a new concrete plaza area, landscaping, and lighting. Exterior improvements to the site consist of a parking lot conversion to accommodate construction of the new MPR. A new courtyard will be added to the north of the MPR building.

Applicant/Owner: Dean Forman, John Adams Academy

SUMMARY RECOMMENDATION

The Planning Department recommends that the Planning Commission:

- A. Adopt the Mitigated Negative Declaration;
- B. Adopt the two findings of fact for the Design Review Permit Modification; and approve the Design Review Permit Modification subject to seventy-eight (78) conditions of approval;
- C. Adopt the two findings of fact for the Tree Permit; and approve the Tree Permit subject to twenty-one (21) conditions of approval.

BACKGROUND

This report is a supplement to the Staff Report (attached) for the John Adams Academy Multi-purpose Building Design Review Permit Modification and Tree Permit (File #PL15-0283) that was originally included on the Planning Commission Agenda for the meeting of June 22, 2017. As shown above, this Supplement restates and modifies the SUMMARY RECOMMENDATION. All project discussions, evaluations, conclusions and conditions included in the June 22, 2017 staff report remain the same, with the exception of the ENVIRONMENTAL DETERMINATION, and two additional conditions of approval (requiring fencing) resulting from negotiations between the applicant and Sierragate 10 tenants/property owners that occurred subsequent to June 22, 2017 (see Conditions 12 and 13). Staff is in agreement with the proposed additional conditions. The June 22, 2017 staff report's ENVIRONMENTAL DETERMINATION reflected preparation of a Negative Declaration for the project. This supplement includes a restated RECOMMENDATION to the Planning Commission, which reflects preparation of a Mitigated Negative Declaration (MND) for the project, as discussed further below.

Project History: Following completion of an Initial Study for the project, it was determined that the project would not have a significant effect on the environment; therefore, a Negative Declaration was prepared for Planning Commission review and adoption at the June 22nd meeting.

On June 21, 2017, staff received a comment letter from the law firm of Brigit Barnes & Associates, legal counsel for Sierragate building owners (see Attachment 3). The letter's primary focus was the AM Peak Hour Level of Service (LOS) for the intersection of Harding and Douglas Boulevards under Cumulative-Plus-Project conditions.

Traffic Study/Significant Impacts: The Kimley-Horn Traffic Impact Study (TIS) performed for the project indicated a degradation of the LOS level (Level C to Level D) during the AM Peak Hour at the intersection of Harding and Douglas Boulevards, (see TIS Table 6 – CIP Cumulative [2035] plus Proposed Project Intersection Levels of Service [Intersection #11 – Harding Blvd @ Douglas Blvd]). Based on the Level of Service policies identified in the City's General Plan Circulation element (see TIS Page 8), this degradation in LOS is considered a significant impact, requiring mitigation.

However, the Conclusion paragraphs of the Kimley-Horn TIS incorrectly indicated that the addition of the proposed project to the Existing (2017) and CIP Cumulative (2035) scenarios would not significantly worsen conditions at the study intersections, and as a result, no mitigations would be required (see Staff Report - Exhibit A (Initial Study at Attachment 3 – Page 18).

Continuation/Revisions/Public Review: Upon discovery of this inconsistency regarding traffic impacts, staff determined that the LOS level reflected in Table 6 of the TIS was correct, and the LOS degradation would require mitigation and preparation of a Mitigated Negative Declaration (MND) (see Exhibit A). Therefore, the project was continued to the Planning Commission meeting of July 27, 2017. This schedule provided a time period to; 1) determine necessary mitigation methods to maintain LOS Level C at the impacted intersection; 2) prepare the MND; and 3) provide the mandatory 20-day public review period, per the California Environmental Quality Act (CEQA) Section 15073, Public Review of a Proposed Negative Declaration or Mitigated Negative Declaration.

Proposed Mitigation: Per Exhibit F of the Mitigated Negative Declaration (Mitigation Monitoring Program), the applicant will be responsible for modifying the existing traffic signal at Intersection #11, Harding Boulevard @ Douglas Boulevard, to include a westbound right-turn overlap. Traffic signal modifications at the Douglas/Harding Boulevard intersection shall be completed prior to occupancy of the Multi-Purpose Building at John Adams Academy.

ENVIRONMENTAL DETERMINATION

The Planning Manager has determined that the above project will not have a significant effect on the environment and proposes that a Mitigated Negative Declaration be adopted. This determination has been based upon an Initial Study, which has concluded that with mitigation, there will be no significant environmental impacts. At the Planning Commission meeting, the Approving Authority (Planning Commission) may adopt the proposed Mitigated Negative Declaration. The Mitigated Negative Declaration was circulated for a 20-day public review from June 29, 2017 through July 19, 2017.

In accordance with Assembly Bill 52 (AB 52) and Section 21080.3.1(d) of the California Public Resources Code (PRC), the United Auburn Indian Community (UAIC) was notified that the City would be initiating environmental review of the project under CEQA. This notification was provided on April 20, 2017. On May 12, 2017, staff received a letter from the United Auburn Indian Community (UAIC) requesting initiation of consultation under AB 52 and tribal participation in all cultural resource assessments.

Staff responded via email and advised that the City's General Plan EIR includes Mitigation Measures applicable to archeological features and artifacts, should any be found on site. Language included in the measure requires an immediate cessation of work, and the requirement to contact the appropriate agencies to address the resource before work can resume.

No Tribal Cultural Resources are known to exist on the project site, and construction will occur within an area that has been previously graded and is currently a paved parking area. However, the UAIC has requested that a condition be added to the project that provides for a tribal member to visit the site during the time of soil disturbance. Condition 4 has been added which includes this provision and outlines additional preservation measures, should any Tribal Cultural Resources be found on site.

RECOMMENDATION

The Planning Department recommends that the Planning Commission take the following actions:

- A. Adopt the Mitigated Negative Declaration, as shown in Exhibit A.
- B. Adopt the two (2) findings of fact as stated below and approve the **DESIGN REVIEW PERMIT MODIFICATION – 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283**, subject to seventy-eight (78) conditions of approval.
 1. *The proposed modification is in substantial compliance with the intent of the original approval, prior conditions of approval, and all applicable design, development and improvement standards in effect as of the date of application for the modification.*
 2. *The proposed modification is in compliance with all standards and requirements of the City's Zoning Ordinance, with the applicable goals, policies and objectives set forth in the General Plan, and the applicable Community Design Guidelines.*
- C. Adopt the two findings of fact as stated below and approve the **TREE PERMIT - 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283**, subject to twenty-one (21) conditions of approval.
 1. *Approval of the Tree Permit will not be detrimental to the public health, safety or welfare, and approval of the Tree Permit is consistent with the provisions of Chapter 19.66 of the Zoning Ordinance; and*
 2. *Measures have been incorporated into the project and the conditions of approval to provide replacement for the removal of trees and to mitigate impacts to and improve the health of the remaining trees.*

CONDITIONS OF APPROVAL FOR DESIGN REVIEW PERMIT – PL15-0283

1. This design review permit approval shall be effectuated within a period of two (2) years from this date and if not effectuated shall expire on **July 27, 2019**. Prior to said expiration date, the applicant may apply for an extension of time, provided, however, this approval shall be extended for no more than a total of one year from **July 27, 2019**.
2. The project is approved as shown in Exhibits A - J, and as conditioned or modified below. (Planning)

3. The project shall comply with all required environmental mitigation identified in the City of Roseville 2035 General Plan and the Mitigated Negative Declaration prepared for this project. (Planning)
4. A minimum of seven days prior to beginning earthwork or other soil disturbance activities, the applicant shall notify the City of the proposed earthwork start-date, in order to provide the City with time to contact the United Auburn Indian Community (UAIC). A UAIC tribal representative shall be invited to perform a site visit to visually inspect the site within the first five days of initial earthwork to determine if there is any evidence that tribal cultural resources have been unearthed. If findings are negative, then the UAIC representative would have a site meeting with the contractors to discuss the need to remain observant, and to stop work and follow notification procedures if any resources are discovered during construction, consistent with existing mitigation. If artifacts or unusual amounts of charcoal, bone, or shell are uncovered during this initial inspection or during construction, work should be halted within 100 feet of the find, and the project applicant shall immediately notify the City of Roseville Development Services Director. A qualified archeologist approved by the City and Native American Monitor approved by UAIC should be consulted for an on-site evaluation as part of the site investigation and resource assessment. The archeologist and Native American Monitor shall consult with the UAIC and provide proper management recommendations should potential impacts to the resources be found by the City to be significant. A written report detailing the site assessment, coordination activities, and management recommendations shall be provided to the City by the qualified archaeologist. Possible management recommendations for historical or unique archaeological resources or tribal cultural resources could include resource avoidance or, where avoidance is infeasible in light of project design or layout or is unnecessary to avoid significant effects, preservation in place or other measures. The contractor shall implement any measures deemed by City staff to be necessary and feasible to avoid or minimize significant effects to the cultural resources. If bone is discovered and it appears to be human, California law requires that the County Coroner be contacted. If remains are found of Native American origin, the Native American Heritage Commission and UAIC should be informed so that they can assist in protecting such remains. (Planning)
5. At the time of building permit application and plan submittal, the project applicant shall submit a proposed plan which shows the suite addressing plan for individual tenant spaces within the building. The Chief Building Official, or the designate, shall approve said plan prior to building permit approval. (Building)
6. A separate Site Accessibility Plan which details the project's site accessibility information as required by California Title 24, Part 2 shall be submitted as part of the project Building Permit Plans. (Building)
7. For Multiple Building Complexes: As part of the required Site Accessibility Plan, the developer shall delineate the extent of the site accessibility improvements being installed as part of the initial improvements for the project, and those that are planned to be developed as part of subsequent phases (i.e. around future pad buildings). (Building)
8. The project shall be addressed as 1 Sierragate Plaza, Building E or 1E Sierragate Plaza. All projects with multi-tenants or buildings must submit a plot plan with building footprint(s) to the Development Services Department (Planning Division) for building/suite addressing. (Planning)
9. The applicant shall pay City's actual costs for providing plan check, mapping, GIS, and inspection services. This may be a combination of staff costs and direct billing for contract professional services. Project billing may occur up to two months after end of warranty or Notice of

Termination date for the SWPPP, whichever occurs later. (Engineering, Environmental Utilities, Electric, Finance)

10. The design and construction of all improvements shall conform to the Design and Construction Standards of the City of Roseville, or as modified by these conditions of approval, or as directed by the City Engineer. (Engineering)
11. The applicant shall not commence with any on-site improvements or improvements within the right-of-way until such time as grading and/or improvement plans are approved and grading and/or encroachment permits are issued by the Development Services Department – Engineering. (Engineering)
12. John Adams Academy (JAA) shall install six-foot (6) high, black bias able iron fencing that matches the fencing on the JAA campus (1.5" top and bottom rails, 3/4" pickets spaced at 3.875", with 3" posts set approximately every 8 feet) for sixty feet (60') on the northwesterly interior side of the 10 Sierra Gate driveway from the driveway opening approaching, but outside of, the dripline of the heritage oak tree near the corner of the main Sierra Gate entrance onto Harding Boulevard, and three-foot (3') high fence of the same design, materials, and colors for thirty feet (30') feet on the southwesterly interior side of that 10 Sierra Gate driveway, provided that the owners of 10 Sierra Gate provide JAA, at no cost to JAA, a temporary construction easement in order to construct the aforementioned fence, and further providing that JAA shall have no obligation to install any landscaping on the 10 Sierra Gate property. JAA shall engage the fencing contractor prior to the start of the 2017-18 academic year, and complete the installation of the fence as expeditiously as possible. JAA's contractor will coordinate with PCH Humphreys prior to commencement of construction so as to allow for coordination of construction of the balance of the fence to the southerly most property line of Sierragate No. 10. (Planning)
13. JAA agrees to meet with the 10 Sierra Gate property management company regarding effective monitoring of JAA campus traffic as it affects the 10 Sierra Gate property. (Planning)
14. The approval of this project does not constitute approval of proposed improvements as to size, design, materials, or location, unless specifically addressed in these conditions of approval. (Engineering)

PRIOR TO ISSUANCE OF BUILDING PERMITS:

15. Parking stalls shall meet, or exceed, the following minimum standards:
 - a. All parking stalls shall be double-striped. Parking stalls adjacent to sidewalks, landscaped areas or light fixtures, and all Accessible stalls shall abut a 6" raised curb or concrete bumper. (Planning)
 - b. Standard -- 9 feet x 18 feet; Compact--9 feet x 16 feet; Accessible--14 feet x 18 feet (a 9 foot wide parking area plus a 5 foot wide loading area) and a minimum of one (1) parking space shall be Accessible van accessible--17 feet x 18 feet (9 foot wide parking area plus an 8 foot wide loading area). (Planning)
 - c. An 'exterior routes of travel' site accessibility plan incorporating slope, cross-slope, width, pedestrian ramps, curb ramps, handrails, signage, detectable warnings or speed limit signs or equivalent means shall comprise part of the site improvement plans submitted to City for review, prior to building plan check approvals. This site accessibility plan shall also include:

- i) Accessible parking stalls shall be dispersed and located closest to accessible entrances. The total number of accessible parking spaces shall be established by Table 11B-208.2 of the CBC.
 - ii) Accessible Parking spaces and crosswalks shall be signed, marked and maintained as required by Chapter 11B of the CBC.
 - iii) Accessible parking and exterior route of travel shall comply with CBC, Section 11B-206. (Building)
- 16. Signs and/or striping shall be provided on-site as required by the Planning Department to control on-site traffic movements. Parking lot striping and signage shall be maintained in a visible and legible manner. (Planning)
- 17. The plans submitted to the Building Department for permits shall indicate all approved revisions/alterations as approved by the Commission including all conditions of approval. (Planning)
- 18. The project Landscape Plans shall comply with the following:
 - a. The Landscape Plan shall indicate the location of, and be designed to avoid conflicts with, all pole-mounted light fixtures and utility equipment including (but not limited to) electric transformers, switchgear, and overhead lines, backflow preventors, fire department connections, and public water, sewer, and storm drain facilities. (Planning, Fire, EUD, Electric, Public Works)
 - b. The tree plantings in the parking lot shall be designed to provide a minimum of 50% shade coverage after 15 years. (Planning)
 - c. At a minimum, landscaped areas not covered with live material shall be covered with a rock, (3") bark (no shredded bark) or (3") mulch covering. (Planning)
 - d. The landscape plan shall comply with the City of Roseville Water Efficient Landscape Ordinance WELO. (Planning)
 - e. All landscaping in areas containing electrical service equipment shall conform with the Electric Department's Landscape Requirements and Work Clearances as outlined in Section 10.00 of the Departments "Specification for Commercial Construction." (Electric)
- 19. Any roof-mounted equipment and satellite dishes proposed shall be shown on the building plans. The equipment shall be fully screened from public streets and the surrounding properties. (Planning)
- 20. A separate Site Accessibility Plan which details the project's site accessibility information as required by California Title 24, Part 2, shall be submitted as part of the project Building Permit Plans. (Building)
- 21. For Multiple Building Complexes: As part of the required Site Accessibility Plan, the developer shall delineate the extent of the site accessibility improvements being installed as part of the initial improvements for the project, and those that are planned to be developed as part of subsequent phases (i.e. around future pad buildings). (Building)

22. Building permit plans shall comply with all applicable code requirements (California Building Code – CBC – based on the International Building Code, California Green Building Standards Code – CGBSC, California Mechanical Code – CMC – based on the Uniform Mechanical Code, California Plumbing Code – CPC – based on the Uniform Plumbing Code, California Fire Code – CFC – based on the International Fire Code – with City of Roseville Amendments – RFC, California Electrical Code – CEC – based on the National Electrical Code, and California Energy Standards – CEC T-24 Part 6), California Title 24 and the American with Disabilities Act - ADA requirements, and all State and Federally mandated requirements in effect at the time of submittal for building permits (contact the Building Division for applicable Code editions). (Building)
23. Parapet/cornice construction shall support the weight of a ladder leaning against the parapet as well as a 330-pound vertical load applied to the **leading edge** of the horizontal projection of the cornice (a 250-pound firefighter carrying 80 pounds of equipment stepping off of a ladder onto the top of the cornice). (CFC Chapter 1) (Fire)
24. Adequate radio coverage shall be provided within all buildings for public safety agencies, as required by Roseville Municipal Code and the California Fire Code. A field test shall be provided by a person in possession of a current FCC License, or a current technician certification issued by the Associated Public-Safety Communications Officials International (APCO), or the National Association of Business and Educational Radio (NABER). The building owner shall retain all test records on the inspected premises and a copy shall be submitted to the Fire Department officials in accordance with Section 510 of the California Fire Code. Adequate radio coverage shall include all of the following:
 - a. A minimum signal strength of 95 dBm received at the closest City of Roseville Communication site when transmitted from 90% of the area of each floor of the building.
 - b. The frequency range that must be supported shall be 821-824 MHz and 866-869 MHz.
 - c. A 100 % reliability factor. (Fire, Police)
25. Developer shall provide an approved building address number on the upper section of the building, as required by CFC Section 901.4.4 as amended by the City of Roseville. Landscape planting shall not obstruct the building address. (Fire)
26. Maintenance of copy of building plans: Health and Safety Code section 19850 requires the building department of every city or county to maintain an official copy of the building plans for the life of the building. As such, each individual building shall be submitted as a separate submittal package. Building plan review, permit issuance and archiving is based on each individual building address.
27. For all work to be performed off-site, permission to enter and construct shall be obtained from the property owner, in the form of a notarized right-of-entry. Said notarized right-of-entry shall be provided to Public Works prior to approval of any plans. (Engineering)
28. The Improvement Plans shall include a complete set of Landscape Plans. The Landscape Plans shall be approved with the Improvement Plans. (Planning, Engineering, Fire, Environmental Utilities, Electric)
29. A note shall be added to the grading plans that states:

*“Prior to the commencement of grading operations, the contractor shall identify the site where the **excess/borrow** earthen material shall be imported/deposited. If the **borrow/deposit** site is within the City of Roseville, the contractor shall produce a report issued by a geotechnical engineer to verify that the exported materials are suitable for the*

intended fill, and shall show proof of all approved grading plans. Haul routes to be used shall be specified.” (Engineering)

30. All storm drainage, including roof drains, shall be collected on site and treated with Best Management Practices (BMP's) per the West Placer Storm Water Quality Design Manual. All storm water shall be routed to the nearest existing storm drain system or natural drainage facility. Drain outfalls shall extend down to the receiving water and shall be constructed with adequate velocity attenuation devices. The grading/improvement plans for the site shall be accompanied with a shed map that defines that area tributary to this site and all drainage facilities shall be designed to accommodate the tributary flow. The storm drain system and proposed BMP's shall be privately owned and maintained by the property owner. Prior to the issuance of any permits, the owner shall provide a plan for the maintenance of the proposed BMP's. (Engineering)
31. Prior to the issuance of any permits, the property owner shall prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City, as defined by the Regional Water Quality Control Board. The SWPPP shall be submitted in a single three ring binder. Upon approval, the SWPPP will be returned to the property owner during the pre-construction meeting. (Engineering)
32. The applicant shall remove and reconstruct any existing damaged curb, gutter, and sidewalk along the property frontage. During plan check of the improvement plans and/or during inspection, Public Works will designate the exact areas to be reconstructed. Any existing public facilities damaged during the course of construction shall be repaired by the property owner and at the property owner's expense, to the satisfaction of the City. (Engineering)
33. Prior to the approval of the improvement plans, it will be the project proponent's responsibility to pay the standard City Trench Cut Recovery Fee for any cuts within the City streets that are required for the installation of underground utilities. (Engineering)
34. Prior to the issuance of building permits, the property owner shall pay into the following fee programs: Citywide Drainage Fee, Citywide Traffic Mitigation Fee (TMF), Highway 65 Joint Partners Association (JPA), South Placer Regional Transportation Authority (SPRTA), and City/County Fee. (Public Works)
35. Prior to the issuance of a grading permit or approval of Improvement Plans, the grading plans shall clearly identify all existing water and sewer utilities within the boundaries of the project (including adjoining public right of way). Existing utilities shall be identified in plan view and in profile view where grading activities will modify existing site elevations over top of or within 15 feet of the utility. Any utilities that could potentially be impacted by the project shall be clearly identified along with the proposed protection measures. The developer shall be responsible for taking measures and incurring costs associated with protecting the existing water, sewer and recycled water utilities to the satisfaction of the Environmental Utilities Director. (Environmental Utilities)
36. The site plan shall identify trash enclosure location for this project. (Environmental Utilities)
37. The applicant shall pay all applicable water and sewer fees. (Environmental Utilities)
38. Water and sewer infrastructure shall be designed pursuant to the adopted City of Roseville Improvement Standards and the City of Roseville Construction Standards and shall include:
 - a. Utilities or permanent structures shall not be located within the area that would be disturbed by an open trench needed to expose sewer trunk mains deeper than 12' unless approved

by Environmental Utilities in these conditions. The area needed to construct the trench is a sloped cone above the sewer main. The cone shall have 1:1 side slopes.

- b. Water, sewer and recycled mains shall not exceed a depth of 12' below finished grade, unless authorized in these conditions of approval.
 - c. All sewer manholes shall have all-weather 10-ton vehicle access unless authorized by these conditions of approval. (Environmental Utilities)
- 39. Trash enclosures, recycling areas, and enclosure approaches shall be designed to current Refuse Division specifications, the materials and colors shall match the building, and the location of such facilities shall be reviewed and approved by the Refuse Division, Planning and the Fire Department. The enclosure must have inside dimensions of 12 feet wide and 9 feet deep and be built to the specifications of the Solid Waste Department's Enclosure Description. (Refuse, Planning, Fire)
 - 40. Access to trash enclosures shall have an inside turning radius of 25 feet and an outside turning radius of 45 feet must be maintained to allow the refuse truck access to and from the enclosure. Enclosures must have a clear approach of 65 feet in front of the enclosure to allow servicing bins. (Refuse)
 - 41. A trash enclosure and recycling enclosure is required for each building and each tenant, otherwise, the building owner is responsible for the trash service. (Refuse)
 - 42. The trash enclosure needs to be a double enclosure per city standards. (Environmental Utilities)
 - 43. Existing domestic water service will require a backflow preventor if one does not exist. (Environmental Utilities)
 - 44. The applicable codes and standards adopted by the City shall be enforced at the time construction plans have been submitted to the City for permitting (Fire)
 - 45. The design and installation of all fire protection equipment shall conform to the California Fire Code and the amendments adopted by the City of Roseville, along with all standards and policies implemented by the Roseville Fire Department. All amendments, standards and policies can be found on the City's web site www.roseville.ca.us or contact Patrick Chew, Plan Check Engineer, at 916-774-5823 or pchew@roseville.ca.us with the Fire Prevention Division for information. (Fire)
 - 46. All buildings with an Assembly Use type occupancy having an occupant load exceeding 1000 persons shall have a voice evacuation system installed throughout the entire structure in accordance with Section 907.1.3 of the California Building and Fire Code. Permit application for such system shall be submitted to the fire prevention division of the fire department for review and approval. (Fire)
 - 47. The fire flow required, at a 50% reduction, due to the buildings being sprinklered, will be based on the largest single structure in accordance with the California Fire Code at the time detailed plans are submitted to the City of Roseville for review. The maximum fire flow will not exceed 4,000 gpm based on the Appendix III-AA of the California Fire Code. (Fire)
 - 48. All buildings with an E-occupancy use and assembly shall have a voice evacuation system installed throughout the entire structure in accordance with Section 907 of the California Building

and Fire Code. Permit application for such system shall be submitted to the fire prevention division of the fire department for review and approval.

49. An **approved** automatic fire extinguishing system shall be provided for all buildings where the total fire area is **3,600** square feet or greater, as required by California Fire Code as adopted by this city for non-single family residential units. All amendments, standards and policies can be found on the City's web site www.roseville.ca.us or contact Patrick Chew, Senior Fire Inspector, at 916-774-5823 or pchew@roseville.ca.us with the Fire and Life Safety Division for information. (Fire)
50. Automatic fire extinguishing system risers, fire alarm system panels and digital alarm communicator system panels shall be located within an approved fire control room and shall be accessible from an adjacent fire apparatus roadway. Said fire control room shall be a minimum size of thirty-five (35) square feet in size and shall be openable from the exterior via an approved door opening. (Fire)
51. The use and/or increased volume of hazardous materials or storage, liquids, gases and/or chemicals shall meet the requirements of the Chapter 6.95 of the Health and Safety Code, the Roseville Fire Department and the National Fire Codes. Submit a complete plan set and the Hazardous Materials Business Plan, including names and amount of any hazardous materials that will be stored or used, to the Fire and Life Safety Division for review and approval. A permit application shall also be provided at the time of submittal. Contact Steve Anderson of our Hazardous Materials Division within the Fire Department at (916) 774-5821 to initiate the process. Satisfaction of storage and use shall be determined prior to requesting occupancy. (Fire)
52. The Electric Department requires the submittal of the following information in order to complete the final electric design for the project:
 - a. one (1) set of improvement plans
 - b. load calculations
 - c. electrical panel one-line drawings (Electric)
53. All on-site external lighting shall be installed and directed to have no off-site glare. Lighting within the parking areas and pedestrian walkways shall provide a maintained minimum of one (1) foot candle and 0.5 foot candle of light, respectively. All exterior light fixtures shall be vandal resistant. (Planning & Police)
54. The parking lot shall have properly posted signs that state the use of the parking area is for the exclusive use of employees and customers of this project. (See California Vehicle Code Sections 22507.8, 22511.5, 22511.8, 22658(a), and the City of Roseville Municipal Code Section 11.20.110). The location of the signs shall be shown on the approved site plan. (Planning & Police)
55. It is the developer's responsibility to notify PG&E of any work required on PG&E facilities. (PG&E)

DURING CONSTRUCTION & PRIOR TO ISSUANCE OF OCCUPANCY PERMITS:

56. Any backflow preventors visible from the street shall be painted green to blend in with the surrounding landscaping. The backflow preventors shall be screened with landscaping and shall comply with the following criteria:

- a. There shall be a minimum clearance of four feet (4'), on all sides, from the backflow preventor to the landscaping.
 - b. For maintenance purposes, the landscaping shall only be installed on three sides and the plant material shall not have thorns.
 - c. The control valves and the water meter shall be physically unobstructed.
 - d. The backflow preventer shall be covered with a green cover that will provide insulation. (Planning, Environmental Utilities)
57. Easement widths shall comply with the City's Improvement Standards and Construction Standards. Separate document easements required by the City shall be prepared in accordance with the City's "Policy for Dedication of Easements to the City of Roseville". All legal descriptions shall be prepared by a licensed land Surveyor. All existing public utility, electric, water, sewer and reclaimed water easements shall be maintained unless otherwise authorized by these conditions of approval. (Public Works, Environmental Utilities, Electric)
58. Inspection of the potable water supply system on new commercial/ industrial/ office projects shall be as follows:
- a. The Environmental Utilities Inspector will inspect all potable water supply up to the downstream side of the backflow preventor.
 - b. The property owner/applicant shall be responsible for that portion of the water supply system from the backflow preventor to the building. The builder/contractor shall engage a qualified inspector to approve the installation of this portion of the water supply. The Building Division will require from the builder/ contractor, a written document certifying that this portion of the potable water supply has been installed per improvement plans and in accordance with the Uniform Plumbing Code. This certificate of compliance shall be submitted to the Building Division before a temporary occupancy or a building final is approved.
 - c. The building inspectors will exclusively inspect all potable water supply systems for the building from the shutoff valve at the building and downstream within the building. (Building, Environmental Utilities)
59. All improvements being constructed in accordance with the approved grading and improvement plans shall be accepted as complete by the City. (Engineering)
60. The applicant/developer shall prepare a Transportation Systems Management (TSM) Agreement for John Adams Academy to be reviewed and approved by the City Manager. (Public Works, Alternative Transportation)
61. Water and sewer shall be constructed pursuant to the adopted City of Roseville Improvement Standards and the City of Roseville Construction Standards. (Environmental Utilities)
62. All water backflow devices shall be tested and approved by the Environmental Utilities Department. (Environmental Utilities)
63. All Electric Department facilities, including streetlights where applicable, shall be designed and built to the "City of Roseville Specifications for Commercial Construction." (Electric)
64. The City of Roseville Electric Department has electrical construction charges which are to be paid by the developer and which are explained in the City of Roseville "Specification for

Commercial Construction." These charges will be determined upon completion of the final electrical design. (Electric)

65. Any relocation, rearrangement, or change of existing electric facilities due to this development shall be at the developer's expense. (Electric)
66. Any facilities proposed for placement within public/electric utility easements shall be subject to review and approval by the Electric Department before any work commences in these areas. This includes, but is not limited to, landscaping, lighting, paving, signs, trees, walls, and structures of any type. (Electric)
67. All electric metering shall be directly outside accessible. This can be accomplished in any of the following ways:
 - a. Locate the metered service panel on the outside of the building.
 - b. Locate the metered service panel in a service room with a door that opens directly to the outside. The developer will be required to provide a key to the door for placement in a lock box to be installed on the outside of the door. Any doors leading from the service room to other areas of the building shall be secured to prohibit unauthorized entry.
68. One 3/4" conduit with a 2-pair phone line shall be installed from the buildings telephone service panel to the meter section of the customer's electrical switchgear or panel. (Electric)
69. It is the responsibility of the developer to ensure that all existing electric facilities remain free and clear of any obstruction during construction and when the project is complete. (Electric)

OTHER CONDITIONS OF APPROVAL:

70. Signs shown on the elevations are not approved as part of the Design Review Permit. A Sign Permit is required for all project signs. (Planning)
71. Following the installation of the landscaping, all landscape material shall be maintained in a healthy and weed free condition; dead plant material shall be replaced immediately. All trees shall be maintained and pruned in accordance with the accepted practices of the International Society of Arboriculture (ISA). (Planning)
72. The required width of fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. Minimum required widths and vertical clearances established by the Fire Code shall be maintained at all times during construction. Closure of accesses for fire apparatus by gates, barricades and other devices shall be prohibited unless approved by the Fire Chief. (Fire)
73. Temporary aboveground storage tanks may be used at construction sites for diesel fuel only and shall not exceed 1,000-gallon capacity. Tanks shall comply with all provisions found within the Fire Code. A Fire Department Permit shall be obtained prior to tank installation. The permit shall expire after 90 days from the date of issuance, unless extended by the Fire Chief. (Fire)
74. If site survey or earth moving work results in the discovery of hazardous materials in containers or what appears to be hazardous wastes released into the ground, the contractor or person responsible for the building permit must notify the Roseville Fire Department immediately. A representative from the Fire Department will make a determination as to whether the incident is reportable or not and if site remediation is required. (Fire)

75. The location and design of the gas service shall be determined by PG&E. The design of the gas service for this project shall not begin until PG&E has received a full set of City approved improvement plans for the project. (PG&E)
76. The project is subject to the noise standards established in the City's Noise Ordinance. In accordance with the City's Noise Ordinance, project construction is exempt between the hours of seven a.m. and seven p.m. Monday through Friday, and between the hours of eight a.m. and eight p.m. Saturday and Sunday. Provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. (Building)
77. The developer (or designated consultant) shall certify that the building foundation location has been placed according to all approved setback requirements shown on the approved site plan. The developer shall prepare a written statement confirming building placement and provide an original copy to the City Building Department Field Inspector at the time of or prior to the foundation inspection. (Building)
78. Prior to Certificate of Occupancy, the applicant may apply for a Temporary Occupancy (TO) of the building. If a TO is Desired, the applicant must submit a written request to the Building division a minimum of thirty (30) days prior to the expected temporary occupancy date and shall include a schedule for occupancy and a description of the purpose for the Temporary Occupancy. (Building)

CONDITIONS OF APPROVAL FOR TREE PERMIT – PL15-0283

TREE PERMIT CONDITIONS AND COMPLIANCE VERIFICATION/INSPECTION CHECKLIST	COMPLIANCE VERIFIED/ INSPECTED	COMMENTS
PRIOR TO ISSUANCE OF ANY PERMITS OR ANY CONSTRUCTION ON-SITE		
1. All recommendations contained in the Arborist Report (Exhibit J) shall be incorporated as part of these conditions except as modified herein. (Planning)		
2. Tree #1484 is approved for removal with this tree permit. All other native oak trees shall remain in place. Trees to be removed shall be clearly marked in the field and inspected by Planning Staff prior to removal. Removal of the trees shall be performed by or under the supervision of a certified arborist. (Planning)		
3. The developer shall be responsible for the replacement of the total number of inches proposed for removal prior to any tree removal. The total number of inches for this project is seven inches (7"). Mitigation must be provided prior to tree removal unless otherwise approved in the tree replacement plan or in these conditions. (Planning)		
4. No activity shall be permitted within the protected zone of any native oak tree beyond those identified by this report. Encroachment into the protected zone of Tree #1485 , as shown in Exhibit J, and described in the staff report is permitted. (Planning)		
5. A \$10,000 cash deposit or bond (or other means of security provided to the satisfaction of the Planning Department) shall be posted to insure the preservation of all remaining trees during construction. The cash deposit or bond shall be posted in a form approved by the City Attorney. Each occurrence of a violation on any condition regarding		

tree preservation shall result in forfeiture of all or a portion of the cash deposit or bond. (Planning)		
6. A violation of any of the conditions of this Tree Permit is a violation of the Roseville Municipal Code, the Zoning Ordinance (Chapter 19.74) and the Tree Preservation Ordinance (Chapter 19.66). Penalties for violation of any of the conditions of approval may include forfeiture of the bond, suspension or revocation of the permit, payment of restitution, and criminal penalties. (Planning)		
7. A fencing plan shall be shown on the approved site plan and/or improvement plans demonstrating the Protected Zone for the affected trees. A maximum of three feet beyond the edge of the walls, driveway, or walkways will be allowed for construction activity and shall be shown on the fencing plan. The fencing plan shall be reviewed and approved by the Planning Department prior to the placement of the protective fencing. (Planning)		
8. The applicant shall install a minimum of a five-foot high chain link fence (or acceptable alternative) at the outermost edge of the Protected Zone of the oak tree. The fencing for encroachments shall be installed at the limit of construction activity. The applicant shall install signs at two equidistant locations on the temporary fence that are clearly visible from the front of the lot and where construction activity will occur. The size of each sign shall be a minimum of two feet (2') by two feet (2') and must contain the following language: "WARNING THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE PLANNING DEPARTMENT". (Planning)		
9. Once the fencing is installed, the applicant shall schedule an appointment with the Planning Department to inspect and approve the temporary fencing before beginning any construction. (Planning)		
10. The applicant shall arrange with the arborist to perform, and certify in writing, the completion of deadwooding, fertilization, and all other work recommended for completion prior to the approval of improvement plans. Pruning shall be done by an Arborist or under the direct supervision of a Certified Arborist, in conformance with International Society of Arboriculturalists (I.S.A.) standards. Any watering and deep root fertilization which the arborist deems necessary to protect the health of the trees as noted in the arborist report or as otherwise required by the arborist shall be completed by the applicant. (Planning)		.
11. A utility trenching pathway plan shall be submitted depicting all of the following systems: storm drains, sewers, water mains, and underground utilities. The trenching pathway plan shall show the proposed locations of all lateral lines. (Planning)		
12. A Site Planning Meeting shall be held with the applicant, the applicant's primary contractor, the Planning Department and the Engineering Department to review this permit, the approved grading or improvement plans, and the tree fencing prior to any grading on-site. The Developer shall call the Planning Department and Engineering Division two weeks prior to the start of grading work to schedule the meeting and fencing inspection. (Planning)		
DURING CONSTRUCTION		

13. The following information must be located on-site during construction activities: Arborist Report; Approved site plan/improvement plans including fencing plan; and, Conditions of approval for the Tree Permit. All construction must follow the approved plans for this tree permit without exception. (Planning)		
14. All preservation devices (aeration systems, oak tree wells, drains, special paving, etc.) shall be designed and installed as required by these conditions and the arborist's recommendations, and shall be shown on the improvement plans or grading plans. (Planning)		
15. If any native ground surface fabric within the Protected Zone must be removed for any reason, it shall be replaced within forty-eight (48) hours. (Planning)		
16. Storage or parking of materials, equipment and vehicles is not permitted within the protected zone of any oak tree. Vehicles and other heavy equipment shall not be operated within the Protected Zone of any oak tree. (Planning)		
17. Where recommended by the arborist, portions of the foundation shall be hand dug under the direct supervision of the project arborist. The certified arborist shall immediately treat any severed or damaged roots. Minor roots less than one (1) inch in diameter may be cut, but damaged roots shall be traced back and cleanly cut behind any split, cracked or damaged area. Major roots over one (1) inch in diameter may not be cut without approval of an arborist and any arborist recommendations shall be implemented. (Planning)		
18. The temporary fencing shall remain in place throughout the entire construction period and shall not be removed without obtaining written authorization from the Planning Department. In no event shall the fencing be removed before the written authorization is received from the Planning Department. (Planning)		
PRIOR TO ISSUANCE OF AN OCCUPANCY PERMIT		
19. Within 5 days of the completion of construction, a Certification Letter from a certified arborist shall be submitted to and approved by the Planning Department. The certification letter shall attest to all of the work (regulated activity) that was conducted in the protected zone of the tree, either being in conformance with this permit or of the required mitigation still needing to be performed. (Planning)		
20. A copy of this completed Tree Permit Compliance Verification/Inspection form shall be submitted to the Planning Department. (Planning)		
21. The approval of this Tree Permit shall expire on the same date as the John Adams Academy DRPMOD (PL15-0283).		

ATTACHMENTS

1. June 22, 2017 Planning Commission Staff Report
2. CalEEMod – June 2017
3. Building Renderings
4. Brigit Barnes & Associates Letter

EXHIBITS

- A. CEQA Initial Study/Mitigated Negative Declaration

- B. Site Plan
- C. Demolition Plan
- D. Grading Plan
- E. Elevations
- F. Floor Plans
- G. Utility Plan
- H. Lighting/Photometric Plan
- I. Landscape Plan
- J. Arborist Report/Protected Tree Inventory

Note to Applicant and/or Developer: Please contact the Planning Division staff at (916) 774-5276 prior to the Commission meeting if you have any questions on any of the recommended conditions for your project. If you challenge the decision of the Commission in court, you may be limited to raising only those issues which you or someone else raised at the public hearing held for this project, or in written correspondence delivered to the Planning Director at, or prior to, the public hearing.



**PLANNING DIVISION STAFF REPORT
PLANNING COMMISSION MEETING**

June 22, 2017

Prepared by: Ron Miller, Associate Planner

ITEM V-B: DESIGN REVIEW PERMIT MODIFICATION & TREE PERMIT – 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283

REQUEST

John Adams Academy Charter School proposes to construct an 11,600 square foot multi-purpose building (MPR) within an existing paved parking lot at the eastern edge of the school campus. The project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard. The project entitlements requested include a Design Review Permit Modification (DRPMOD) and a Tree Permit (TP) for construction of the MPR and associated site improvements, including a new concrete plaza area, landscaping, and lighting. Exterior improvements to the site consist of a parking lot conversion to accommodate construction of the new MPR. A new courtyard will be added to the north of the MPR building.

Applicant/Owner: Dean Forman, John Adams Academy

SUMMARY RECOMMENDATION

The Planning Department recommends that the Planning Commission:

- A. Adopt the Negative Declaration;
- B. Adopt the two findings of fact for the Design Review Permit Modification; and approve the Design Review Permit Modification subject to seventy-six (76) conditions of approval;
- C. Adopt the two findings of fact for the Tree Permit; and approve the Tree Permit subject to twenty-one (21) conditions of approval.

SUMMARY OF OUTSTANDING ISSUES

Prior to and subsequent to submittal of the DRPMOD application for construction of the MPR, neighboring commercial property owners and tenants expressed concern about traffic congestion, and the inability of clients and patients to reach their businesses during John Adams Academy's peak student drop-off and pickup times. Staff and the applicant have had ongoing discussions and have met with the neighboring property owners/tenants on multiple occasions to address the traffic issue and explore potential remedies. Neighboring businesses also inquired as to why the Academy was allowed to locate at Sierragate Plaza, and why the City granted permits for them to do so.

Staff advised, during ongoing discussions and meetings, that a Public Charter School is a permitted use within the Business Professional (BP) zoning district, and no Planning entitlements were required for a permitted use to occupy the site. The applicant did obtain necessary building permits for conversion of the office buildings to classrooms. Additionally, in May 2011, the Academy received approval of a Design Review Permit Modification (DRPMOD) for construction of an outdoor play area within the north area of the campus parking lot (Planning File #2011PL-023 [DRP-000380]).

As a result of neighboring businesses concerns, the applicant completed multiple on-site and off-site (Lead Hill/Harding Boulevard Intersection) circulation improvements in an effort to mitigate traffic congestion during peak student drop-off and pickup times. It is staff's belief that the on-site improvements completed by the applicant have greatly reduced the traffic congestion issues on City streets that existed prior to submittal of this DRPMOD application. Many property owners have still identified on-site traffic and circulation as an ongoing concern with the public charter school. Additional detail regarding the traffic improvements is provided in the Evaluation section of this report.

The applicant has reviewed and is in agreement with the recommended conditions of approval.

BACKGROUND

The project site is located at 1 Sierragate Plaza, within the City's Infill area. Specifically, the project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard (see Figure 2). The subject property has General Plan Land Use and Zoning Designations of Business Professional (BP). John Adams Academy is a Public Charter School, with a Zoning Ordinance Use Type Classification of Schools, Elementary and Secondary, which is a permitted Use Type in the BP zoning district.

Figure 1: John Adams Academy – as seen from Harding Boulevard Entrance



The John Adams Academy (K-12 Elementary and Secondary School Use Type) site is 9.85 acres in size, and is currently developed with four buildings, associated paved parking, landscaping, lighting and a paved student playground area. All existing buildings will remain in place. The site also includes a paved ring road, which circles the entire campus. The ring road is shared by John Adams Academy and adjacent commercial properties. The ring road is accessed off Harding Boulevard and used for student drop-off and pickup, as well as access to adjacent businesses.

The project site is bordered by commercial properties (professional and medical offices) to the west and south, the Interstate 80 (I-80) freeway to the east, with open space and a bike trail to the north. The project site is approximately 600 feet south of the open space parcel; therefore, there will be no construction activities near the open space area.

The requested project entitlements include a Design Review Permit Modification (DRPMOD) and Tree Permit (TP) for construction of an MPR and associated site improvements, including parking, landscaping, and lighting.

The applicant proposes to construct an 11,600 square foot MPR within an existing paved parking lot at the eastern edge of the school campus. Exterior improvements to the site consist of parking lot demolition to accommodate construction of the proposed building. All landscape islands, curbs and landscaping within the building site will be removed prior to construction of the building. A new courtyard will be added north of the proposed building, which will include trees for shading and a turf area of approximately 600 square feet.

The building's setbacks will be approximately 44 feet north of the southern property boundary (420 feet north of Lead Hill Boulevard), 470 feet east of Harding Boulevard, 650 feet from the north property line (open space & bike trail), and approximately 40 feet west of the I-80 freeway. In comparison, the three-story office building south of the project site is approximately 36 feet west of the I-80 freeway.

Figure 2: Vicinity Map



SITE INFORMATION

- A. **Project Location:** 1 Sierragate Plaza
- B. **Applicable Plan Area:** Infill

C. Public Outreach/Roseville Coalition Of Neighborhood Associations (RCONA):

- November 4, 2015 – JAA Meeting with Neighboring Businesses
- February 1, 2016 – Planning Mtg – Neighboring Businesses – Traffic Study
- February 3, 2016 – Planning Mtg – Neighboring Businesses – Traffic Study/General Discussion
- RCONA Board, Enwood/Folsom Road Neighborhood Association. Staff mailed a letter to the RCONA Board members and the Enwood/Folsom Road Neighborhood Association on August 24, 2015, informing the Board and Association of the application on file.
- On June 8, 2017, a Public Hearing Notice was published in the Press Tribune and was distributed to the RCONA Board, Enwood/Folsom Road Neighborhood Association and property owners and tenants within a 300-foot radius of the project site. To date staff has not received any correspondence or comments.

D. Total Acreage: ±9.5 acres

E. Grading: The project site has been previously graded and improved as a paved parking area. The grading plan for the project indicates minor grading to remove the existing paving and grade for the building pad for the proposed MPR. The project site will be graded to allow drainage into a drainage swale on the west side of the building, and ultimately into the existing drainage system for the school campus.

F. Site Access: The John Adams Academy site is accessed via a driveway entrance off Harding Boulevard. The driveways currently allow for full turning movements and will continue to do so when the project is completed. During morning drop-off and afternoon pickup, the Academy utilizes personnel at the entry and exit drive(s) off Harding Boulevard and at strategic points along the ring road that circles the entire campus site. Traffic monitoring during these peak periods assists with traffic flow for student drop-off and pickup, and also assists customers and clients of neighboring businesses in reaching their desired destination(s). The applicant has completed multiple on-site circulation improvements, as described under Site Design/Circulation below.

The proposed project is consistent with the land uses contemplated by the City's General Plan, Zoning Ordinance and Northwest Roseville Specific Plan (NWRSP).

ZONING STANDARDS

Development Standard	Required	Proposed
Building Setbacks	None required	±470' – Harding Boulevard ±650' - North property line (open space & bike trail) ±40-53' – Interstate 80 ±420' – Lead Hill Boulevard
Landscape Setbacks	20' – Harding Boulevard (per CDG)	±40' - ±53' – Interstate 80 Proposed building will be constructed within parking area on existing campus within office complex – not adjacent to nearby public streets.
Building Height Limit	50' – BP Zone District	36' to top of roof ridge
Building Coverage	No maximum per Zoning Ordinance	17.1% coverage - entire campus
Parking Spaces (Total)	443 spaces Grades K-8 classrooms = 54 spaces Grades 9-12 (classrooms + student parking requirement) = 196 spaces Multi-purpose building (classrooms + assembly) = 193 spaces	480 spaces

EVALUATION

DESIGN REVIEW PERMIT MODIFICATION

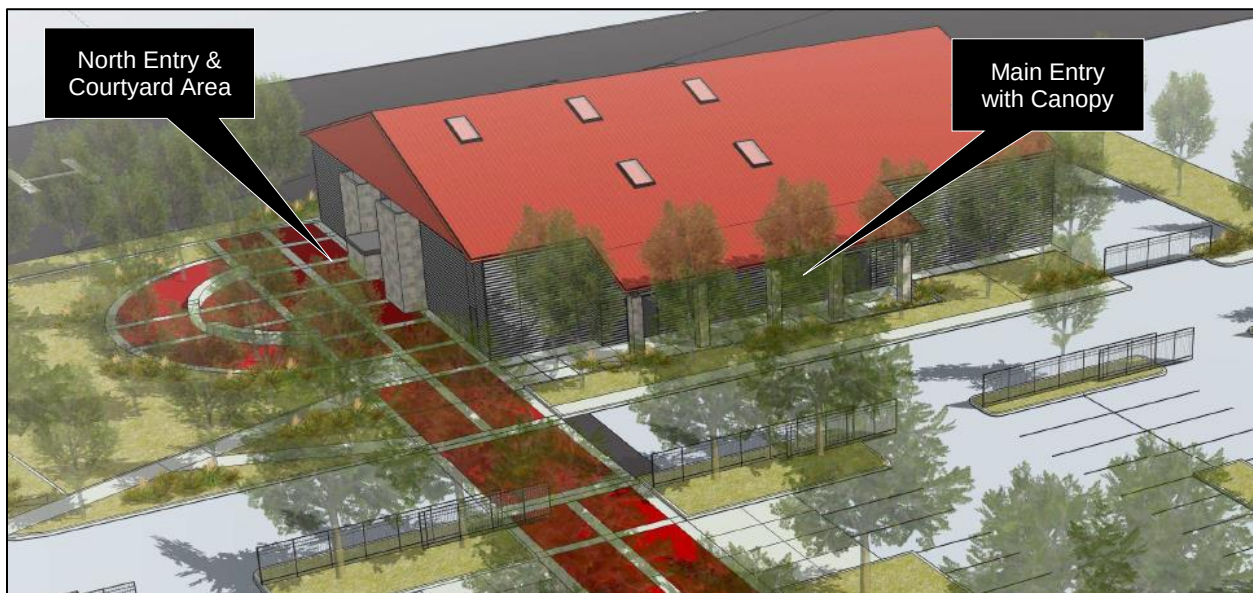
The evaluation of the DRPMOD for the proposed project has been based on the applicable development standards within the City's Zoning Ordinance, and the design standards of the City's Community Design Guidelines (CDG). Staff reviewed the proposal for consistency with all applicable standards and found the project to be consistent with the requirements and guidelines in each. The following discussion is provided as clarification on areas of interest.

As proposed and conditioned, the project complies with the applicable guidelines identified in the above listed documents. The remainder of the Design Review Permit evaluation section will focus on design guidelines that warrant additional review and consideration by the Planning Commission.

Architecture: The MPR building will incorporate dark red metal roofing and grey split-faced block pilasters (at the north and south ends of the building) which were used on the original Sierragate buildings. The grey horizontal metal siding ties in architecturally with the original buildings' use of grey horizontal wood siding.

The west elevation's main entry area will feature a canopy of the same material and color of the roof. The canopy's pitch will be a continuation of and match that of the gabled roof. Five CMU columns will support the canopy structure. The height of the building's eaves will be 20 feet, and roof's ridge height will be 36 feet. Skylights provide daylighting with internal louvers for occupant light control. Translucent glazing on the east façade provides daylight to the court and gathering areas. The entry plaza on the northeast end of the building will also serve as a student gathering area (see Figure 3 & Exhibit E)

Figure 3: 3-D Rendering – MPR West Elevation



Site Design/Circulation: As referenced above, access to the Academy site, and the proposed MPR building, is via a single driveway with median off Harding Boulevard. Once entering the campus off Harding Boulevard, parents are to make a counter-clockwise loop on the ring road to the rear area of the school for student drop off, then complete the loop to exit back onto Harding Boulevard. The

route of travel is depicted with red arrows on the campus circulation plan shown below (see Figure 4). As referenced previously, traffic monitors staff the site during peak drop-off (7:40 am – 8:00 am) and pickup times (2:50 pm – 3:15 pm) to assist in traffic flow.

Prior to, and subsequent to the application submittal, neighboring businesses expressed concern about traffic impacts of the existing school, and the proposed MPR. Specifically, neighboring business owners were receiving complaints from clients, patients and staff that the traffic from the Academy was making it difficult to access the site during drop off and pick up times. The neighboring business owners indicated there was a loss of business as a result of the traffic impacts from the Academy. Staff and the applicant met with neighboring businesses on multiple occasions (see Public Outreach above) to address their concerns and explore possible options for improving the flow of traffic and access to adjacent commercial properties.

As a result of these discussions, Kimley Horn conducted a Traffic Access and Circulation Evaluation (see IS/Neg Dec Attachment 2) in November 2015 to evaluate existing traffic patterns and impacts as well as potential traffic/circulation modifications that might be considered to improve traffic flow in and out of the Academy during peak drop-off and pickup times.

Based on the results of the traffic/circulation evaluation and meetings with neighboring businesses to discuss results of the evaluation, the applicant completed significant on-site improvements to the Sierragate internal circulation system. These improvements include the following:

- Creation of a third lane on the westerly half of Sierragate Plaza Drive to allow two ingress/egress lanes while still allowing opposite direction travel
- Creation of four “Keep Clear” zones to allow free ingress/egress movements at: 1.) Harding entry throat; 2.) 13 Sierragate parking entrance off Sierragate Plaza Drive; 3.) 10 Sierragate parking entrance off Sierragate Plaza Drive; and 4.) 5 Sierragate parking entrance off Sierragate Plaza Drive
- Signage to reinforce preferred vehicular movements
- Windshield signage identifying John Adams Academy (JAA) Roseville parent vehicles
- Operational protocols to monitor and control pedestrian traffic to and from the JAA Roseville campus
- Operational protocols to expedite passenger loading & unloading

Additionally, as a result of traffic studies done for the site, the City has made modifications to the signal timing and roadway striping at the intersection of Lead Hill and Harding Boulevards. The combination of on-site circulation and intersection improvements has greatly improved overall traffic circulation at the site during peak drop-off and pickup times, when compared to school years prior to the improvements being completed.

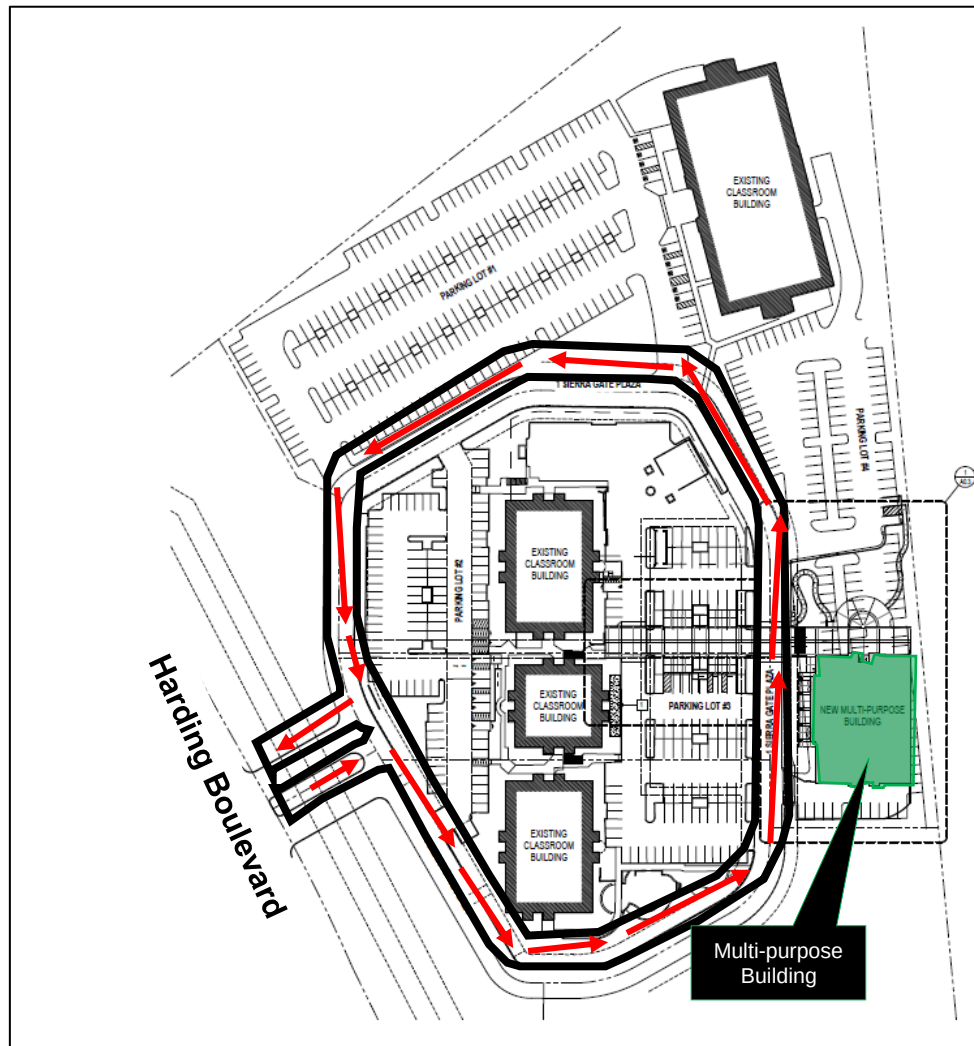
Following completion of the above-referenced improvements, Kimley Horn completed a Traffic Impact Study (see IS/Neg Dec Attachment 3) to re-evaluate traffic/circulation patterns at the Academy site and establish a base for preparation of the necessary environmental document (Initial Study/Negative Declaration).

MPR Access/Uses: Access to the proposed MPR will also utilize the same ring road circulation pattern around the campus to access the various parking areas (see Figure 4). The MPR will be used for activities during the normal daytime school hours, as well as before and after-school activities, such as indoor school athletics (practice and games), drama, choir, band, and other activities. It is anticipated that these before and after school activities will serve to decrease peak hour student drop-

off and pick up by allowing students to arrive prior to morning peak hour traffic to practice for various activities/events, and to stay on campus beyond the normal afternoon peak pickup times.

Other uses include daytime assemblies and parent/teacher conferences, which will not affect peak drop-off and pickup traffic. Occasional activities, such as graduations, evening sporting events, plays, choir concerts, etc., will occur after normal business hours or on weekends, outside of normal peak hour traffic periods. The Academy has prepared a Multi-purpose Room Program Document (see IS/Neg Dec Attachment 1) that details proposed MPR uses, time of day for various activities, and traffic information. Staff has reviewed this document and believes the impacts of activities occurring at the MPR are adequately addressed in the project's Initial Study/Negative Declaration.

Figure 4: Campus Circulation Plan



Parking: Staff analyzed the parking requirement for the Academy site and MPR against the Zoning Ordinance off-street parking standards for Elementary, Middle, and High School use. As shown in the Zoning Standards table on Page 4, the parking requirement for the Academy, including the new MPR, is 443 spaces. There are 480 spaces available, which exceeds the zoning standard by 37 spaces.

Landscaping: The proposed landscape plans shows landscape borders around the perimeter of the building and courtyard at the north end of the building. A landscaped drainage swale will be included

on the west side of the building that will be planted with a variety of shrubs and grasses that will accommodate runoff water prior to discharge from the site through the existing storm water drainage system (see Exhibits D & I).

The courtyard area at the north end of the building will be bounded with a planter area that includes a variety of large scale trees (London Plane, Chinese Pistache & Red Maple) that will serve to visually screen the courtyard area and northern portion the building from the freeway. Additional large scale trees and shrubs will be planted within the landscape border between the building and the east property line adjacent to the freeway right-of-way. All landscaped areas will include a variety of understory shrubbery and ground covers to add color, texture interest to the overall landscape design.

Plant material proposed for all planter areas is of low water use varieties. Landscape plans submitted as part of this project must comply with the City's Water Efficient Landscape Ordinance (see Condition 15).

DESIGN REVIEW PERMIT CONCLUSION

Section 19.78.060(B) of the Zoning Ordinance requires that two findings be made in order to approve a Design Review Permit Modification (DRPMOD). Based on the analysis contained in this staff report and with the project conditions, the required findings can be made for the proposed DRPMOD. The two findings for approval of the Design Review Permit are contained in the Recommendation section of this report.

TREE PERMIT

An Arborist Report and Protected Tree Inventory were prepared for the project (provided as Exhibit J), which include recommendations for tree preservation guidelines. The table below identifies impacts to the native oak trees within the project area.

TREE #	SPECIES	DBH	CONDITION	MAINTENANCE RECOMMENDATIONS	IMPACT ASSESSMENT
1484	Quercus douglasii	7"	Good		Must be removed due to necessary grading for building pad
1485	Quercus douglasii	6"	Fair to Good	Pruning may be required for clearance. Project Arborist to be onsite during pruning. Install exclusionary fencing prior to grading/grubbing a minimum of 2' from the base to west and 15' to the north and south (Protection area = 444sf or 72%). Any trees to be removed onsite shall be chipped and the chips applied as mulch in the exclusionary fencing area to a depth of 6". Install and strap a straw bale on the west side of the tree trunk. Irrigate the soil to a depth of 18" four (4) days prior to removal of existing curb. Project arborist shall confirm irrigation depth on the day following irrigation. Roots encountered during removal of curb/pavement shall not be 'pulled' but shall be cut clean. Irrigation shall	Moderate - provided all Development restrictions are followed. Tree vigor is good and impact to the root zone is calculated as 28%.

TREE #	SPECIES	DBH	CONDITION	MAINTENANCE RECOMMENDATIONS	IMPACT ASSESSMENT
				be required according to general development guidelines. Follow all other general development guidelines. Prune for good structure over 3 years, do not remove more than 15% of leaf surface in any one year.	

The Tree Preservation Ordinance requires mitigation for the removal of native oak trees on an inch-per-inch basis, either through on-site plantings, in-lieu mitigation fees, or a combination thereof. For on-site plantings, the Zoning Ordinance requires that native oak trees comprise a minimum of 50% of the plantings. As shown in the above table, Tree #1484 is the only tree identified for removal, with a total mitigation requirement of seven inches (7"). Mitigation will be accomplished through a combination of on-site plantings and payment of in-lieu mitigation fees. As conditioned, the project meets the mitigation requirements of the Tree Ordinance.

Section 19.66.060 of the Zoning Ordinance identifies standard policies and procedures for approved work that is necessary to protect the health of protected trees. Subsection G requires the posting and maintenance of a minimum \$10,000 deposit (or an amount deemed necessary by the approving authority) to insure the preservation of protected trees during construction. Condition 5 has been included as a Tree Permit condition requiring that a \$10,000 deposit be submitted to the City in the form of a cash deposit or bond for the preservation of Tree #1485.

The recommended conditions of approval require that the project arborist perform the recommended mitigation measures and that the arborist be present when work is occurring within the protected zones of trees to be preserved and that, if needed, additional recommended mitigation measures be implemented. These measures and the standard conditions of approval will adequately mitigate the potential construction impacts to oak trees resulting from the project.

ENVIRONMENTAL DETERMINATION

The Planning Manager has determined that the above project will not have a significant effect on the environment and proposes that a Negative Declaration be adopted. This determination has been based upon an Initial Study, which has concluded that there will be no significant environmental impacts. At the Planning Commission meeting, the Approving Authority (Planning Commission) may adopt the proposed Negative Declaration. The Negative Declaration was circulated for a 20-day public review from June 1, 2017 through June 21, 2017.

In accordance with Assembly Bill 52 (AB 52) and Section 21080.3.1(d) of the California Public Resources Code (PRC), the United Auburn Indian Community (UAIC) was notified that the City would be initiating environmental review of the project under CEQA. This notification was provided on April 20, 2017. On May 12, 2017, staff received a letter from the United Auburn Indian Community (UAIC) requesting initiation of consultation under AB 52 and tribal participation in all cultural resource assessments.

Staff responded via email and advised that the City's General Plan EIR includes Mitigation Measures applicable to archeological features and artifacts, should any be found on site. Language included in the measure requires an immediate cessation of work, and the requirement to contact the appropriate agencies to address the resource before work can resume.

No Tribal Cultural Resources are known to exist on the project site, and construction will occur within an area that has been previously graded and is currently a paved parking area; however, the UAIC has requested that a condition be added to the project that provides for a tribal member to visit the site during the time of soil disturbance. Condition 4 has been added which includes this provision and outlines additional preservation measures, should any Tribal Cultural Resources be found on site.

RECOMMENDATION

The Planning Department recommends that the Planning Commission take the following actions:

- A. Adopt the Negative Declaration, as shown in Exhibit A.
- B. Adopt the two (2) findings of fact as stated below and approve the **DESIGN REVIEW PERMIT MODIFICATION – 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283**, subject to seventy-six (76) conditions of approval.
 1. *The proposed modification is in substantial compliance with the intent of the original approval, prior conditions of approval, and all applicable design, development and improvement standards in effect as of the date of application for the modification.*
 2. *The proposed modification is in compliance with all standards and requirements of the City's Zoning Ordinance, with the applicable goals, policies and objectives set forth in the General Plan, and the applicable Community Design Guidelines.*
- C. Adopt the two findings of fact as stated below and approve the **TREE PERMIT - 1 SIERRAGATE PLAZA – INFILL PCL 241 – JOHN ADAMS ACADEMY MULTI-PURPOSE BUILDING – FILE# PL15-0283**, subject to twenty-one (21) conditions of approval.
 1. *Approval of the Tree Permit will not be detrimental to the public health, safety or welfare, and approval of the Tree Permit is consistent with the provisions of Chapter 19.66 of the Zoning Ordinance; and*
 2. *Measures have been incorporated into the project and the conditions of approval to provide replacement for the removal of trees and to mitigate impacts to and improve the health of the remaining trees.*

CONDITIONS OF APPROVAL FOR DESIGN REVIEW PERMIT – PL15-0283

1. This design review permit approval shall be effectuated within a period of two (2) years from this date and if not effectuated shall expire on **June 22, 2019**. Prior to said expiration date, the applicant may apply for an extension of time, provided, however, this approval shall be extended for no more than a total of one year from **June 22, 2019**.
2. The project is approved as shown in Exhibits A - J, and as conditioned or modified below. (Planning)
3. The project shall comply with all required environmental mitigation identified in the City of Roseville 2035 General Plan. (Planning)

4. A minimum of seven days prior to beginning earthwork or other soil disturbance activities, the applicant shall notify the City of the proposed earthwork start-date, in order to provide the City with time to contact the United Auburn Indian Community (UAIC). A UAIC tribal representative shall be invited to perform a site visit to visually inspect the site within the first five days of initial earthwork to determine if there is any evidence that tribal cultural resources have been unearthed. If findings are negative, then the UAIC representative would have a site meeting with the contractors to discuss the need to remain observant, and to stop work and follow notification procedures if any resources are discovered during construction, consistent with existing mitigation. If artifacts or unusual amounts of charcoal, bone, or shell are uncovered during this initial inspection or during construction, work should be halted within 100 feet of the find, and the project applicant shall immediately notify the City of Roseville Development Services Director. A qualified archeologist approved by the City and Native American Monitor approved by UAIC should be consulted for an on-site evaluation as part of the site investigation and resource assessment. The archeologist and Native American Monitor shall consult with the UAIC and provide proper management recommendations should potential impacts to the resources be found by the City to be significant. A written report detailing the site assessment, coordination activities, and management recommendations shall be provided to the City by the qualified archaeologist. Possible management recommendations for historical or unique archaeological resources or tribal cultural resources could include resource avoidance or, where avoidance is infeasible in light of project design or layout or is unnecessary to avoid significant effects, preservation in place or other measures. The contractor shall implement any measures deemed by City staff to be necessary and feasible to avoid or minimize significant effects to the cultural resources. If bone is discovered and it appears to be human, California law requires that the County Coroner be contacted. If remains are found of Native American origin, the Native American Heritage Commission and UAIC should be informed so that they can assist in protecting such remains. (Planning)
5. At the time of building permit application and plan submittal, the project applicant shall submit a proposed plan which shows the suite addressing plan for individual tenant spaces within the building. The Chief Building Official, or the designate, shall approve said plan prior to building permit approval. (Building)
6. A separate Site Accessibility Plan which details the project's site accessibility information as required by California Title 24, Part 2 shall be submitted as part of the project Building Permit Plans. (Building)
7. For Multiple Building Complexes: As part of the required Site Accessibility Plan, the developer shall delineate the extent of the site accessibility improvements being installed as part of the initial improvements for the project, and those that are planned to be developed as part of subsequent phases (i.e. around future pad buildings). (Building)
8. The project shall be addressed as 1 Sierragate Plaza, Building E or 1E Sierragate Plaza. All projects with multi-tenants or buildings must submit a plot plan with building footprint(s) to the Development Services Department (Planning Division) for building/suite addressing. (Planning)
9. The applicant shall pay City's actual costs for providing plan check, mapping, GIS, and inspection services. This may be a combination of staff costs and direct billing for contract professional services. Project billing may occur up to two months after end of warranty or Notice of Termination date for the SWPPP, whichever occurs later. (Engineering, Environmental Utilities, Electric, Finance)

10. The design and construction of all improvements shall conform to the Design and Construction Standards of the City of Roseville, or as modified by these conditions of approval, or as directed by the City Engineer. (Engineering)
11. The applicant shall not commence with any on-site improvements or improvements within the right-of-way until such time as grading and/or improvement plans are approved and grading and/or encroachment permits are issued by the Development Services Department – Engineering. (Engineering)
12. The approval of this project does not constitute approval of proposed improvements as to size, design, materials, or location, unless specifically addressed in these conditions of approval. (Engineering)

PRIOR TO ISSUANCE OF BUILDING PERMITS:

13. Parking stalls shall meet, or exceed, the following minimum standards:
 - a. All parking stalls shall be double-striped. Parking stalls adjacent to sidewalks, landscaped areas or light fixtures, and all Accessible stalls shall have a 6" raised curb or concrete bumper. (Planning)
 - b. Standard -- 9 feet x 18 feet; Compact--9 feet x 16 feet; Accessible--14 feet x 18 feet (a 9 foot wide parking area plus a 5 foot wide loading area) and a minimum of one (1) parking space shall be Accessible van accessible--17 feet x 18 feet (9 foot wide parking area plus an 8 foot wide loading area). (Planning)
 - c. An 'exterior routes of travel' site accessibility plan incorporating slope, cross-slope, width, pedestrian ramps, curb ramps, handrails, signage, detectable warnings or speed limit signs or equivalent means shall comprise part of the site improvement plans submitted to City for review, prior to building plan check approvals. This site accessibility plan shall also include:
 - i) Accessible parking stalls shall be dispersed and located closest to accessible entrances. The total number of accessible parking spaces shall be established by Table 11B-208.2 of the CBC.
 - ii) Accessible Parking spaces and crosswalks shall be signed, marked and maintained as required by Chapter 11B of the CBC.
 - iii) Accessible parking and exterior route of travel shall comply with CBC, Section 11B-206. (Building)
14. Signs and/or striping shall be provided on-site as required by the Planning Department to control on-site traffic movements. Parking lot striping and signage shall be maintained in a visible and legible manner. (Planning)
15. The plans submitted to the Building Department for permits shall indicate all approved revisions/alterations as approved by the Commission including all conditions of approval. (Planning)
16. The project Landscape Plans shall comply with the following:
 - a. The Landscape Plan shall indicate the location of, and be designed to avoid conflicts with, all pole-mounted light fixtures and utility equipment including (but not limited to) electric transformers, switchgear, and overhead lines, backflow preventors, fire department

- connections, and public water, sewer, and storm drain facilities. (Planning, Fire, EUD, Electric, Public Works)
- b. The tree plantings in the parking lot shall be designed to provide a minimum of 50% shade coverage after 15 years. (Planning)
 - c. At a minimum, landscaped areas not covered with live material shall be covered with a rock, (3") bark (no shredded bark) or (3") mulch covering. (Planning)
 - d. The landscape plan shall comply with the City of Roseville Water Efficient Landscape Ordinance WELO. (Planning)
 - e. All landscaping in areas containing electrical service equipment shall conform with the Electric Department's Landscape Requirements and Work Clearances as outlined in Section 10.00 of the Departments "Specification for Commercial Construction." (Electric)
17. Any roof-mounted equipment and satellite dishes proposed shall be shown on the building plans. The equipment shall be fully screened from public streets and the surrounding properties. (Planning)
 18. A separate Site Accessibility Plan which details the project's site accessibility information as required by California Title 24, Part 2, shall be submitted as part of the project Building Permit Plans. (Building)
 19. For Multiple Building Complexes: As part of the required Site Accessibility Plan, the developer shall delineate the extent of the site accessibility improvements being installed as part of the initial improvements for the project, and those that are planned to be developed as part of subsequent phases (i.e. around future pad buildings). (Building)
 20. Building permit plans shall comply with all applicable code requirements (California Building Code – CBC – based on the International Building Code, California Green Building Standards Code – CGBSC, California Mechanical Code – CMC – based on the Uniform Mechanical Code, California Plumbing Code – CPC – based on the Uniform Plumbing Code, California Fire Code – CFC – based on the International Fire Code – with City of Roseville Amendments – RFC, California Electrical Code – CEC – based on the National Electrical Code, and California Energy Standards – CEC T-24 Part 6), California Title 24 and the American with Disabilities Act - ADA requirements, and all State and Federally mandated requirements in effect at the time of submittal for building permits (contact the Building Division for applicable Code editions). (Building)
 21. Parapet/cornice construction shall support the weight of a ladder leaning against the parapet as well as a 330-pound vertical load applied to the **leading edge** of the horizontal projection of the cornice (a 250-pound firefighter carrying 80 pounds of equipment stepping off of a ladder onto the top of the cornice). (CFC Chapter 1) (Fire)
 22. Adequate radio coverage shall be provided within all buildings for public safety agencies, as required by Roseville Municipal Code and the California Fire Code. A field test shall be provided by a person in possession of a current FCC License, or a current technician certification issued by the Associated Public-Safety Communications Officials International (APCO), or the National Association of Business and Educational Radio (NABER). The building owner shall retain all test records on the inspected premises and a copy shall be submitted to the Fire Department officials in accordance with Section 510 of the California Fire Code. Adequate radio coverage shall include all of the following:

A minimum signal strength of 95 dBm available in 90% of the area of each floor of the building when transmitted from the closest City of Roseville Radio Communication site.

- a. A minimum signal strength of 95 dBm received at the closest City of Roseville Communication site when transmitted from 90% of the area of each floor of the building.
 - b. The frequency range that must be supported shall be 821-824 MHz and 866-869 MHz.
 - c. A 100 % reliability factor. (Fire, Police)
23. Developer shall provide an approved building address number on the upper section of the building, as required by CFC Section 901.4.4 as amended by the City of Roseville. Landscape planting shall not obstruct the building address. (Fire)
24. Maintenance of copy of building plans: Health and Safety Code section 19850 requires the building department of every city or county to maintain an official copy of the building plans for the life of the building. As such, each individual building shall be submitted as a separate submittal package. Building plan review, permit issuance and archiving is based on each individual building address.
25. For all work to be performed off-site, permission to enter and construct shall be obtained from the property owner, in the form of a notarized right-of-entry. Said notarized right-of-entry shall be provided to Public Works prior to approval of any plans. (Engineering)
26. The Improvement Plans shall include a complete set of Landscape Plans. The Landscape Plans shall be approved with the Improvement Plans. (Planning, Engineering, Fire, Environmental Utilities, Electric)
27. A note shall be added to the grading plans that states:
*“Prior to the commencement of grading operations, the contractor shall identify the site where the **excess/borrow** earthen material shall be imported/deposited. If the **borrow/deposit** site is within the City of Roseville, the contractor shall produce a report issued by a geotechnical engineer to verify that the exported materials are suitable for the intended fill, and shall show proof of all approved grading plans. Haul routes to be used shall be specified.”* (Engineering)
28. All storm drainage, including roof drains, shall be collected on site and treated with Best Management Practices (BMP's) per the West Placer Storm Water Quality Design Manual. All storm water shall be routed to the nearest existing storm drain system or natural drainage facility. Drain outfalls shall extend down to the receiving water and shall be constructed with adequate velocity attenuation devices. The grading/improvement plans for the site shall be accompanied with a shed map that defines that area tributary to this site and all drainage facilities shall be designed to accommodate the tributary flow. The storm drain system and proposed BMP's shall be privately owned and maintained by the property owner. Prior to the issuance of any permits, the owner shall provide a plan for the maintenance of the proposed BMP's. (Engineering)
29. Prior to the issuance of any permits, the property owner shall prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) to the City, as defined by the Regional Water Quality Control Board. The SWPPP shall be submitted in a single three ring binder. Upon approval, the SWPPP will be returned to the property owner during the pre-construction meeting. (Engineering)
30. The applicant shall remove and reconstruct any existing damaged curb, gutter, and sidewalk along the property frontage. During plan check of the improvement plans and/or during inspection, Public

Works will designate the exact areas to be reconstructed. Any existing public facilities damaged during the course of construction shall be repaired by the property owner and at the property owner's expense, to the satisfaction of the City. (Engineering)

31. Prior to the approval of the improvement plans, it will be the project proponent's responsibility to pay the standard City Trench Cut Recovery Fee for any cuts within the City streets that are required for the installation of underground utilities. (Engineering)
32. Prior to the issuance of building permits, the property owner shall pay into the following fee programs: Citywide Drainage Fee, Citywide Traffic Mitigation Fee (TMF), Highway 65 Joint Partners Association (JPA), South Placer Regional Transportation Authority (SPRTA), and City/County Fee. (Public Works)
33. Prior to the issuance of a grading permit or approval of Improvement Plans, the grading plans shall clearly identify all existing water and sewer utilities within the boundaries of the project (including adjoining public right of way). Existing utilities shall be identified in plan view and in profile view where grading activities will modify existing site elevations over top of or within 15 feet of the utility. Any utilities that could potentially be impacted by the project shall be clearly identified along with the proposed protection measures. The developer shall be responsible for taking measures and incurring costs associated with protecting the existing water, sewer and recycled water utilities to the satisfaction of the Environmental Utilities Director. (Environmental Utilities)
34. The site plan shall identify trash enclosure location for this project. (Environmental Utilities)
35. The applicant shall pay all applicable water and sewer fees. (Environmental Utilities)
36. Water and sewer infrastructure shall be designed pursuant to the adopted City of Roseville Improvement Standards and the City of Roseville Construction Standards and shall include:
 - a. Utilities or permanent structures shall not be located within the area that would be disturbed by an open trench needed to expose sewer trunk mains deeper than 12' unless approved by Environmental Utilities in these conditions. The area needed to construct the trench is a sloped cone above the sewer main. The cone shall have 1:1 side slopes.
 - b. Water, sewer and recycled mains shall not exceed a depth of 12' below finished grade, unless authorized in these conditions of approval.
 - c. All sewer manholes shall have all-weather 10-ton vehicle access unless authorized by these conditions of approval. (Environmental Utilities)
37. Trash enclosures, recycling areas, and enclosure approaches shall be designed to current Refuse Division specifications, the materials and colors shall match the building, and the location of such facilities shall be reviewed and approved by the Refuse Division, Planning and the Fire Department. The enclosure must have inside dimensions of 12 feet wide and 9 feet deep and be built to the specifications of the Solid Waste Department's Enclosure Description. (Refuse, Planning, Fire)
38. Access to trash enclosures shall have an inside turning radius of 25 feet and an outside turning radius of 45 feet must be maintained to allow the refuse truck access to and from the enclosure. Enclosures must have a clear approach of 65 feet in front of the enclosure to allow servicing bins. (Refuse)

39. A trash enclosure and recycling enclosure is required for each building and each tenant, otherwise, the building owner is responsible for the trash service. (Refuse)
40. The trash enclosure needs to be a double enclosure per city standards. (Environmental Utilities)
41. Existing domestic water service will require a backflow preventor if one does not exist. (Environmental Utilities)
42. The applicable codes and standards adopted by the City shall be enforced at the time construction plans have been submitted to the City for permitting (Fire)
43. The design and installation of all fire protection equipment shall conform to the California Fire Code and the amendments adopted by the City of Roseville, along with all standards and policies implemented by the Roseville Fire Department. All amendments, standards and policies can be found on the City's web site www.roseville.ca.us or contact Patrick Chew, Plan Check Engineer, at 916-774-5823 or pchew@roseville.ca.us with the Fire Prevention Division for information. (Fire)
44. All buildings with an Assembly Use type occupancy having an occupant load exceeding 1000 persons shall have a voice evacuation system installed throughout the entire structure in accordance with Section 907.1.3 of the California Building and Fire Code. Permit application for such system shall be submitted to the fire prevention division of the fire department for review and approval. (Fire)
45. The fire flow required, at a 50% reduction, due to the buildings being sprinklered, will be based on the largest single structure in accordance with the California Fire Code at the time detailed plans are submitted to the City of Roseville for review. The maximum fire flow will not exceed 4,000 gpm based on the Appendix III-AA of the California Fire Code. (Fire)
46. All buildings with an E-occupancy use and assembly shall have a voice evacuation system installed throughout the entire structure in accordance with Section 907 of the California Building and Fire Code. Permit application for such system shall be submitted to the fire prevention division of the fire department for review and approval.
47. An **approved** automatic fire extinguishing system shall be provided for all buildings where the total fire area is **3,600** square feet or greater, as required by California Fire Code as adopted by this city for non-single family residential units. All amendments, standards and policies can be found on the City's web site www.roseville.ca.us or contact Patrick Chew, Senior Fire Inspector, at 916-774-5823 or pchew@roseville.ca.us with the Fire and Life Safety Division for information. (Fire)
48. Automatic fire extinguishing system risers, fire alarm system panels and digital alarm communicator system panels shall be located within an approved fire control room and shall be accessible from an adjacent fire apparatus roadway. Said fire control room shall be a minimum size of thirty-five (35) square feet in size and shall be openable from the exterior via an approved door opening. (Fire)
49. The use and/or increased volume of hazardous materials or storage, liquids, gases and/or chemicals shall meet the requirements of the Chapter 6.95 of the Health and Safety Code, the Roseville Fire Department and the National Fire Codes. Submit a complete plan set and the Hazardous Materials Business Plan, including names and amount of any hazardous materials that will be stored or used, to the Fire and Life Safety Division for review and approval. A permit

application shall also be provided at the time of submittal. Contact Steve Anderson of our Hazardous Materials Division within the Fire Department at (916) 774-5821 to initiate the process. Satisfaction of storage and use shall be determined prior to requesting occupancy. (Fire)

50. The Electric Department requires the submittal of the following information in order to complete the final electric design for the project:
 - a. one (1) set of improvement plans
 - b. load calculations
 - c. electrical panel one-line drawings (Electric)
51. All on-site external lighting shall be installed and directed to have no off-site glare. Lighting within the parking areas and pedestrian walkways shall provide a maintained minimum of one (1) foot candle and 0.5 foot candle of light, respectively. All exterior light fixtures shall be vandal resistant. (Planning & Police)
52. The parking lot shall have properly posted signs that state the use of the parking area is for the exclusive use of employees and customers of this project. (See California Vehicle Code Sections 22507.8, 22511.5, 22511.8, 22658(a), and the City of Roseville Municipal Code Section 11.20.110). The location of the signs shall be shown on the approved site plan. (Planning & Police)
53. It is the developer's responsibility to notify PG&E of any work required on PG&E facilities. (PG&E)

DURING CONSTRUCTION & PRIOR TO ISSUANCE OF OCCUPANCY PERMITS:

54. Any backflow preventors visible from the street shall be painted green to blend in with the surrounding landscaping. The backflow preventors shall be screened with landscaping and shall comply with the following criteria:
 - a. There shall be a minimum clearance of four feet (4'), on all sides, from the backflow preventor to the landscaping.
 - b. For maintenance purposes, the landscaping shall only be installed on three sides and the plant material shall not have thorns.
 - c. The control valves and the water meter shall be physically unobstructed.
 - d. The backflow preventer shall be covered with a green cover that will provide insulation. (Planning, Environmental Utilities)
55. Easement widths shall comply with the City's Improvement Standards and Construction Standards. Separate document easements required by the City shall be prepared in accordance with the City's "Policy for Dedication of Easements to the City of Roseville". All legal descriptions shall be prepared by a licensed land Surveyor. All existing public utility, electric, water, sewer and reclaimed water easements shall be maintained unless otherwise authorized by these conditions of approval. (Public Works, Environmental Utilities, Electric)
56. Inspection of the potable water supply system on new commercial/ industrial/ office projects shall be as follows:
 - a. The Environmental Utilities Inspector will inspect all potable water supply up to the downstream side of the backflow preventor.

- b. The property owner/applicant shall be responsible for that portion of the water supply system from the backflow preventor to the building. The builder/contractor shall engage a qualified inspector to approve the installation of this portion of the water supply. The Building Division will require from the builder/ contractor, a written document certifying that this portion of the potable water supply has been installed per improvement plans and in accordance with the Uniform Plumbing Code. This certificate of compliance shall be submitted to the Building Division before a temporary occupancy or a building final is approved.
 - c. The building inspectors will exclusively inspect all potable water supply systems for the building from the shutoff valve at the building and downstream within the building. (Building, Environmental Utilities)
57. All improvements being constructed in accordance with the approved grading and improvement plans shall be accepted as complete by the City. (Engineering)
58. The applicant/developer shall prepare a Transportation Systems Management (TSM) Agreement for John Adams Academy to be reviewed and approved by the City Manager. (Public Works, Alternative Transportation)
59. Water and sewer shall be constructed pursuant to the adopted City of Roseville Improvement Standards and the City of Roseville Construction Standards. (Environmental Utilities)
60. All water backflow devices shall be tested and approved by the Environmental Utilities Department. (Environmental Utilities)
61. All Electric Department facilities, including streetlights where applicable, shall be designed and built to the "City of Roseville Specifications for Commercial Construction." (Electric)
62. The City of Roseville Electric Department has electrical construction charges which are to be paid by the developer and which are explained in the City of Roseville "Specification for Commercial Construction." These charges will be determined upon completion of the final electrical design. (Electric)
63. Any relocation, rearrangement, or change of existing electric facilities due to this development shall be at the developer's expense. (Electric)
64. Any facilities proposed for placement within public/electric utility easements shall be subject to review and approval by the Electric Department before any work commences in these areas. This includes, but is not limited to, landscaping, lighting, paving, signs, trees, walls, and structures of any type. (Electric)
65. All electric metering shall be directly outside accessible. This can be accomplished in any of the following ways:
- a. Locate the metered service panel on the outside of the building.
 - b. Locate the metered service panel in a service room with a door that opens directly to the outside. The developer will be required to provide a key to the door for placement in a lock box to be installed on the outside of the door. Any doors leading from the service room to other areas of the building shall be secured to prohibit unauthorized entry.
66. One 3/4" conduit with a 2-pair phone line shall be installed from the buildings telephone service panel to the meter section of the customer's electrical switchgear or panel. (Electric)

67. It is the responsibility of the developer to ensure that all existing electric facilities remain free and clear of any obstruction during construction and when the project is complete. (Electric)

OTHER CONDITIONS OF APPROVAL:

68. Signs shown on the elevations are not approved as part of the Design Review Permit. A Sign Permit is required for all project signs. (Planning)
69. Following the installation of the landscaping, all landscape material shall be maintained in a healthy and weed free condition; dead plant material shall be replaced immediately. All trees shall be maintained and pruned in accordance with the accepted practices of the International Society of Arboriculture (ISA). (Planning)
70. The required width of fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. Minimum required widths and vertical clearances established by the Fire Code shall be maintained at all times during construction. Closure of accesses for fire apparatus by gates, barricades and other devices shall be prohibited unless approved by the Fire Chief. (Fire)
71. Temporary aboveground storage tanks may be used at construction sites for diesel fuel only and shall not exceed 1,000-gallon capacity. Tanks shall comply with all provisions found within the Fire Code. A Fire Department Permit shall be obtained prior to tank installation. The permit shall expire after 90 days from the date of issuance, unless extended by the Fire Chief. (Fire)
72. If site survey or earth moving work results in the discovery of hazardous materials in containers or what appears to be hazardous wastes released into the ground, the contractor or person responsible for the building permit must notify the Roseville Fire Department immediately. A representative from the Fire Department will make a determination as to whether the incident is reportable or not and if site remediation is required. (Fire)
73. The location and design of the gas service shall be determined by PG&E. The design of the gas service for this project shall not begin until PG&E has received a full set of City approved improvement plans for the project. (PG&E)
74. The project is subject to the noise standards established in the City's Noise Ordinance. In accordance with the City's Noise Ordinance, project construction is exempt between the hours of seven a.m. and seven p.m. Monday through Friday, and between the hours of eight a.m. and eight p.m. Saturday and Sunday. Provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. (Building)
75. The developer (or designated consultant) shall certify that the building foundation location has been placed according to all approved setback requirements shown on the approved site plan. The developer shall prepare a written statement confirming building placement and provide an original copy to the City Building Department Field Inspector at the time of or prior to the foundation inspection. (Building)
76. Prior to Certificate of Occupancy, the applicant may apply for a Temporary Occupancy (TO) of the building. If a TO is Desired, the applicant must submit a written request to the Building division a minimum of thirty (30) days prior to the expected temporary occupancy date and shall include a schedule for occupancy and a description of the purpose for the Temporary Occupancy. (Building)

CONDITIONS OF APPROVAL FOR TREE PERMIT – PL15-0283

TREE PERMIT CONDITIONS AND COMPLIANCE VERIFICATION/INSPECTION CHECKLIST	COMPLIANCE VERIFIED/ INSPECTED	COMMENTS
PRIOR TO ISSUANCE OF ANY PERMITS OR ANY CONSTRUCTION ON-SITE		
1. All recommendations contained in the Arborist Report (Exhibit J) shall be incorporated as part of these conditions except as modified herein. (Planning)		
2. Tree #1484 is approved for removal with this tree permit. All other native oak trees shall remain in place. Trees to be removed shall be clearly marked in the field and inspected by Planning Staff prior to removal. Removal of the trees shall be performed by or under the supervision of a certified arborist. (Planning)		
3. The developer shall be responsible for the replacement of the total number of inches proposed for removal prior to any tree removal. The total number of inches for this project is seven inches (7"). Mitigation must be provided prior to tree removal unless otherwise approved in the tree replacement plan or in these conditions. (Planning)		
4. No activity shall be permitted within the protected zone of any native oak tree beyond those identified by this report. Encroachment into the protected zone of Tree #1485 , as shown in Exhibit J, and described in the staff report is permitted. (Planning)		
5. A \$10,000 cash deposit or bond (or other means of security provided to the satisfaction of the Planning Department) shall be posted to insure the preservation of all remaining trees during construction. The cash deposit or bond shall be posted in a form approved by the City Attorney. Each occurrence of a violation on any condition regarding tree preservation shall result in forfeiture of all or a portion of the cash deposit or bond. (Planning)		
6. A violation of any of the conditions of this Tree Permit is a violation of the Roseville Municipal Code, the Zoning Ordinance (Chapter 19.74) and the Tree Preservation Ordinance (Chapter 19.66). Penalties for violation of any of the conditions of approval may include forfeiture of the bond, suspension or revocation of the permit, payment of restitution, and criminal penalties. (Planning)		
7. A fencing plan shall be shown on the approved site plan and/or improvement plans demonstrating the Protected Zone for the affected trees. A maximum of three feet beyond the edge of the walls, driveway, or walkways will be allowed for construction activity and shall be shown on the fencing plan. The fencing plan shall be reviewed and approved by the Planning Department prior to the placement of the protective fencing. (Planning)		
8. The applicant shall install a minimum of a five-foot high chain link fence (or acceptable alternative) at the outermost edge of the Protected Zone of the oak tree. The fencing for encroachments shall be installed at the limit of construction activity. The applicant shall install signs at two equidistant locations on the temporary fence that are clearly visible from the front of the lot and where construction activity will occur. The size of each sign shall be a minimum of two feet (2') by two feet (2') and must contain the following language:		

“WARNING THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE PLANNING DEPARTMENT”. (Planning)		
9. Once the fencing is installed, the applicant shall schedule an appointment with the Planning Department to inspect and approve the temporary fencing before beginning any construction. (Planning)		
10. The applicant shall arrange with the arborist to perform, and certify in writing, the completion of deadwooding, fertilization, and all other work recommended for completion prior to the approval of improvement plans. Pruning shall be done by an Arborist or under the direct supervision of a Certified Arborist, in conformance with International Society of Arboriculturalists (I.S.A.) standards. Any watering and deep root fertilization which the arborist deems necessary to protect the health of the trees as noted in the arborist report or as otherwise required by the arborist shall be completed by the applicant. (Planning)		
11. A utility trenching pathway plan shall be submitted depicting all of the following systems: storm drains, sewers, water mains, and underground utilities. The trenching pathway plan shall show the proposed locations of all lateral lines. (Planning)		
12. A Site Planning Meeting shall be held with the applicant, the applicant's primary contractor, the Planning Department and the Engineering Department to review this permit, the approved grading or improvement plans, and the tree fencing prior to any grading on-site. The Developer shall call the Planning Department and Engineering Division two weeks prior to the start of grading work to schedule the meeting and fencing inspection. (Planning)		
DURING CONSTRUCTION		
13. The following information must be located on-site during construction activities: Arborist Report; Approved site plan/improvement plans including fencing plan; and, Conditions of approval for the Tree Permit. All construction must follow the approved plans for this tree permit without exception. (Planning)		
14. All preservation devices (aeration systems, oak tree wells, drains, special paving, etc.) shall be designed and installed as required by these conditions and the arborist's recommendations, and shall be shown on the improvement plans or grading plans. (Planning)		
15. If any native ground surface fabric within the Protected Zone must be removed for any reason, it shall be replaced within forty-eight (48) hours. (Planning)		
16. Storage or parking of materials, equipment and vehicles is not permitted within the protected zone of any oak tree. Vehicles and other heavy equipment shall not be operated within the Protected Zone of any oak tree. (Planning)		
17. Where recommended by the arborist, portions of the foundation shall be hand dug under the direct supervision of the project arborist. The certified arborist shall immediately treat any severed or damaged roots. Minor roots less than one (1) inch in diameter may be cut, but damaged roots shall be traced back and cleanly cut behind any split, cracked or damaged area. Major roots over one (1) inch in diameter may not be cut without approval of an arborist and any arborist recommendations shall be implemented. (Planning)		

18. The temporary fencing shall remain in place throughout the entire construction period and shall not be removed without obtaining written authorization from the Planning Department. In no event shall the fencing be removed before the written authorization is received from the Planning Department. (Planning)		
PRIOR TO ISSUANCE OF AN OCCUPANCY PERMIT		
19. Within 5 days of the completion of construction, a Certification Letter from a certified arborist shall be submitted to and approved by the Planning Department. The certification letter shall attest to all of the work (regulated activity) that was conducted in the protected zone of the tree, either being in conformance with this permit or of the required mitigation still needing to be performed. (Planning)		
20. A copy of this completed Tree Permit Compliance Verification/Inspection form shall be submitted to the Planning Department. (Planning)		
21. The approval of this Tree Permit shall expire on the same date as the John Adams Academy DRPMOD (PL15-0283).		

ATTACHMENTS

1. CalEEMod – June 2017
2. Building Renderings

EXHIBITS

- A. CEQA Initial Study/Negative Declaration
- B. Site Plan
- C. Demolition Plan
- D. Grading Plan
- E. Elevations
- F. Floor Plans
- G. Utility Plan
- H. Lighting/Photometric Plan
- I. Landscape Plan
- J. Arborist Report/Protected Tree Inventory

Note to Applicant and/or Developer: Please contact the Planning Division staff at (916) 774-5276 prior to the Commission meeting if you have any questions on any of the recommended conditions for your project. If you challenge the decision of the Commission in court, you may be limited to raising only those issues which you or someone else raised at the public hearing held for this project, or in written correspondence delivered to the Planning Director at, or prior to, the public hearing.



MITIGATED NEGATIVE DECLARATION

Project Title/File Number: Infill PCL 241 – John Adams Academy Multi-Purpose Building – File #PL15-0283

Project Location: 1 Sierragate Plaza (APNs: 015-240-024-000, 015-240-021-000 & 015-240-018-000); Roseville; Placer County

Project Applicant: Dean Forman, John Adams Academy; 1 Sierra Gate Plaza; Roseville CA 95678; (916)955-6363

Property Owner: Dean Forman, John Adams Academy; 1 Sierra Gate Plaza; Roseville CA 95678; (916)955-6363

Lead Agency Contact Person: Ron Miller, Associate Planner; Phone (916) 774-5276

Date: June 29, 2017

Project Description: John Adams Academy Charter School proposes to construct a ±11,600 square foot multi-purpose building (MPR) within an existing paved parking lot at the eastern edge of the school campus. The project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard.

The project entitlements requested include a Design Review Permit Modification (DRPMOD) and a Tree Permit (TP) for construction of the MPR and associated site improvements, including a new concrete plaza, landscaping, and lighting. Exterior improvements to the site consist of a parking lot conversion to accommodate construction of the new MPR. All landscape islands, curbs and landscaping within the building site will be removed prior to construction of the building. A new courtyard will be added to the north of the MPR building, which will be bordered by trees for shading.

DECLARATION

The Planning Manager has determined that the above project will not have significant effects on the environment and therefore does not require preparation of an Environmental Impact Report. The determination is based on the attached initial study and the following findings:

- A. *The project will not have the potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare or threatened species, reduce the number or restrict the range of rare or endangered plants or animals or eliminate important examples of the major periods of California history or prehistory.*
- B. *The project will not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals.*
- C. *The project will not have impacts, which are individually limited, but cumulatively considerable.*
- D. *The project will not have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly.*
- E. *No substantial evidence exists that the project may have a significant effect on the environment.*
- F. *The project incorporates all applicable mitigation measures identified in the attached initial study.*
- G. *This Mitigated Negative Declaration reflects the independent judgment of the lead agency.*

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INITIAL STUDY & ENVIRONMENTAL CHECKLIST

Project Title/File Number:	Infill PCL 241 – John Adams Academy Multi-Purpose Building – File #PL15-0283
Project Location:	1 Sierragate Plaza (APNs: 015-240-024-000, 015-240-021-000 & 015-240-018-000); Roseville; Placer County
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Project Applicant:	Dean Forman, John Adams Academy; 1 Sierra Gate Plaza; Roseville CA 95678; (916)955-6363
Property Owner:	Dean Forman, John Adams Academy; 1 Sierra Gate Plaza; Roseville CA 95678; (916)955-6363
Lead Agency Contact Person:	Ron Miller, Associate Planner; Phone (916) 774-5276

This initial study has been prepared to identify and assess the anticipated environmental impacts of the above described project application. The document relies on the Amoruso Ranch Specific Plan Final Environmental Impact Report (SCH # 20131020570), certified June 15, 2016, as the Amoruso Ranch Specific Plan project updated the City's General Plan, and site-specific studies prepared to address in detail the effects or impacts associated with the project. Where documents were submitted by consultants working for the applicant, City staff reviewed such documents in order to determine whether, based on their own professional judgment and expertise, staff found such documents to be credible and persuasive. Staff has only relied on documents that reflect their independent judgment, and has not accepted at face value representations made by consultants for the applicant.

This document has been prepared to satisfy the California Environmental Quality Act (CEQA), (Public Resources Code, Section 21000 et seq.) and the State CEQA Guidelines (14 CCR 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects.

The initial study is a public document used by the decision-making lead agency to determine whether a project may have a significant effect on the environment. If the lead agency finds substantial evidence that any aspect of the project, either individually or cumulatively, may have a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, the lead agency is required to prepare an EIR. If the agency finds no substantial evidence that the project or any of its aspects may cause a significant effect on the environment, a negative declaration shall be prepared. If in the course of analysis, the agency recognizes that the project may have a significant impact on the environment, but that by incorporating specific mitigation measures to which the applicant agrees, the impact will be reduced to a less than significant effect, a mitigated negative declaration shall be prepared.

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PROJECT DESCRIPTION

Project Location

The John Adams Academy site is located at 1 Sierragate Plaza, within the City's Infill area. Specifically, the project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard (see Figure 1). The subject property has General Plan Land Use and Zoning Designations of Professional (BP).

Figure 1: Vicinity Map/Surrounding Uses



Background

Location	Zoning	General Plan Land Use	Actual Use of Property
Project Site	BP	BP	Charter School
North	Floodway (FW)	Low Density Residential (LDR-0)	Miner's Ravine Open Space and Bike Trail
South	BP	BP	Professional/Dental Offices

East	Interstate 80 Freeway (I-80) – Regional Commercial/Special Area Overlay/Northeast Roseville Specific Plan (RC/SA-NE) Beyond	Regional Commercial (RC) (East of I-80)	I-80 Freeway and Retail/Commercial Uses Beyond
West	Harding Boulevard – Attached Housing (R3) Beyond	High Density Residential (HDR-14.4) (West of Harding Boulevard)	Harding Boulevard (4-Lane Arterial Roadway) and Apartment Complex Beyond

Environmental Setting

The John Adams Academy (K-12 Elementary and Secondary School Use Type) site is 9.85 acres in size, and is currently developed with four buildings, associated paved parking, landscaping, lighting and a paved student playground area. All existing buildings will remain in place. The site also includes a paved ring road, which circles the entire campus. The ring road is shared by John Adams Academy and adjacent commercial properties. The ring road is accessed off Harding Boulevard and used for student drop-off and pickup, as well as access to adjacent businesses.

The project site is bordered by commercial properties (professional and medical offices) to the west and south, the Interstate 80 (I-80) freeway to the east, with open space and a bike trail to the north. The project site is approximately 600 feet south of the open space parcel; therefore, there will be no impacts within the open space area.

Proposed Project

The requested project entitlements include a Design Review Permit (DRP) and Tree Permit (TP) for construction of a multi-purpose building and associated site improvements, including parking, landscaping, and lighting.

The applicant proposes to construct a ±11,600 square foot multi-purpose building within an existing paved parking lot at the eastern edge of the school campus. Exterior improvements to the site consist of parking lot demolition to accommodate construction of the proposed building. All landscape islands, curbs and landscaping within the building site will be removed prior to construction of the building. A new courtyard will be added north of the proposed building, which will include trees for shading and a turf area of approximately 600 square feet.

The building's setbacks will be approximately 44 feet north of the southern property boundary (420 feet north of Lead Hill Boulevard), 470 feet east of Harding Boulevard, 650 feet from the north property line (open space & bike trail), and approximately 40 feet west of the I-80 freeway. In comparison, the three-story office building south of the project site is approximately 36 feet west of the I-80 freeway.

CITY OF ROSEVILLE MITIGATION ORDINANCES, GUIDELINES, AND STANDARDS

For projects that are consistent with the development density established by existing zoning, community plan, or general plan policies for which an EIR was certified, CEQA Guidelines section 15183(f) allows a lead agency to rely on previously adopted development policies or standards as mitigation for the environmental effects, when the standards have been adopted by the City, with findings based on substantial evidence, that the policies or standards will substantially mitigate environmental effects, unless substantial new information shows otherwise.

(CEQA Guidelines §15183(f)). The City of Roseville adopted CEQA Implementing Procedures (Implementing Procedures) which are consistent with this CEQA Guidelines section. The current version of the Implementing Procedures were adopted in April 2008, along with Findings of Fact, as Resolution 08-172. The below regulations and ordinances were found to provide uniform mitigating policies and standards, and are applicable to development projects. The City's Mitigating Policies and Standards are referenced, where applicable, in the Initial Study Checklist.:

- City of Roseville 2035 General Plan
- City of Roseville Zoning Ordinance (RMC Title 19)
- City of Roseville Improvement Standards (Resolution 02-37)
- City of Roseville Construction Standards (Resolution 01-208)
- Subdivision Ordinance (RMC Title 18)
- Noise Regulation (RMC Ch.9.24)
- Flood Damage Prevention Ordinance (RMC Ch.9.80)
- Drainage Fees (Dry Creek [RMC Ch.4.49] and Pleasant Grove Creek [RMC Ch.4.48])
- West Placer Stormwater Quality Design Manual (Resolution 16-152)
- Urban Stormwater Quality Management and Discharge Control Ordinance (RMC Ch. 14.20)
- Traffic Mitigation Fee (RMC Ch.4.44)
- Highway 65 Joint Powers Authority Improvement Fee (Resolution 2008-02)
- South Placer Regional Transportation Authority Transportation and Air Quality Mitigation Fee (Resolution 09-05)
- Tree Preservation Ordinance (RMC Ch.19.66)
- Community Design Guidelines (Resolution 95-347)
- Specific Plan Design Guidelines:
 - Development Guidelines Del Webb Specific Plan (Resolution 96-330)
 - Landscape Design Guidelines for North Central Roseville Specific Plan (Resolution 90-170)
 - North Roseville Specific Plan and Design Guidelines (Resolution 00-432)
 - Northeast Roseville Specific Plan (Olympus Pointe) Signage Guidelines (Resolution 89-42)
 - North Roseville Area Design Guidelines (Resolution 92-226)
 - Northeast Roseville Specific Plan Landscape Design Guidelines (Resolution 87-31)
 - Southeast Roseville Specific Plan Landscape Design Guidelines (Resolution 88-51)
 - Stoneridge Specific Plan and Design Guidelines (Resolution 98-53)
 - Highland Reserve North Specific Plan and Design Guidelines (Resolution 97-128)
 - West Roseville Specific Plan and Design Guidelines (Resolution 04-40)
 - Sierra Vista Specific Plan and Design Guidelines (Resolution 12-217)
 - Creekview Specific Plan and Design Guidelines (Resolution 12-320)
 - Amoruso Ranch Specific Plan and Design Guidelines (Resolution 16-273)

OTHER ENVIRONMENTAL DOCUMENTS RELIED UPON

- Amoruso Ranch Specific Plan Final Environmental Impact Report (SCH#2013102057)

Pursuant to CEQA Guidelines Section 15183, any project that is consistent with the development densities established by zoning, a Community Plan, or a General Plan for which an EIR was certified shall not require

additional environmental review, except as may be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site. The Amoruso Ranch Specific Plan EIR updated the City's General Plan to 2035, and updated Citywide analyses of traffic, water supply, water treatment, wastewater treatment, and waste disposal. The proposed project is consistent with the adopted land use designations examined within the environmental documents listed above, and thus this Initial Study focuses on effects particular to the specific project site, impacts which were not analyzed within the EIR, and impacts which may require revisiting due to substantial new information. When applicable, the topical sections within the Initial Study summarize the findings within the environmental documents listed above. The analysis, supporting technical materials, and findings of the environmental document are incorporated by reference, and are available for review at the Civic Center, 311 Vernon Street, Roseville, CA.

EXPLANATION OF INITIAL STUDY CHECKLIST

The California Environmental Quality Act (CEQA) Guidelines recommend that lead agencies use an Initial Study Checklist to determine potential impacts of the proposed project on the physical environment. The Initial Study Checklist provides a list of questions concerning a comprehensive array of environmental issue areas potentially affected by this project. This section of the Initial Study incorporates a portion of Appendix G Environmental Checklist Form, contained in the CEQA Guidelines. Within each topical section (e.g. Air Quality), a description of the setting is provided, followed by the checklist responses, thresholds used, and finally a discussion of each checklist answer.

There are four (4) possible answers to the Environmental Impacts Checklist on the following pages. Each possible answer is explained below:

- 1) A "Potentially Significant Impact" is appropriate if there is enough relevant information and reasonable inferences from the information that a fair argument based on substantial evidence can be made to support a conclusion that a substantial, or potentially substantial, adverse change may occur to any of the physical conditions within the area affected by the project. When one or more "Potentially significant Impact" entries are made, an EIR is required.
- 2) A "Less Than Significant With Mitigation" answer is appropriate when the lead agency incorporates mitigation measures to reduce an impact from "Potentially Significant" to "Less than Significant." For example, floodwater impacts could be reduced from a potentially-significant level to a less-than-significant level by relocating a building to an area outside of the floodway. The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less-than-significant level. Mitigation measures are identified as MM followed by a number.
- 3) A "Less Than significant Impact" answer is appropriate if there is evidence that one or more environmental impacts may occur, but the impacts are determined to be less than significant, or the application of development policies and standards to the project will reduce the impact(s) to a less-than-significant level. For instance, the application of the City's Improvement Standards reduces potential erosion impacts to a less-than-significant level.
- 4) A "No Impact" answer is appropriate where it can be demonstrated that the impact does not have the potential to adversely affect the environment. For instance, a project in the center of an urbanized area with no agricultural lands on or adjacent to the project area clearly would not have an adverse effect on agricultural resources or operations. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources cited in the Initial Study. Where a "No Impact" answer is adequately supported by the information sources cited in the Initial Study, further narrative explanation is not required. A "No Impact" answer is explained when it is based on project-specific factors as well as generous standards.

All answers must take account of the whole action involved, including off- and on-site, indirect, direct, construction, and operation impacts, except as provided for under State CEQA Guidelines.

INITIAL STUDY CHECKLIST

I. Aesthetics

John Adams Academy Charter School proposes to construct a ±11,600 square foot multi-purpose building (MPR) within an existing paved parking lot at the eastern edge of the school campus (see Exhibits A & D). The project site is located between Harding Boulevard and the Interstate 80 freeway, approximately 400 feet north of Lead Hill Boulevard. The overall footprint of the MPR is 97' x 120'.

The proposed building will have gabled standing seam metal roof with skylights. The roof will be of a dark burgundy color. The exterior walls of the building will be constructed of metal siding, grey-brown (greige) in color. The north and south elevations will feature CMU pilasters that will match the existing buildings on the site. The west elevation will feature a canopy, also of the same material and color of the roof. The canopy's pitch will match that of the gabled roof. Five CMU columns will support the canopy structure. The height of the building's eaves will be 20 feet, and roof's ridge height will be 36 feet.

The project will include landscape borders, with tree and understory plantings on all sides of the building. The landscape border along the eastern portion of the building (adjacent to Interstate 80) varies in width from approximately 12 feet to 23 feet. An outdoor paved courtyard will be constructed adjacent to the building's north elevation. Large-scale shrubs and trees will be planted along the eastern property boundary that will serve to screen a portion of the building, and the courtyard from the freeway to the east.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?			X	

Thresholds of Significance and Regulatory Setting:

The significance of an environmental impact cannot always be determined through the use of a specific, quantifiable threshold. CEQA Guidelines Section 15064(b) affirms this by the statement “an ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.” This is particularly true of aesthetic impacts. As an example, a proposed parking lot in a dense urban center would have markedly different visual effects than a parking lot in an open space area. For the purpose of this study, the significance thresholds are as stated in CEQA Guidelines Appendix G, as shown in a–d of the checklist below. The Findings of the Implementing Procedures indicate that compliance with the Zoning Ordinance (e.g. building height, setbacks, etc), Subdivision Ordinance (RMC Ch. 18), Community Design Guidelines (Resolution 95-347), and applicable Specific Plan Policies and/or Specific Plan Design Guidelines will prevent significant impacts in urban settings as it relates to items a, b, and c, below.

Discussion of Checklist Answers:

a–b) There are no designated or eligible scenic vistas or scenic highways within or adjacent to the City of Roseville.

c) The project site is in an urban setting, adjacent to a 10-lane interstate highway (Interstate 80), on an existing fully-developed school campus. Therefore, the site lacks any prominent or high-quality natural features that could be negatively impacted by development. There are currently four buildings on the school campus, including a paved playground area (19,039 square feet), associated parking, landscaping and lighting on the site. Additionally, the properties adjacent to the project site and in the immediate vicinity are developed with commercial buildings and centers (including associated parking, lighting and landscaping). The height of the proposed multi-purpose building is 36 feet. The nearest commercial building, 5 Sierrgate Plaza, approximately 180 feet south of the proposed building, is 50 feet in height.

The proposed multi-purpose building will be constructed approximately 44 feet north of the southern property boundary (420 feet north of Lead Hill Boulevard), 470 feet east of Harding Boulevard, 650 feet from the north property line (open space & bike trail). The building's setback from the Interstate 80 freeway to the east ranges from approximately 40 feet at the north end of the building to approximately 53 feet at south end of the building. In comparison, the three-story office building south of the project site is approximately 36 feet west of the I-80 freeway at its closest point.

The project will have a significant setback from nearby streets (Lead Hill and Harding Boulevards), and will include landscaping and trees that will serve to minimize the potential visual impact. From this analysis staff has concluded that the visual impacts from the proposed multi-purpose building construction will be mitigated by the project's setbacks from nearby roadways and adjacent properties, project landscaping and masonry walls, as well as screening by existing buildings and landscaping in the immediate vicinity.

The City of Roseville has adopted Community Design Guidelines (CDG) for the purpose of creating building and community designs which are a visual asset to the community. The CDG includes guidelines for building design, site design and landscape design, which will result in a project that enhances the existing urban visual environment. The City's approving authority (Planning Commission) will review the Design Review Permit (DRP) for conformance with City standards and requirements. The project will not result in any new aesthetic impacts beyond those identified in the General Plan EIR. Accordingly, the aesthetic impacts of the project are ***less than significant***.

d) The project involves nighttime lighting to provide for the security and safety of project users, however, the project is already located within an urbanized setting with many existing lighting sources. Lighting is conditioned to comply with City standards (i.e. CDG) to limit the height of light standards and to require cut-off lenses and glare shields to minimize light and glare impacts. The project will not create a new source of substantial light. None of

the project elements are highly reflective, and thus the project will not contribute to an increased source of glare. Potential light and glare impacts are considered ***less than significant***.

II. Agricultural & Forestry Resources

The State Department of Conservation oversees the Farmland Mapping and Monitoring Program, which was established to document the location, quality, and quantity of agricultural lands, and the conversion of those lands over time. The primary land use classifications on the maps generated through this program are: Urban and Built Up Land, Grazing Land, Farmland of Local Importance, Unique Farmland, Farmland of Statewide Importance, and Prime Farmland. According to the current California Department of Conservation Placer County Important Farmland Map (2012), the majority of the City of Roseville is designated as Urban and Built Up Land and most of the open space areas of the City are designated as Grazing Land. There are a few areas designated as Farmland of Local Importance and two small areas designated as Unique Farmland located on the western side of the City along Baseline Road. The current Williamson Act Contract map (2013/2014) produced by the Department of Conservation shows that there are no Williamson Act contracts within the City, and only one (on PFE Road) that is adjacent to the City. None of the land within the City is considered forest land by the Board of Forestry and Fire Protection.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Thresholds of Significance and Regulatory Setting:

Unique Farmland, Farmland of Statewide Importance, and Prime Farmland are called out as protected farmland categories within CEQA Guidelines Appendix G. Neither the City nor the State has adopted quantified significance thresholds related to impacts to protected farmland categories or to agricultural and forestry resources. For the purpose of this study, the significance thresholds are as stated in CEQA Guidelines Appendix G, as shown in a–e of the checklist above.

Discussion of Checklist Answers:

a–e) The project site is currently a developed site with a parking lot and is not used for agricultural purposes, does not include agricultural zoning, is not within or adjacent to one of the areas of the City designated as a protected farmland category on the Placer County Important Farmland map, is not within or adjacent to land within a Williamson Act Contract, and is not considered forest land. Given the foregoing, the proposed project will have no impact on agricultural resources.

III. Air Quality

The City of Roseville, along with the south Placer County area, is located in the Sacramento Valley Air Basin (SVAB). The SVAB is within the Sacramento Federal Ozone Non-Attainment Area. Under the Clean Air Act, Placer County has been designated a "serious non-attainment" area for the federal 8-hour ozone standard, "non-attainment" for the state ozone standard, and a "non-attainment" area for the federal and state PM₁₀ standard (particulate matter less than 10 microns in diameter). Within Placer County, the Placer County Air Pollution Control District (PCAPCD) is responsible for ensuring that emission standards are not violated. Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	

Thresholds of Significance and Regulatory Setting:

In responding to checklist items a, b, and d, project-related air emissions would have a significant effect if they would result in concentrations that either violate an ambient air quality standard or contribute to an existing air quality violation. To assist in making this determination, the PCAPCD adopted thresholds of significance, which were developed by considering both the health-based ambient air quality standards and the attainment strategies outlined in the State Implementation Plan. The PCAPCD-recommended significance threshold for reactive organic gases (ROG), nitrogen oxides (NO_x) is 82 pounds daily during construction and 55 pounds daily during operation, and for particulate matter (PM) is 82 pounds per day during both construction and operation. For all other constituents, significance is determined based on the concentration-based limits in the Federal and State Ambient Air Quality Standards. Toxic Air Contaminants (TAC) are also of public health concern, but no thresholds or standards are provided because they are considered to have no safe level of exposure. Analysis of TAC is based on the *Air Quality and Land Use Handbook – A Community Health Perspective* (April 2005, California Air Resources Board), which lists TAC sources and recommended buffer distances from sensitive uses. For checklist item c, the PCAPCD's *CEQA Air Quality Handbook (Handbook)* recommends that the same thresholds used for the project analysis be used for the cumulative impact analysis.

With regard to checklist item e, there are no quantified significance thresholds for exposure to objectionable odors. Significance is determined after taking into account multiple factors, including screening distances from odor sources (as found in the PCAPCD CEQA Handbook), the direction and frequency of prevailing winds, the time of day when odors are present, and the nature and intensity of the odor source.

Discussion of Checklist Answers:

a–b) Analyses are not included for sulfur dioxide, lead, and other constituents because there are no mass emission thresholds; these are concentration-based limits in the Federal and State Ambient Air Quality Standards which require substantial, point-source emissions (e.g. refineries, concrete plants, etc.) before exceedance will occur, and the SVAB is in attainment for these constituents. Likewise, carbon monoxide is not analyzed because the SVAB is in attainment for this constituent, and it requires high, localized concentrations (called carbon monoxide “hot spots”) before the ambient air quality standard would be exceeded. “Hot spots” are typically associated with heavy traffic congestion occurring at high-volume roadway intersections. The Amoruso Ranch EIR analysis of Citywide traffic indicated that 198 out of 226 signalized intersections would operate at level of service C or better—that is, they will not experience heavy traffic congestion. It further indicated that analyses of existing CO concentrations at the most congested intersections in Roseville show that

CO levels are well below federal and state ambient air quality standards. The discussions below focus on emissions of ROG, NO_x, or PM. A project-level analysis has been prepared to determine whether the project will, on a singular level, exceed the established thresholds.

The City of Roseville is located within the boundaries of the Sacramento Valley Air Basin (SVAB) and under the jurisdiction of the Placer County Air Pollution Control District (PCAPCD). The federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) require that federal and State ambient air quality standards (AAQS) be established, respectively, for six common air pollutants, known as criteria pollutants. The criteria pollutants include particulate matter (PM), ground-level ozone, carbon monoxide (CO), sulfur oxides, nitrogen oxides (NO_x), and lead. At the federal level, the SVAB area is designated as nonattainment for the 8-hour ozone and the 24-hour particulate matter 2.5 microns in diameter (PM_{2.5}) AAQS, and attainment or unclassified for all other federal criteria pollutant AAQS. At the State level, the SVAB area is designated as nonattainment for the 1-hour ozone, 8-hour ozone, particulate matter 10 microns in diameter (PM₁₀) AAQS, and attainment or unclassified for all other State AAQS.

The CAA requires each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The SIPs are modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. Due to the nonattainment designations, PCAPCD, along with the other air districts in the SVAB region, periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the NAAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies.

The current applicable air quality plan for the proposed project area is the *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan* (Ozone Attainment Plan), adopted September 26, 2013. The U.S. Environmental Protection Agency (USEPA) determined the motor vehicle emission budgets in the Plan to be adequate and made such findings effective August 25, 2014. On January 9, 2015, the USEPA approved the 2013 Ozone Attainment Plan.

The 2013 Ozone Attainment Plan demonstrates how existing and new control strategies would provide the necessary future emission reductions to meet the CAA requirements, including the NAAQS. It should be noted that in addition to strengthening the 8-hour ozone NAAQS, the USEPA also strengthened the secondary 8-hour ozone NAAQS, making the secondary standard identical to the primary standard. The SVAB remains classified as a severe nonattainment area with an attainment deadline of 2027. On October 26, 2015, the USEPA released a final implementation rule for the revised NAAQS for ozone to address the requirements for reasonable further progress, modeling and attainment demonstrations, and reasonably available control measures (RACM) and reasonably available control technology (RACT). With the publication of the new NAAQS ozone rules, areas in nonattainment must update their ozone attainment plans and submit new plans by 2020/2021.

General conformity requirements of the regional air quality plan include whether a project would cause or contribute to new violations of any NAAQS, increase the frequency or severity of an existing violation of any NAAQS, or delay timely attainment of any NAAQS. In order to evaluate ozone and other criteria air pollutant emissions and support attainment goals for those pollutants that the area is designated nonattainment, the PCAPCD recommends significance thresholds for emissions of PM₁₀ and ozone precursors – reactive organic gases (ROG) and oxides of nitrogen (NO_x). On October 13, 2016, the PCAPCD adopted updated significance thresholds for the aforementioned pollutants.

The significance thresholds, expressed in pounds per day (lbs/day), listed in Table 1 are the PCAPCD's recommended thresholds of significance for use in the evaluation of air quality impacts associated with proposed development projects. The City of Roseville, as lead agency, utilizes the PCAPCD's recommended thresholds of significance for CEQA evaluation purposes. Thus, if the proposed project's emissions exceed the pollutant

thresholds presented in Table 1, the project could have a significant effect on air quality, the attainment of federal and State AAQS, and could conflict with or obstruct implementation of the applicable air quality plan.

Table 1		
PCAPCD Thresholds of Significance		
Pollutant	Construction Threshold (lbs/day)	Operational Threshold (lbs/day)
ROG	82	55
NO _x	82	55
PM ₁₀	82	82
<i>Source: Placer County Air Pollution Control District. Placer County Air Pollution Control District Policy. Review of Land Use Projects Under CEQA. October 13, 2016.</i>		

Implementation of the proposed project would contribute local emissions in the area during construction and operation of the proposed project. The proposed project's short-term construction-related and long-term operational emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.1 software (CalEEMod) – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data is available, such data should be input into the model. As such, the proposed project's modeling assumed the following:

- Demolition of existing parking area on site.
- Construction of a 11,600 square foot multi-purpose building with associated parking, lighting & landscaping.
- Peak operation, , based on trip generation information provided by Kimley Horn.
- Compliance with the 2016 California Building Energy Efficiency Standards Code.

The proposed project's estimated emissions associated with construction and operations are presented and discussed in further detail below.

Construction Emissions

During construction of the project, various types of equipment and vehicles would temporarily operate on the project site. Construction exhaust emissions would be generated from construction equipment, vegetation clearing and earth movement activities, construction worker commutes, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which includes PM emissions. As construction of the proposed project would generate air pollutant emissions intermittently within the site, and the vicinity of the site, until all construction has been completed, construction is a potential concern because the proposed project is in a non-attainment area for ozone and PM.

All projects under the jurisdiction of PCAPCD are required to comply with all applicable PCAPCD rules and regulations. Accordingly, the proposed project would be required to comply with all applicable PCAPCD rules

and regulations for construction, which would be noted on City-approved construction plans. The applicable rules and regulations for construction would include, but would not be limited to, the following:

- Rule 202 related to visible emissions;
- Rule 217 related to cutback and emulsified asphalt paving materials;
- Rule 218 related to architectural coatings;
- Rule 228 related to fugitive dust; and
- Rule 501 related to general permit requirements.

It should be noted that PCAPCD prohibits open burning of cleared site vegetation during construction activities through Rule 3. The project site is currently developed with buildings and parking areas; therefore, little vegetation clearing would be necessary during construction. However, when landscaping vegetation is cleared, open burning of such material would be prohibited by the City of Roseville's Municipal Code, Section 16.16.070. Thus, open burning of vegetation during construction would not occur.

According to the CalEEMod results, which inherently accounts for applicable PCAPCD rules and regulations, the proposed project would result in maximum construction criteria air pollutant emissions as shown in Table 2. Assumptions used for the modeling are presented above.

Table 2			
Maximum Unmitigated Construction-Related Emissions			
Pollutant	Project Emissions (lbs/day)	PCAPCD Significance Threshold (lbs/day)	Exceeds Threshold?
ROG	21.84	82.0	NO
NO _x	13.07	82.0	NO
PM ₁₀	1.57	82.0	NO
<i>Source: CalEEMod, May 2017</i>			

As shown in the table, the proposed project's maximum unmitigated construction-related emissions would be well below the applicable thresholds of significance. Therefore, construction activities associated with development of the proposed project would not substantially contribute to the PCAPCD's nonattainment status for ozone or PM. Accordingly, construction of the proposed project would not violate any AAQS or contribute to an existing or projected air quality violation or conflict with or obstruct implementation of the applicable air quality plan, and a less-than-significant impact would occur associated with construction.

Operational Emissions

Operational emissions of ROG, NO_x, and PM₁₀ would be generated by the proposed project from area, energy, and mobile sources. Area sources include architectural coating vapors, landscape maintenance equipment exhaust, and use of consumer products (e.g., deodorants, cleaning products, spray paint, etc.). Energy sources include electricity and natural gas consumption. Mobile-source emissions would result from the future employee and visitor vehicle trips.

As stated above, the proposed project would be required to comply with all applicable PCAPCD rules and regulations, including the following related to operations:

- Rule 205 related to nuisances;
- Rule 242 related to stationary internal combustion engines;
- Rule 231 or Rule 247 related to commercial water heaters and boilers; and
- Rule 502 related to review of new sources of emissions.

According to the CalEEMod results, the proposed project would result in maximum unmitigated operational emissions as shown in Table 3. Assumptions used for the modeling are presented above. As shown in the table, the proposed project's operational emissions would be well below the applicable thresholds of significance.

Table 3 Maximum Unmitigated Operational Emissions (lbs/day)			
Pollutant	Project Emissions (lbs/day)	PCAPCD Significance Threshold (lbs/day)	Exceeds Threshold?
ROG	0.62	55	NO
NO _x	2.32	55	NO
PM ₁₀	0.86	82	NO
Source: CalEEMod, May 2017			

Therefore, the proposed project would not substantially contribute to the PCAPCD's nonattainment status for ozone or PM during operations. Accordingly, operation of the proposed project would not violate any AAQS or contribute to an existing or projected air quality violation or conflict with or obstruct implementation of the applicable air quality plan, and a **less than significant** impact would occur associated with operations.

Conclusion

The proposed project's construction and operational emissions would not exceed the applicable thresholds of significance. In addition, the project would be required to comply with all applicable PCAPCD rules and regulations. Because the project would not exceed the thresholds of significance, the proposed project would not substantially contribute to the region's nonattainment status of ozone or PM. Therefore, implementation of the proposed project would not violate an air quality standard or contribute to an existing or projected air quality violation, and a **less than significant** impact related to air quality could occur.

c. A cumulative impact analysis considers a project over time in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed. Due to the dispersive nature and regional sourcing of air pollutants, air pollution is already largely a cumulative impact. The nonattainment status of regional pollutants, including ozone and PM, is a result of past and present development, and, thus, cumulative impacts related to these pollutants could be considered cumulatively significant.

To improve air quality and attain the health-based standards, reductions in emissions are necessary within nonattainment areas. The project is part of a pattern of urbanization occurring in the greater Sacramento ozone nonattainment area. The growth and combined vehicle usage, and business activity within the nonattainment area from the project, in combination with other past, present, and reasonably foreseeable projects within Roseville and surrounding areas, could either delay attainment of the standards or require the adoption of additional controls on existing and future air pollution sources to offset emission increases. Thus, the project

could cumulatively contribute to regional air quality health effects through emissions of criteria and mobile source air pollutants.

The PCAPCD recommends using the region's existing attainment plans as a basis for analysis of cumulative emissions. If a project would interfere with an adopted attainment plan, the project would inhibit the future attainment of AAQS, and thus result in a cumulative impact. As discussed above, the PCAPCD's recommended thresholds of significance for ozone precursors and PM₁₀ are based on attainment plans for the region. Thus, the PCAPCD concluded that if a project's ozone precursor and PM₁₀ emissions would be less than PCAPCD project-level thresholds, the project would not be expected to conflict with any relevant attainment plans, and would not result in a cumulatively considerable contribution to a significant cumulative impact. As a result, the PCACPD established operational phase cumulative-level emissions thresholds identical to the operational thresholds identified above, in Table 1.

As shown in Table 3 above, the proposed project would not result in emissions in exceedance of the applicable thresholds of significance for ozone precursors or PM₁₀. Accordingly, impacts related to the cumulative emissions of criteria pollutants for which PCAPCD is in non-attainment would be considered ***less than significant***.

d. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. The proposed project involves construction and operation of a 43,400 square foot temple. Nearby residents, children attending the nearby school, park visitors, and future visitors to the new temple would be considered sensitive receptors.

The major pollutant concentrations of concern are localized CO emissions and toxic air contaminant (TAC) emissions, which are addressed in further detail below.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the proposed project would increase traffic volumes on streets near the project site; therefore, the project would be expected to increase local CO concentrations. High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. The Statewide CO Protocol document identifies signalized intersections operating at Level of Service (LOS) E or F, or projects that would result in the worsening of signalized intersections to LOS E or F, as having the potential to result in localized CO concentrations in excess of the State or federal AAQS, as a result of large numbers of cars idling at stop lights.¹

Consistent with the State CO Protocol, the PCAPCD recommends further analysis for localized CO concentrations if the project would cause a signalized intersection to be degraded from an acceptable LOS (i.e., LOS A, B, C, or D) to an unacceptable LOS (i.e., LOS E or F), or substantially worsen an already existing unacceptable peak-hour LOS at an intersection, as determined by a traffic study. Substantially worsen is defined by PCAPCD as an increase in delay by 10 seconds or more.

To assess potential traffic impacts that could result from operation of the proposed project, Kimley Horn completed a *Traffic Study* for the proposed project. Kimley Horn concluded that the proposed project would not result in the degradation of any intersections from acceptable to unacceptable LOS. The proposed project would cause a 0.8 second increase the delay at the intersection of Main Street and Elm Street that currently operates

¹ California Department of Transportation. *Transportation Project-Level Carbon Monoxide Protocol*. December 1997.

at an acceptable LOS B. It was concluded that this intersection will continue to operate at LOS C. A maximum increase in delay of 0.8 seconds would not be considered to substantially worsen the intersection according to the PCAPCD. Thus, the proposed project would not result in the degradation of an intersection operating at an acceptable LOS to an unacceptable LOS.

Based on the above, the proposed project would not result in substantial concentrations of localized CO at any affected intersection. Therefore, the proposed project would not expose sensitive receptors to substantial concentrations of CO.

TAC Emissions

Another category of environmental concern is TACs. The *CARB's Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks from TACs are a function of both the concentration of emissions and the duration of exposure. Health-related risks associated with DPM in particular are primarily associated with long-term exposure and associated risk of contracting cancer.

As part of the *California Building Industry Association v. Bay Area Air Quality Management District* case, the California Supreme Court granted limited review to the question: Under what circumstances, if any, does CEQA require an analysis of how existing environmental conditions will impact future residents or users (receptors) of a proposed project? In the opinion published on December 17, 2015, the Supreme Court stated that even in those specific instances where evaluation of a project's potentially significant exacerbating effects on existing environmental hazards is appropriate, the evaluation of how future residents or users could be affected by the exacerbated conditions is still compelled by the project's impact on the environment, and not the environment's impact on the project.²

Considering the recent court rulings, while the proposed project would be considered a sensitive receptor, due to the presence of students, consideration of potential impacts related to existing sources of TACs on future students and visitors to the proposed medical multi-purpose building are outside of the scope of CEQA. However, potential sources of TACs related to operation or construction of the proposed project could have the potential to expose existing sensitive receptors to TACs. As discussed previously, the closest sensitive receptors to the project site are nearby residences, visitors to the nearby park, school children, and visitors to the Temple.

Construction-related activities could result in the generation of TACs, specifically diesel particulate matter (DPM), from on-road haul trucks and off-road equipment exhaust emissions. However, construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. All construction equipment and operation thereof would be regulated per the State's In-Use Off-Road Diesel Vehicle Regulation. Project construction would also be required to comply with all applicable PCAPCD rules and regulations, particularly associated with permitting of air pollutant sources. In addition, construction equipment would operate intermittently throughout the course of a day, would be restricted to daytime hours per Chapter 9.24 of the City's Municipal Code, and would likely only occur over portions of the project site at a time. According to PCAPCD, if construction emissions are below the applicable mass emissions thresholds of significance and grading would disturb less than 15 acres per day, construction DPM would not be generated such that associated health risks would result.³ As discussed above, and presented in Table 2, construction activity related to the

² Alameda County Superior Court. *California Building Industry Association v. Bay Area Air Quality Management District*. A153335 and A136212. Filed August 12, 2016.

³ Placer County Air Pollution Control District. Personal communication with Angel Green, Associate Planner. September 21, 2015.

proposed project would not result in mass emissions in excess of the thresholds of significance, nor would the project disturb more than 15 acres per day. In fact, construction of the proposed project would only disturb approximately three acres of land. As such, construction of the proposed project would not be expected to generate substantial DPM emissions that could result in health risks.

Considering the short-term nature of construction activities, the limited extent of ground disturbance, and the regulated and intermittent nature of the operation of construction equipment, the likelihood that any one sensitive receptor would be exposed to high concentrations of DPM for any extended period of time during construction would be low. For the aforementioned reasons, project construction would not be expected to expose sensitive receptors to substantial pollutant concentrations.

Conclusion

The proposed project is a minor expansion of the existing use, consisting of the construction of a new multi-purpose building and associated plaza area. Though a relatively small project, Lead Agency staff, nonetheless, used the California Emissions Estimator Model version 2016.3.1 (CalEEMod) to calculate the emissions which would result from the project during construction and operation. Rather than lowering the model default trip generation to match the traffic study, the more conservative model defaults for an elementary school building of 11,600 square feet were used. Even using this conservative analysis, the modeling results show the project emissions will be well below the thresholds of significance. Construction emissions are calculated to be 21.84 and 13.07 pounds per day of ROG and NOx, respectively, and operational emissions are 0.62 and 2.32 pounds per day of ROG and NOx, respectively.

Based on the above, the proposed project would not expose any sensitive receptors to substantial concentrations of any pollutants. Therefore, impacts related to exposing sensitive receptors to substantial pollutant concentrations would be ***less than significant***.

e. Odors are generally regarded as an annoyance rather than a health hazard. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact do not exist. Certain land uses such as wastewater treatment facilities, landfills, confined animal facilities, composting operations, food manufacturing plants, refineries, and chemical plants have the potential to generate considerable odors. The project site is located in a developed area and is not located in the vicinity of any existing or planned such land uses. Community Assembly land uses (churches, temples) are not typically associated with the creation of objectionable odors. As discussed earlier, the Sikh Temple already operates at the site within existing buildings. As such, the proposed project would not be anticipated to change the odor setting of project area by introducing new land uses. Thus, the project would not introduce any new sources or be exposed to any existing sources of potential objectionable odors.

Although less common, diesel fumes associated with substantial diesel-fueled equipment and heavy-duty trucks, such as from construction activities or operations of emergency generators, could be found to be objectionable. However, as addressed above, construction is temporary and construction equipment would operate intermittently throughout the course of a day, would be restricted to certain hours per the City's Municipal Code, and would likely only occur over portions of the improvement area at a time. All construction equipment and operation thereof would be regulated per the statewide In-Use Off-Road Diesel Vehicle Regulation and the CARB's Airborne Toxic Control Measure for Stationary Compression Ignition Engines. Construction equipment and the emergency generator would also be required to comply with applicable PCAPCD rules and regulations, particularly associated with permitting of air pollutant sources. The aforementioned regulations would help to minimize air pollutant emissions as well as any associated odors. Considering the short-term nature of construction activities and the regulated and intermittent nature of the operation of construction, construction of

the proposed project would not be expected to create objectionable odors affecting a substantial number of people.

PCAPCD Rule 205, Nuisance, addresses the exposure of “nuisance or annoyance” air contaminant discharges, including odors, and provides enforcement of odor control. Rule 205 is complaint-based, where if public complaints are sufficient to cause the odor source to be considered a public nuisance, then the PCAPCD is required to investigate the identified source, as well as determine and ensure a solution for the source of the complaint, which could include operational modifications to correct the nuisance condition. Thus, although not anticipated, if odor or air quality complaints are made upon development of the proposed project, the PCAPCD would be required (per PCAPCD Rule 205) to ensure that such complaints are addressed and mitigated, as necessary.

For the aforementioned reasons, construction and operation of the proposed project would not create objectionable odors affecting a substantial number of people, and impacts would be ***less than significant***.

IV. Biological Resources

The John Adams Academy site is currently developed with four building totaling approximately 99,750 square feet. The academy site includes buildings, paved playground and parking areas, drive aisles, landscaping (trees and shrubbery) and lighting.

There are two native oak trees within and adjacent to the project area. Both trees are Blue Oaks; identified by the project arborist at Tree #s 1484 (seven inch [7"] Diameter at Breast Height [DBH]) and 1485 (six inch [6"] DBH). Both trees are along the eastern property line. It will be necessary to remove tree #1484; the 7" Blue Oak tree.

As defined by the City of Roseville Zoning Ordinance (RMC Chapter 19.66 – Tree Preservation), native oak trees of greater than six (6") diameter at breast height are defined as protected. Requests to remove a protected native oak tree require approval of a Tree Permit. The Tree Preservation Ordinance also includes mitigation requirements for removal of protected tree. Mitigation can be provided through on-site plantings and/or payment of an in-lieu mitigation fee.

The project proposes removal of tree #1484 (see Exhibit B – Grading Plan & Attachment 4) – Arborist Report/Tree Inventory). As required, the applicant has submitted a request for a Tree Permit. Conditions of approval of the Tree Permit will include additional protective measures for the other oak tree to remain on site, and mitigation measures that will include on-site replacement plantings, payment of in-lieu mitigation fees, or a combination thereof.

No other permits are required for the subject site of the proposed multi-purpose building. No other natural resources exist on the subject property; therefore, the potential impacts to biological resources are considered to be ***less than significant***, as further explained below.

There is no adopted Habitat Conservation Plan or Natural Community Conservation Plan applicable to any property in the City, including the project site.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat				X

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X

Thresholds of Significance and Regulatory Setting:

There is no ironclad definition of significance as it relates to biological resources. Thus, the significance of impacts to biological resources is defined by the use of expert judgment supported by facts, and relies on the policies, codes, and regulations adopted by the City and by regulatory agencies that relate to biological resources (as cited and described in the Discussion of Checklist Answers section). Thresholds for assessing the significance of environmental impacts are based on the CEQA Guidelines checklist items a–f, above. Consistent with CEQA Guidelines Section 15065, a project may have a significant effect on the environment if:

The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; [or] substantially reduce the number or restrict the range of an endangered, rare or threatened species . . .

Various agencies regulate impacts to the habitats and animals addressed by the CEQA Guidelines checklist. These include the United States Fish and Wildlife Service, National Oceanic and Atmospheric Administration–Fisheries, United States Army Corps of Engineers, Central Valley Regional Water Quality Control Board, and California Department of Fish and Wildlife. The primary regulations affecting biological resources are described in the sections below.

Checklist item a addresses impacts to special status species. A “special status” species is one which has been identified as having relative scarcity and/or declining populations. Special status species include those formally listed as threatened or endangered, those proposed for formal listing, candidates for federal listing, and those classified as species of special concern. Also included are those species considered to be “fully protected” by the California Department of Fish and Wildlife (California Fish and Wildlife), those granted “special animal” status for tracking and monitoring purposes, and those plant species considered to be rare, threatened, or endangered in California by the California Native Plant Society (CNPS). The primary regulatory protections for special status species are within the Federal Endangered Species Act, California Endangered Species Act, California Fish and Game Code, and the Federal Migratory Bird Treaty Act.

Checklist item b addresses all “sensitive natural communities” that may be affected by local, state, or federal regulations/policies while checklist item c focuses specifically on one type of such a community: federally-protected wetlands. Focusing first on wetlands, there are two questions to be posed in examining wet habitats: the first is whether the wetted area meets the technical definition of a wetland, making it subject to checklist item b, and the second is whether the wetland is subject to federal jurisdiction, making it subject to checklist item c. The 1987 Army Corps Wetlands Delineation Manual is used to determine whether an area meets the technical criteria for a wetland. A delineation verification by the Army Corps verifies the size and condition of the wetlands and other waters in question, and determines the extent of government jurisdiction as it relates to Section 404 of the Federal Clean Water Act and Section 401 of the State Clean Water Act.

The Clean Water Act protects all “navigable waters”, which are defined as traditional navigable waters that are or were used for commerce, or may be used for interstate commerce; tributaries of covered waters; and wetlands adjacent to covered waters, including tributaries. Non-navigable waters are called isolated wetlands, and are not subject to either the Federal or State Clean Water Act. Thus, isolated wetlands are not subject to federal wetland protection regulations. However, in addition to the Clean Water Act, the State also has jurisdiction over impacts to surface waters through the Porter-Cologne Water Quality Control Act (Porter-Cologne), which does not require that waters be “navigable”. For this reason, isolated wetlands are regulated by the State of California pursuant to Porter-Cologne. The City of Roseville General Plan also provides protection for wetlands, including isolated wetlands, pursuant to the General Plan Open Space and Conservation Element. Federal, State and City regulations/policies all seek to achieve no net loss of wetland acreage, values, or function.

Aside from wetlands, checklist item b also addresses other “sensitive natural communities,” which includes any habitats protected by local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. The City of Roseville General Plan Open Space and Conservation Element includes policies for the protection of riparian areas (streamside habitat) and floodplain areas; these are Vegetation and Wildlife section Policies 2 and 3. Policy 4 also directs preservation of additional area around stream corridors and floodplain if there is sensitive woodland, grassland, or other habitat which could be made part of a contiguous open space area. Other than wetlands, which were already discussed, US Fish and Wildlife and California Department of Fish and Wildlife habitat protections generally result from species protections, and are thus addressed via checklist item a.

For checklist item d, there are no regulations specific to the protection of migratory corridors. This item is addressed by an analysis of the habitats present in the vicinity and analyzing the probable effects on access to those habitats which will result from a project.

The City of Roseville Tree Preservation ordinance (RMC Ch.19.66) requires protection of native oak trees, and compensation for oak tree removal. The Findings of the Implementing Procedures indicate that compliance with the City of Roseville Tree Preservation ordinance (RMC Ch.19.66) will prevent significant impacts related to loss of native oak trees, referenced by item e, above.

Regarding checklist item f, there are no adopted Habitat Conservation Plans within the City of Roseville.

Discussion of Checklist Answers:

a) The John Adams Academy site is currently developed with four buildings and associated parking, landscaping and lighting. The the building site for the proposed multi-purpose building is currently a paved parking area adjacent to a 10-lane interstate highway. This area is isolated from other habitat and is only approximately 0.92 acres in size. While the property could provide refuge for common, small burrowing mammals or reptile species found in urban environments, it is too small and isolated to provide habitat for larger animals or predators. Birds of prey could forage incidentally on the site; however, the site is too isolated and small to provide any substantial or vital habitat. Therefore, the project will not cause any substantial adverse impacts to a special status species.

b) There were no sensitive natural communities observed or identified on the site, and thus the project will have no impact with regard to this criterion.

c) No potential wetlands have been identified or observed on the site, nor has the site been known historically to support wetlands. Since the site does not contain wetlands, there is no impact with regard to this criterion.

d) The City includes an interconnected network of open space corridors and preserves located throughout the City to ensure that the movement of wildlife is not substantially impeded as the City develops. The development of the project site will not negatively impact these existing and planned open space corridors, nor is the project site located in an area that has been designated by the City, United States Fish and Wildlife, or California Department of Fish and Wildlife as vital or important for the movement of wildlife or the use of native wildlife nursery sites.

e) The City has a Tree Preservation Ordinance for the protection of native oak trees. As defined by the City of Roseville Zoning Ordinance (RMC Chapter 19.66 – Tree Preservation), native oak trees of greater than six (6”) diameter at breast height are defined as protected. Requests to remove a protected native oak tree require approval of a Tree Permit. The Tree Preservation Ordinance also includes mitigation requirements for removal of protected tree. Mitigation can be provided through on-site plantings and/or payment of an in-lieu mitigation fee.

As required, the applicant has submitted a request for a Tree Permit for removal of the one native oak tree on site. Conditions of approval of the Tree Permit will include additional protective measures and mitigation measures that will include on-site replacement plantings, payment of in-lieu mitigation fees, or a combination thereof. Therefore, project-specific impacts are ***less than significant***.

f) There are no Habitat Conservation Plans; Natural Community Conservation Plans; or other approved local, regional, or state habitat conservation plans that apply to the project site.

V. Cultural Resources

As described within the Open Space and Conservation Element of the City of Roseville General Plan, the Roseville region was within the territory of the Nisenan (also Southern Maidu or Valley Maidu). Two large permanent Nisenan habitation sites have been identified and protected within the City's open space (in Maidu Park). Numerous smaller cultural resources, such as midden deposits and bedrock mortars, have also been recorded in the City. The gold rush which began in 1848 marked another settlement period, and evidence of Roseville's ranching and mining past are still found today. Historic features include rock walls, ditches, low terraces, and other remnants of settlement and activity. A majority of documented sites within the City are located in areas designated for open space uses.

Also, pursuant to Assembly Bill 52 (AB 52) the current project was routed to all tribes which requested such notice. The United Auburn Indian Community (UAIC) responded to the AB 52 notification letter. As Lead Agency, the City of Roseville has provided background information regarding the project site and is in continuing dialogue with the tribe, per AB 52 protocol.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of an historic resource as defined in Section 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?			X	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Thresholds of Significance and Regulatory Setting:

The significance of impacts to cultural resources is based directly on the CEQA Guidelines checklist items a–e listed above. The Archaeological, Historic, and Cultural Resources section of the City of Roseville General Plan also directs the proper evaluation of and, when feasible, protection of significant resources (Policies 1 and 2). There are also various federal and State regulations regarding the treatment and protection of cultural resources, including the National Historic Preservation Act and the Antiquities Act (which regulate items of significance in history), Section 7050.5 of the California Health and Safety Code, Section 5097.9 of the California Public Resources Code (which regulates the treatment of human remains) and Section 21073 et seq. of the California Public Resources Code (regarding Tribal Cultural Resources). The CEQA Guidelines also contains specific sections, other than the checklist items, related to the treatment of effects on historic resources.

The CEQA Guidelines contains specific sections, other than the checklist items, related to the treatment of effects on historic and archeological resources. Pursuant to the CEQA Guidelines, if it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2 (a), (b), and (c)). A *historical resource* is a resource listed, or determined to be eligible for listing, in the California Register of Historical Resources (CRHR) (Section 21084.1); a resource included in a local register of historical resources (Section 15064.5(a)(2)); or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (Section 15064.5 (a)(3)). Public Resources Code Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR.

Discussion of Checklist Answers:

a-b and d) The John Adams Academy project site is located within a fully developed 15.7 acre complex of professional office buildings developed in the early to mid-1980s. The Academy is developed with four classroom buildings, including a loop road that circumnavigates three classroom buildings, and provides access to the fourth building and adjacent commercial properties. The project site is surrounded with urban development, including the Interstate 80 Freeway immediately adjacent to the east. John Adams Academy is surrounded by professional office buildings; all part of the Sierragate Plaza office complex. The entirety of the Sierragate Plaza office complex is developed with paved parking, driveways and parking lot drive aisles, as well as associated landscaping and lighting.

No cultural resources are known to exist on the project site. While it is anticipated that there will be no impacts to cultural resources, the City's General Plan policies state that, in the event of a discovery of buried archeological or historic deposits, or human remains, project activity in the vicinity to be halted until a qualified archeologist can assess the resources and provide management. Impacts to potential cultural resources are therefore considered to be ***less than significant***.

c) No paleontological resources are known to exist on the project site per the City's General Plan EIR; however, standard General Plan policy measures apply which are designed to reduce impacts to such resources, should any be found on-site. The measures require an immediate cessation of work, and contact with a qualified archeologist to address the resource before work can resume. The project will not result in any new impacts beyond those already discussed and disclosed in the General Plan EIR; therefore, project-specific impacts are ***less than significant***.

VI. Geology and Soils

As described in the Safety Element of the City of Roseville General Plan, there are three inactive faults (Volcano Hill, Linda Creek, and an unnamed fault) in the vicinity, but there are no known active seismic faults within Placer

County. The last seismic event recorded in the South Placer area occurred in 1908, and is estimated to have been at least a 4.0 on the Richter Scale. Due to the geographic location and soil characteristics within the City, the General Plan indicates that soil liquefaction, landslides, and subsidence are not a significant risk in the area.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
i) Ruptures of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
c) Be located in a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to geology and soils is based directly on the CEQA Guidelines checklist items a–e listed above. Regulations applicable to this topic include the Alquist-Priolo Act, which addresses earthquake safety in building permits, and the Seismic Hazards Mapping Act, which requires the state to gather and publish data on the location and risk of seismic faults.

The Findings of the Implementing Procedures indicate that compliance with the Flood Damage Prevention Ordinance (RMC Ch.9.80) and Design/Construction Standards (Resolution 07-107) will prevent significant impacts related to checklist item b. The Ordinance and standards include permit requirements for construction and development in erosion-prone areas and ensure that grading activities will not result in significant soil erosion or loss of topsoil. The use of septic tanks or alternative waste systems is not permitted in the City of Roseville, and therefore no analysis of criterion e is necessary.

Discussion of Checklist Answers:

a) The project will not expose people or structures to potential substantial adverse effects involving seismic shaking, ground failure or landslides.

i–iii) According to United States Geological Service mapping and literature, active faults are largely considered to be those which have had movement within the last 10,000 years (within the Holocene or Historic time periods)⁴ and there are no major active faults in Placer County. The California Geological Survey has prepared a map of the state which shows the earthquake shaking potential of areas throughout California based primarily on an area's distance from known active faults. The map shows that the City lies in a relatively low-intensity ground-shaking zone. Commercial, institutional, and residential buildings as well as all related infrastructure are required, in conformance with Chapter 16, *Structural Design Requirements*, Division IV, *Earthquake Design* of the California Building Code, to lessen the exposure to potentially damaging vibrations through seismic-resistant design. In compliance with the Code, all structures in the Project area would be built to withstand ground shaking from possible earthquakes in the region; impacts are **less than significant**.

iv) Landslides typically occur where soils on steep slopes become saturated or where natural or manmade conditions have taken away supporting structures and vegetation. The project site is relatively flat and existing and proposed slopes of the project site are not steep enough to present a hazard during

⁴ United States Geological Survey, <http://earthquake.usgs.gov/learn/glossary/?term=active%20fault>, Accessed January 2016

development or upon completion of the project. In addition, measures would be incorporated during construction to shore minor slopes and prevent potential earth movement. Therefore, impacts associated with landslides are **less than significant**.

b) Grading activities will result in the disruption, displacement, compaction and over-covering of soils associated with site preparation (grading and trenching for utilities). Grading activities for the project will be minor and limited to the project site. Grading activities require a grading permit from the Engineering Division. The grading permit is reviewed for compliance with the City's Improvement Standards, including the provision of proper drainage, appropriate dust control, and erosion control measures. Grading and erosion control measures will be incorporated into the required grading plans and improvement plans. Therefore, the impacts associated with disruption, displacement, and compaction of soils associated with the project are **less than significant**.

c, d) A review of the Natural Resources Conservation Service Soil Survey for Placer County, accessed via the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>), indicates that the soils on the site are Xerorthents, cut & fill areas (2% - 50% slopes), and Exchequer, very stony loam (2% - 15% slopes) which are not listed as geologically unstable or sensitive. Additionally, the Roseville General Plan finds such impacts to be **less than significant** since new buildings and structures are required to comply with all applicable building codes. A soil report is required with the submittal of the improvement plans. The City of Roseville Building Department will review construction plans before a building permit is issued and the Engineering Division will review and approve all rough grading plans to ensure that all grading and structures would withstand shrink-swell potentials and earthquake activity in this area.

e) The City's General Plan Policy requires that new development connect to the City's sanitary sewer system. The City's Environmental Utilities Department has reviewed the project and determined that City's sanitary sewer system can accommodate the project. No septic tanks will be permitted as part of the project. Therefore, no impact to soils relative to supporting use of septic tanks would occur.

VII. Greenhouse Gases

Greenhouse gases trap heat in the earth's atmosphere. The principal greenhouse gases (GHGs) that enter the atmosphere because of human activities are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases. As explained by the United States Environmental Protection Agency⁵, global average temperature has increased by more than 1.5 degrees Fahrenheit since the late 1800s, and most of the warming of the past half century has been caused by human emissions. The City has taken proactive steps to reduce greenhouse gas emissions, which include the introduction of General Plan policies to reduce emissions, changes to City operations, and climate action initiatives. These are all described in a fact sheet available at http://www.roseville.ca.us/gov/development_services/_planning/general_plan_n_development_guidelines.as Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	

⁵ <http://www3.epa.gov/climatechange/science/overview.html>, Accessed January 2016

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Thresholds of Significance and Regulatory Setting:

In Assembly Bill 32 (the California Global Warming Solutions Act), signed by Governor Schwarzenegger of California in September 2006, the legislature found that climate change resulting from global warming was a threat to California, and directed that “the State Air Resources Board design emissions reduction measures to meet the statewide emissions limits for greenhouse gases . . .”. The target established in AB 32 was to reduce emissions to 1990 levels by the year 2020. CARB subsequently prepared the *Climate Change Scoping Plan* (Scoping Plan) for California, which was approved in 2008. The Scoping Plan provides the outline for actions to reduce California’s GHG emissions. CARB’s updated August 2011 Scoping Plan calculated a reduction needed of 21.7% from future “Business As Usual” (BAU) conditions in the year 2020. The current Scoping Plan (adopted May 2014) indicates that statewide emissions of GHG in 1990 amounted to 431 million metric tons, and that the 2020 “Business As Usual” (BAU) scenario is estimated as 509⁶ million metric tons, which would require a reduction of 15.3% from 2020 BAU. In addition to this, Senate Bill 32 was signed by the Governor on September 8, 2016, to establish a reduction target of 40 percent below 1990 levels by 2030. The Air Resources Board is currently updating the Scoping Plan to reflect this target.

The Placer County Air Pollution Control District (PCAPCD) recommends that thresholds of significance for GHG be related to AB 32 reduction goals, and has adopted thresholds of significance which take into account the 2030 reduction target. The thresholds include a de minimis and a bright-line maximum threshold. Any project emitting less than 1,100 metric tons of carbon dioxide equivalents per year (MT CO₂e/yr) during construction or operation results in **less than significant** impacts. The PCAPCD considers any project with emissions greater than the bright-line cap of 10,000 MT CO₂e/yr to have significant impacts. For projects exceeding the de minimis threshold, but below the bright-line threshold, comparison to the appropriate efficiency threshold is recommended. The significance thresholds are shown in Table 1 below.

Table 1: GHG Significance Thresholds

Bright-line Threshold 10,000 MT CO ₂ e/yr			
Residential Efficiency (MT CO ₂ e/capita ¹)		Non-Residential Efficiency (MT CO ₂ e/ksf ²)	
Urban	Rural	Urban	Rural
4.5	5.5	26.5	27.3
De Minimis Threshold 1,100 MT CO ₂ e/yr			
1. Per Capita = per person			
2. Per ksf = per 1,000 square feet of building			

Discussion of Checklist Answers:

a,b) Emissions of greenhouse gases (GHGs) contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change

⁶ Includes Pavely and Renewables Portfolio Standard reduction

can be attributed to every nation, region, and city, and virtually every individual on earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Recognizing the global scale of climate change, California has enacted several pieces of legislations in an attempt to address GHG emissions. Specifically, Assembly Bill (AB) 32, and more recently Senate Bill (SB) 32, have established statewide GHG emissions reduction targets. Accordingly, the CARB has prepared the Climate Change Scoping Plan for California (Scoping Plan), which was approved in 2008 and updated in 2014. The Scoping Plan provides the outline for actions to reduce California's GHG emissions and achieve the emissions reductions targets required by AB 32. In concert with statewide efforts to reduce GHG emissions, air districts, counties, and local jurisdictions throughout the State have implemented their own policies and plans to achieve emissions reductions in line with the Scoping Plan and emissions reductions targets, including AB 32 and SB 32.

As a means of achieving the regional GHG emissions reductions goals required by AB 32, on October 13, 2016, the PCAPCD adopted GHG emissions thresholds to help the district attain the GHG reduction goals established by AB 32 and SB 32. The common unit of measurement for GHG, used by PCAPCD, is expressed in terms of annual metric tons of CO₂ equivalents (MTCO₂e/yr). The updated thresholds begin with a screening emission level of 1,100 MT CO₂e/yr. Any project below the 1,100 MT CO₂e/yr threshold is judged by the PCAPCD as having a less-than-significant impact on GHG emissions within the District, and thus would not conflict with any state or regional GHG emissions reduction goals. Projects that would result in emissions above the 1,100 MT CO₂e/yr threshold would not necessarily result in substantial impacts, if certain efficiency thresholds are met. The efficiency thresholds, which are calculated on a per capita or square foot basis, are presented in Table 4.

Table 4			
PCAPCD Operational Thresholds of Significance			
Efficiency Thresholds			
Residential (MT CO₂e/capita)		Non-Residential (MT CO₂e/1,000 sf)	
Urban	Rural	Urban	Rural
4.5	5.5	26.5	27.3
<i>Source: Placer County Air Pollution Control District. Placer County Air Pollution Control District Policy. Review of Land Use Projects Under CEQA. October 13, 2016.</i>			

Projects that fall below the 1,100 MT CO₂e/yr threshold or meet the efficiency thresholds are considered to be in keeping with statewide GHG emissions reduction targets, which would ensure that the proposed project would not inhibit the State's achievement of GHG emissions reductions. Thus, projects with emissions below the 1,100 MT CO₂e/yr threshold or below the efficiency thresholds presented in **Table 4**, are considered to result in less-than-significant impacts in regards to GHG emissions within the District and thus would not conflict with any state or regional GHG emissions reduction goals. Finally, the PCAPCD has also established a Bright Line Cap, which shall be the maximum limit for any proposed project. The Bright Line Cap is 10,000 MT CO₂e/yr for all types of projects.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO₂) and, to a lesser extent, other GHG pollutants, such as methane (CH₄) and nitrous oxide (N₂O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. Buildout of the proposed project would contribute to increases of GHG emissions that are associated with global climate change during construction and operations.

Buildout of the proposed project would contribute to increases of GHG emissions that are associated with global climate change during construction and operations. The proposed project's short-term construction-related and long-term operational GHG emissions are presented below.

Short-Term Construction GHG Emissions

Construction-related GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change, as global climate change is inherently a cumulative effect that occurs over a long period of time and is quantified on a yearly basis. However, the proposed project's construction GHG emissions have been estimated and compared to the PCAPCD's operational thresholds of significance for informational purposes. The construction modeling assumptions are described in the Air Quality section above.

The proposed project's total unmitigated construction-related GHG emissions would be 63 metric tons, which is below the applicable 1,100 MT CO₂e/yr threshold. Accordingly, the proposed project would not be expected to have a significant impact related to GHG emissions during construction.

Long-Term Operational GHG Emissions

It should be noted that modeling for operation of the proposed project was adjusted to reflect the CO₂ intensity factor for energy provided by Roseville Electric, based on Roseville Electric's progress towards meeting the State's Renewable Energy Portfolio Standards. All other operational modeling assumptions are described in the Air Quality section above.

CalEEMod results for greenhouse gas emissions indicate annual emissions of 180 MT of CO₂e, which is substantially below the de minimus threshold of 1,000 MT of CO₂e.

Based on the above, the proposed project would not be considered to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Therefore, impacts related to GHG emissions and global climate change would not be cumulatively considerable and would be considered ***less than significant***.

VIII. Hazards and Hazardous Materials

There are no hazardous cleanup sites of record within 1,000 feet of the site according to either the Department of Toxic Substances Control Envirostor database (<http://www.envirostor.dtsc.ca.gov/public/>) or the State Water Resources Control Board Geotracker database (<http://geotracker.waterboards.ca.gov/>). The nearest properties where hazardous materials are stored or handled includes the underground fuel storage tank at the gas station at the intersection of Lead Hill Boulevard and North Sunrise Avenue, approximately 850 feet southeast of the project site. No previous environmental review of the project site has found evidence of contamination or hazardous conditions.

The project is not located within an airport land use plan area, no airports are located within two miles of the project site, and the project site is not located within the vicinity of a private airstrip; therefore, no impact would occur.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing in the project area?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to hazardous materials is based directly on the CEQA Guidelines checklist items a–h listed above. A material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state or local regulatory agency, or if it has characteristics defined as hazardous by such an agency. The determination of significance based on the above criteria depends on the probable frequency and severity of consequences to people who might be exposed to the health hazard, and the degree to which Project design or existing regulations would reduce the frequency of or severity of exposure. As an example, products commonly used for household cleaning are classified as hazardous when transported in large quantities, but one would not conclude that the presence of small quantities of household cleaners at a home would pose a risk to a school located within ¼-mile.

Many federal and State agencies regulate hazards and hazardous substances, including the United States Environmental Protection Agency (US EPA), California Department of Toxic Substances Control (DTSC), Central Valley Regional Water Quality Control Board (Regional Water Board), and the California Occupational Safety and Health Administration (CalOSHA). The state has been granted primacy (primary responsibility for oversight) by the US EPA to administer and enforce hazardous waste management programs. State regulations also have detailed planning and management requirements to ensure that hazardous materials are handled, stored, and disposed of properly to reduce human health risks. California regulations pertaining to hazardous waste management are published in the California Code of Regulations (see 8 CCR, 22 CCR, and 23 CCR).

The project is not within an airport land use plan, within two miles of a public or public use airport and there are no private airstrips in the vicinity of the project site.

Discussion of Checklist Answers:

The City's Mitigating Policies and Standards that have been adopted as they relate to hazards and hazardous materials (i.e. Hazardous Materials Management Program (HMMP), Site-specific Business Plan with the City's Fire Department, Risk Management and Prevention Program (RMPP)) will substantially mitigate any potential impacts.

a-b) Standard construction activities would require the use of hazardous materials such as fuels, oils, lubricants, glues, paints and paint thinners, soaps, bleach, and solvents. These are common household and commercial materials routinely used by both businesses and members of the public. The materials only pose a hazard if they are improperly used, stored, or transported either through upset conditions (e.g. a vehicle

accident) or mishandling. Regulations pertaining to the transport of materials are codified in 49 Code of Federal Regulations 171–180, and transport regulations are enforced and monitored by the California Department of Transportation and by the California Highway Patrol. Specifications for storage on a construction site are contained in various regulations and codes, including the California Code of Regulations, the Uniform Fire Code, and the California Health and Safety Code. These same codes require that all hazardous materials be used and stored in the manner specified on the material packaging. Existing regulations and programs are sufficient to ensure that potential impacts as a result of the use or storage of hazardous materials are reduced to less than significant levels.

c) See response to Items (a) and (b) above. The project is located on the site of John Adams Academy, a charter school campus with students attending kindergarten through twelfth grades. The potential does exist for elementary and secondary school uses to store and/or use toxic/flammable materials (i.e. solvents for cleaning and maintenance, etc.). The California Health and Safety Code, and local City Ordinances regulate the handling, storage and transportation of hazardous and toxic materials. The California Health and Safety Codes require a Risk Management and Prevention Program (RMPP) for those uses that handle specified quantities of toxic and/or hazardous materials. Also, businesses which handle toxic or hazardous materials are required to complete a Hazardous Materials Management Program (HMMP). Furthermore, all business owners must file a site-specific business plan with the City's Fire Department before a new building is occupied. All plans would specify what to do in the event of an accident, and which transportation routes would be used. Because the community assembly use that is proposed would be required to comply with these codes, ordinances and programs, staff has determined that the impact to the environment will be **less than significant**.

d) The project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5⁷; therefore, no impact will occur.

e-f) The project site is not located near or within an airport land use plan or private airstrip.

g) This project is located within an area currently receiving City emergency services and development of the site has been anticipated and incorporated into emergency response plans. Therefore, the project will cause a **less than significant** impact to the City's Emergency Response or Management Plans. Furthermore, the project will be required to comply with all local, State and federal requirements for the handling of hazardous materials. These will require the following programs:

- A Risk Management and Prevention Program (RMPP) is required of uses that handle toxic and/or hazardous materials in quantities regulated by the California Health and Safety Code and/or the City.
- Businesses that handle toxic or hazardous materials are required to complete a Hazardous Materials Management Program (HMMP) pursuant to local, State, or federal requirements.

h) The California Department of Forestry and Fire Protection (CAL FIRE) is the state agency responsible for wildland fire protection and management. As part of that task, CAL FIRE maintains maps designating Wildland Fire Hazard Severity zones. The City is not located within a Very High Fire Hazard Severity Zone, and is not in a CAL FIRE responsibility area; fire suppression is entirely within local responsibility. The project site is in an urban area, on a fully-developed public charter school property, and therefore would not expose people to any risk from wildland fire. There would be no impact with regard to this criterion.

IX. Hydrology and Water Quality

As described in the Open Space and Conservation Element of the City of Roseville General Plan, the City is located within the Pleasant Grove Creek Basin and the Dry Creek Basin. Pleasant Grove Creek and its

⁷ <http://www.calepa.ca.gov/SiteCleanup/CorteseList/SectionA.htm>

tributaries drain most of the western and central areas of the City and Dry Creek and its tributaries drain the remainder of the City. Most major stream areas in the City are located within designated open space.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?			X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site?			X	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted water?			X	
f) Otherwise substantially degrade water quality?			X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiches, tsunami, or mudflow?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to hydrology and water quality is based directly on the CEQA Guidelines checklist items a–j listed above. For checklist item a, the Findings of the Implementing Procedures indicate that compliance with the City of Roseville Design/Construction Standards (Resolution 07-107), Urban Stormwater Quality Management and Discharge Control Ordinance (RMC Ch. 14.20), and Stormwater Quality Design Manual (Resolution 16-152) will prevent significant impacts. The standards require preparation of an erosion and sediment control plan for construction activities and includes designs to control pollutants within post-construction urban water runoff. Likewise, it is indicated that the Drainage Fees for the Dry Creek and Pleasant Grove Watersheds (RMC Ch.4.48) and City of Roseville Design/Construction Standards (Resolution 16-75) will prevent significant impacts related to item e. The ordinance and standards require the collection of drainage fees to fund improvements that mitigate potential flooding impacts, and require the design of a water drainage system that will adequately convey anticipated stormwater flows. Finally, it is indicated that compliance with the Flood Damage Prevention Ordinance (RMC Ch. 9.80) will prevent significant impacts related to items g, h, and i. The Ordinance includes standard requirements for all new construction, including regulation of development with the potential to impede or redirect flood flows, and prohibits development within flood hazard areas. Impacts

from tsunamis and seiches were screened out of the analysis (item j) given the fact that the project is not located near a water body or other feature that would pose a risk of such an event.

Discussion of Checklist Answers:

a,c,d,e,f) The project will involve the disturbance of on-site soils and the construction of impervious surfaces, such as asphalt paving and buildings. Disturbing the soil can allow sediment to be mobilized by rain or wind, and cause displacement into waterways. To address this and other issues, the developer is required to receive approval of a grading permit and/or improvement plans prior to the start of construction. The permit or plans are required to incorporate mitigation measures for dust and erosion control. In addition, the City has a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit issued by the Central Valley Regional Water Quality Control Board which requires the City to reduce pollutants in stormwater to the maximum extent practicable. The City does this, in part, by means of the City's 2016 Design/Construction Standards, which require preparation and implementation of a Stormwater Pollution Prevention Plan. All permanent stormwater quality control measures must be designed to comply with the City's Manual for Stormwater Quality Control Standards for New Development, the City's 2016 Design/Construction Standards, Urban Stormwater Quality Management and Discharge Control Ordinance, and Stormwater Quality Design Manual. For these reasons, impacts related to water quality are **less than significant**.

b) The project does not involve the installation of groundwater wells. The City maintains wells to supplement surface water supplies during multiple dry years, but the effect of groundwater extraction on the aquifer was addressed in the Water Supply Assessment of the Amoruso Ranch Specific Plan EIR, which included a Citywide water analysis. The proposed project is consistent with the General Plan land use designation, and is thus consistent with the citywide Water Supply Assessment. Project impacts related to groundwater extraction are **less than significant**.

g, h) According to the City's floodplain data, the project is not located within the City's Regulatory Floodplain. As a result, implementation of the proposed project would not place housing or any structures within an area at risk of flood flows. There would be no impact with regard to these criteria.

i) Folsom Dam, which is located approximately 10 miles southeast of the project site, is the closest dam to the project site. While portions of the City could be subject to flooding in the event of failure or damage of Folsom Dam, the project site is not located in an area that would be subject to inundation due to dam failure. Therefore, there would be no impact.

j) Because the proposed project is located within an area of flat topography and is furthermore not within a floodplain there is no risk of debris flow or mudflow. There would be no impact with regard to this criterion.

X. Land Use and Planning

The project site is located within the City's Infill area with a Zoning and General Plan land use designation of Business Professional (BP). The proposed project is consistent with the zoning designation. The project entitlements include a Design Review Permit and Tree Permit. With approval of these entitlements, the project is considered to be consistent with the zoning and land use designations.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?				X

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to land use is based directly on the CEQA Guidelines checklist items a–c listed above. Consistency with applicable City General Plan policies, Improvement Standards, and design standards is already required and part of the City’s processing of permits and plans, so these requirements do not appear as mitigation measures.

Discussion of Checklist Answers:

- a) The project area has been master planned for development, including adequate roads, pedestrian paths, and bicycle paths to provide connections within the community. The project will not physically divide an established community.
- b) The project is consistent with, and does not conflict with the City’s General Plan or Zoning Ordinance.
- c) There are no Habitat Conservation Plans or Natural Community Conservation Plans covering the project site; therefore, no impact would occur.

XI. Mineral Resources

The Surface Mining and Reclamation Act (SMARA) of 1975 requires the State Geologist to classify land into Mineral Resource Zones (MRZ’s) based on the known or inferred mineral resource potential of that land. The California Division of Mines and Geology (CDMG) was historically responsible for the classification and designation of areas containing—or potentially containing—significant mineral resources, though that responsibility now lies with the California Geological Survey (CGS). CDMG published Open File Report 95-10, which provides the mineral classification map for Placer County. A detailed evaluation of mineral resources has not been conducted within the City limits, but MRZ’s have been identified. There are four broad MRZ categories (MRZ-1 through MRZ-4), and only MRZ-2 represents an area of known significant mineral resources. The City of Roseville General Plan EIR included Exhibit 4.1-3, depicting the location of MRZ’s in the City limits. There is only one small MRZ-2 designation area, located at the far eastern edge of the City.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to mineral resources is based directly on the CEQA Guidelines checklist items a and b listed above.

Discussion of Checklist Answers:

a–b) The project site is not in the area of the City known to include any mineral resources that would be of local, regional, or statewide importance; therefore, the project has no impacts on mineral resources.

XII. Noise

The project site and adjacent properties are fully developed, or under construction. Existing development on site and within the immediate vicinity includes major roadways (10-lane Interstate freeway, four-lane arterial and four-lane collector), existing commercial buildings and centers, and surface parking lots.

Would the project result in:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Exposure of persons to or generation of excessive ground borne vibration of ground borne noise levels?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

Thresholds of Significance and Regulatory Setting:

Standards for transportation noise and non-transportation noise affecting existing or proposed land uses are established within the City of Roseville General Plan Noise Element Table IX-1 and IX-3, and these standards are used as the thresholds to determine the significance of impacts related to items a and c. The significance of other noise impacts is based directly on the CEQA Guidelines checklist items b, and d–f listed above. The Findings of the Implementing Procedures indicate that compliance with the City Noise Regulation (RMC Ch. 9.24) will prevent significant non-transportation noise as it relates to items a, b, and c. The Ordinance establishes noise exposure standards that protect noise-sensitive receptors from a variety of noise sources, including non-transportation/fixed noise, amplified sound, industrial noise, and events on public property. The project is not within an airport land use plan, within two miles of a public or public use airport and there are also no private airstrips in the vicinity of the project area. Therefore, items e and f have been ruled out from further analysis.

Discussion of Checklist Answers:

a,c) The principally permitted use on the site, (elementary and secondary school) typically generates low to moderate noise levels through the use of mechanical equipment such as roof top air conditioning units, and children playing outdoors. Normal operation of public and private schools typically consisting of classes and other school-sponsored activities is exempt from the provisions of the City's Noise Ordinance, per Roseville Municipal Code (RMC) Chapter 9.24.030. The site is adjacent to commercial buildings, major roadways, and an Interstate Freeway. Consistent with the City's Community Design Guidelines the mechanical equipment will be required to be screened.

b,d) Surrounding uses may experience short-term increases in groundborne vibration, groundborne noise, and airborne noise levels during construction. However, these impacts are temporary in nature and are not anticipated to result in any unusual or excessive ground-borne vibration or noise levels. When conducted during daytime hours, construction activities are exempt from Noise Ordinance standards, but the standards do apply to construction occurring during nighttime hours. While the noise generated may be a minor nuisance, the City

Noise Regulation standards are designed to ensure that impacts are not unduly intrusive. Because the project would comply with the provisions of the City's General Plan and Noise Ordinance, impacts related to noise are considered ***less than significant***.

e, f) The proposed project site is not located within an airport land use plan area nor is it located within two miles of an airport. Therefore, no impact would occur relative to exposing people to excessive airport related noise levels.

XIII. Population and Housing

The project site is located within the City's Infill area and has a land use designation of Business Professional. The City of Roseville General Plan Table II-4 identifies the total number of residential units and population anticipated as a result of buildout of the City, and the Specific Plan likewise includes unit allocations and population projections for the Plan Area. Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to population and housing is based directly on the CEQA Guidelines checklist items a–c listed above.

Discussion of Checklist Answers:

a) The CEQA Guidelines identify several ways in which a project could have growth-inducing impacts (Public Resources Code Section 15126.2), either directly or indirectly. Growth-inducement may be the result of fostering economic growth, fostering population growth, providing new housing, or removing barriers to growth. Growth inducement may be detrimental, beneficial, or of no impact or significance under CEQA. An impact is only deemed to occur when it directly or indirectly affects the ability of agencies to provide needed public services, or if it can be shown that the growth will significantly affect the environment in some other way. The

project is consistent with the land use designation of the site. Therefore, while the project in question may induce some level of growth, this growth was already identified and its effects disclosed and mitigated within the General Plan EIR. Therefore, the impact of the project is ***less than significant***.

b, c) The proposal is not a housing-related project, does not induce growth beyond that anticipated in the General Plan EIR and does not displace any existing housing. No housing exists on the project site, and there would be no impact with respect to these criteria.

XIV. Public Services

Fire protection, police protection, park services, and library services are provided by the City. The project is located within the Roseville City School District. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Fire protection?			X	
b) Police protection?			X	
c) Schools?			X	
d) Parks?			X	
e) Other public facilities?			X	

Thresholds of Significance and Regulatory Setting:

The General Plan EIR identifies and adopts mitigation for impacts to public services, including police and fire protection, wastewater services, and solid waste disposal. The proposed project may incrementally increase the need for public services. However, the City's Fire, Police, Parks, and Utilities Departments have all reviewed the project plans and have not identified any significant impacts to City services.

The significance of impacts related to public services is based directly on the CEQA Guidelines checklist items a–e listed above. The City's General Plan EIR addressed the level of public services which would need to be provided in order to serve planned growth in the community. In addition, the project has been routed to the various public service agencies, both internal and external, to ensure that the project meets the agencies' design standards (where applicable) and to provide an opportunity to recommend appropriate conditions of approval.

Discussion of Checklist Answers:

a) Existing City codes and regulations require adequate water pressure in the water lines, and construction must comply with the Uniform Fire and Building Codes used by the City of Roseville. The nearest fire station (Station #1) is approximately one mile southwest of the project site; therefore, established emergency response times should be adequately met. Existing General Plan policies, fire codes, regulations, funding agreements, and facilities plans are sufficient to ensure ***less than significant*** impacts.

b) Sales taxes and property taxes resulting from the development will add revenue to the General Fund, which serves to fund police services. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure ***less than significant*** impacts.

c) The applicant for this project is required to pay school impact fees at a rate determined by the local school districts. School fees will be collected prior to the issuance of building permits, consistent with City requirements. School sites have already been designated as part of the Specific Plan process. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure **less than significant** impacts.

d) Future park and recreation sites and facilities have already been identified the City's Specific Plans. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure **less than significant** impacts.

e) Sales taxes and property taxes resulting from development will add revenue to the General Fund, which serves to fund the library system and other such facilities and services. In addition, the City charges fees to end-users for other services, such as garbage and greenwaste collection, in order to fund those services. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure **less than significant** impacts.

XV. Recreation

The proposed project is a multi-purpose building for an existing public charter school. There are outdoor play areas on the school site for students' use. The proposed multi-purpose building will provide space for recreational uses. Four City parks and Open Space are located within one-half mile of the project site (Sculpture Park, 0.2 miles northeast, Miner's Ravine Bike Trail and Open Space, 0.1 miles north, Lincoln Estates Park, 0.3 miles southwest, and William L. Taylor Park, 0.4 miles west). Additional facilities will not need to be added as a result of the project. Therefore, the project will have a **less than significant** impact on the existing and planned park facilities.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to recreation services is based directly on the CEQA Guidelines checklist items a–b listed above.

Discussion of Checklist Answers:

a) The EIR for the General Plan addressed the level of park services (including new construction, maintenance, and operation) which would need to be provided in order to serve planned growth in the community. Given that the project is consistent with the General Plan, the project would not cause any unforeseen or new impacts related to the use of existing or proposed parks and recreational facilities. Existing codes, regulations, funding agreements, and facilities plans are sufficient to ensure **less than significant** impacts.

b) Park sites and other recreational facilities are identified within the City's General Plan, and the plan-level impacts of developing those facilities were addressed within the General Plan EIR. The project will not cause any unforeseen or new impacts related to the construction or expansion of recreational facilities.

XVI. Transportation/Traffic

The proposed project has frontage on Harding Boulevard, north-south four-lane arterial roadway. Lead Hill Boulevard, an east-west four-lane collector roadway intersects Harding Boulevard approximately 650 feet southwest of the project site. Harding Boulevard is one of several north-south routes through the central and eastern portion of the City that provide connectivity to Galleria Boulevard, Eureka Road, Roseville Parkway and the Galleria Mall to the north, and with Douglas Boulevard (east-west arterial) to the south. The project site's primary access point is via a driveway accessed off Harding Boulevard. There is an internal ring road and multiple internal drive-aisles providing access to John Adams Academy, adjacent commercial buildings and the surface parking areas.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?		X		

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?		X		
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?			X	
d) Substantially increase hazards due to a design feature(s) (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
e) Result in inadequate emergency access?			X	
f) Conflict with adopted policies, plans, or programs supporting public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?			X	

Thresholds of Significance and Regulatory Setting:

The significance of checklist items c–f are based directly on the CEQA Guidelines checklist descriptions. For checklist items a and b, the Circulation Element of the General Plan establishes Level of Service C or better as an acceptable operating condition at all signalized intersections during a.m. and p.m. peak hours. Exceptions to this policy may be made by the City Council, but a minimum of 70% of all signalized intersections should maintain LOS C. The Findings of the Implementing Procedures indicate that compliance with the Traffic Mitigation Fee (RMC Ch. 4.44) will fund roadway projects and improvements necessary to maintain the City's Level of Service standards for projects consistent with the General Plan and related Specific Plan. An existing plus project conditions (short-term) traffic impact study may be required for projects with unique trip generation or distribution characteristics, in areas of local traffic constraints, or to study the proposed project access. A cumulative plus project conditions (long-term) study is required if a project is inconsistent with the General Plan or Specific Plan and would generate more than 50 pm peak-hour trips. The guidelines for traffic study preparation are found in the City of Roseville Design and Construction Standards - Section 4.

To assess potential traffic impacts that could result from operation of the proposed project, Kimley Horn completed a *Traffic Access and Circulation Evaluation* in January 2016, a *Traffic Impact Study* in May 2017, and a revised *Traffic Impact Study* in June 2017 for the proposed project. Kimley Horn concluded that the addition of the proposed project to the City's CIP Cumulative (2035) conditions results in an impact at the Harding Boulevard intersection with Douglas Boulevard (Intersection #11) during the AM peak-hour, however, this impact can be mitigated to **less than significant**. With proposed mitigation, the proposed project would not result in the degradation of any intersections from acceptable to unacceptable LOS.

The project site is not located within an airport planning area or within any height restriction area established around an airport for the purpose of protecting navigable airspace. Consequently, impacts to changes in air traffic patterns (checklist item c) were screened out of the analysis.

Impacts with regard to items d and e are assessed based on the expert judgment of the City Engineer and City Fire Department, as based upon facts and consistency with the City's Design and Construction Standards.

Discussion of Checklist Answers:

a,b) The proposed project is consistent with the land use designations of the General Plan and Specific Plan, and therefore does not contribute more traffic to the roadways system than was anticipated in Citywide analyses. The traffic study prepared by Kimley Horn focused on examining the project access design and the intersection of fourteen potentially-impacted intersections, as shown below.

1. Atlantic Street @ Wills Road	2. Atlantic Street @ I-80 Westbound On-ramp
3. Atlantic Street @ I-80 Eastbound Off-Ramp	4. Eureka Road @ Sunrise Avenue
5. Galleria Boulevard @ Roseville Parkway	6. Harding Boulevard @ Wills Road
7. Harding Boulevard @ Lead Hill Boulevard	8. Sunrise Avenue @ Lead Hill Boulevard
9. Harding Boulevard @ Estates Drive	10. Harding Boulevard @ Roseville Square
11. Douglas Boulevard @ Harding Boulevard	12. Douglas Boulevard @ I-80 Westbound Off-Ramp
13. Douglas Boulevard @ I-80 Eastbound Off-Ramp	14. Douglas Boulevard @ Sunrise Avenue

The study analyzed the existing transportation conditions along with the expected transportation conditions with the proposed multi-purpose building in place (existing plus project conditions). Based on the analyses documented in the Study, the proposed project does not result in a significant impact at study intersections under Existing Plus Project conditions. However, under CIP Cumulative (2035) Conditions, the proposed project results in a significant impact at only one intersection (Douglas Boulevard & Harding Boulevard) during the AM peak-hour. However, this impact can be mitigated to **less than significant** (see MITIGATION MEASURE TRANS/TRAFFIC #1 below). Project impacts to all other studied intersections are considered **less than significant** and no mitigation is required. The January 13, 2016 *Traffic Access and Circulation Evaluation* prepared by Kimley Horn included specific design recommendations for the Academy site, all of which have been constructed or otherwise implemented by John Adams Academy. As conditioned, and with mitigation, the project will not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, nor will it conflict with an applicable congestion management program.

d,e) The project has been reviewed by the City Engineering and City Fire Department staff, and has been found to be consistent with the City's Design Standards. The *Traffic Access and Circulation Evaluation* prepared by Kimley Horn included specific design recommendations for the Academy site, all of which have been constructed or otherwise implemented by John Adams Academy. Furthermore, standard conditions of approval added to all City project require compliance with Fire Codes and other design standards. Compliance with existing regulations ensure that impacts are **less than significant**.

f) The City of Roseville has adopted a Pedestrian Master Plan, Bicycle Master Plan, and Short-Range Transit Plan. The project was reviewed for consistency with these documents and found that:

- i. The project would not be inconsistent with any applicable policies and guidelines of Roseville's Bikeway Master Plan. Therefore, project impacts to bicycle facilities are considered ***less than significant*** and no mitigation is required.
- ii. The project would not have a negative impact on transit operations, travel times, and/or circulation. Therefore, project impacts to transit facilities are considered ***less than significant*** and no mitigation is required.
- iii. The project would not interfere with the operation of an existing pedestrian facility or preclude the construction of a planned pedestrian facility. Therefore, project impacts to pedestrian facilities are considered ***less than significant*** and no mitigation is required.

TRANSPORTATION/TRAFFIC MITIGATION MEASURES

MITIGATION MEASURE TRANS/TRAFFIC #1: Intersection #11, Harding Boulevard @ Douglas Boulevard. The significant impact at this intersection during the AM peak-hour shall be mitigated by modifying the existing traffic signal to include a westbound right-turn overlap. This mitigation measure results in the intersection operating at LOS C during the AM peak-hour under cumulative (2035) conditions. Therefore, *this impact is less than significant*.

XVII. Tribal Cultural Resources

As described within the Open Space and Conservation Element of the City of Roseville General Plan, the Roseville region was within the territory of the Nisenan (also Southern Maidu or Valley Maidu). Two large permanent Nisenan habitation sites have been identified and protected within the City's open space (in Maidu Park). Numerous smaller cultural resources, such as midden deposits and bedrock mortars, have also been recorded in the City. A majority of documented sites within the City are located in areas designated for open space uses.

Would the project cause a substantial adverse change in the significance of a Tribal Cultural Resource as defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 the lead agency shall consider the significance of the resource to a California Native American tribe.			X	

Thresholds of Significance and Regulatory Setting:

In addition to archeological resources, tribal cultural resources are also given particular treatment. Tribal cultural resources are defined in Public Resources Code Section 21074, as either 1) a site, feature, place, geographically-defined cultural landscape, sacred place, or object with cultural value to a California Native American Tribe, that is listed or eligible for listing on the California Register or Historical Resources, or on a local register of historical resources or as 2) a resource determined by the lead agency, supported by substantial evidence, to be significant according to the historical register criteria in Public Resources Code section 5024.1(c), and considering the significance of the resource to a California Native American Tribe.

Discussion of Checklist Answers:

a) The General Plan EIR includes Mitigation Measures applicable to archeological features and artifacts, should any be found on site. Language included in the measure requires an immediate cessation of work, and the requirement to contact the appropriate agencies to address the resource before work can resume. No Tribal Cultural Resources are known to exist on the project site, and construction will occur within an area that has been previously graded and is currently a paved parking area. The project will not result in any new impacts beyond those already discussed and disclosed in the General Plan EIR; therefore, project-specific impacts are ***less than significant***.

b) Pursuant to Assembly Bill 52 (AB 52) the current project was routed to all tribes which requested such notice. The United Auburn Indian Community (UAIC) responded to the AB 52 notification letter. As Lead Agency, the City of Roseville has provided background information regarding the project site and is in continuing dialogue with the tribes, per AB 52 protocol.

As stated previously, the entirety of the project site is located within a fully-developed public charter school site. The area in which construction will occur has been previously graded and is fully paved. The project will not result in any new impacts; therefore, project-specific impacts are ***less than significant***.

XVIII. Utilities and Service Systems

Water and sewer services are provided, by the City of Roseville. Since utility services are already provided to the site, it is expected that minimal work will need to be completed to the existing utility services serving the site. Storm water will be collected on-site and transferred via the existing storm drain system into an off-site storm

drain system. Solid waste will be collected by the City of Roseville's Refuse Department. The City of Roseville will provide electric service to the site, while natural gas will be provided by PG&E. Comcast will provide cable. The project has been reviewed by the City's Engineering Division, Environmental Utilities, Roseville Electric and PG&E. Adequate services are available for the project.

Would the project:

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
e) Result in a determination by the wastewater treatment provider which serves the project that it has adequate capacity to serve the project's projected demand in addition of the provider's existing commitments?			X	
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
g) Comply with federal, state, and local statutes and regulations related to solid waste?			X	

Thresholds of Significance and Regulatory Setting:

The significance of impacts related to utilities and service systems is based directly on the CEQA Guidelines checklist items a–g listed above.

Discussion of Checklist Answers:

a,e) The proposed project would be served by the Dry Creek Wastewater Treatment Plant (DCWWTP). The Central Valley Regional Water Quality Control Board (RWQCB) regulates water quality and quantity of effluent discharged from the City's wastewater treatment facilities. The DCWWTP has the capacity to treat 18 million gallons per day (mgd) and is currently treating 8.9 mgd. The volume of wastewater generated by the proposed project could be accommodated by the facility; the proposed project will not contribute to an exceedance of applicable wastewater treatment requirements. The impact would be ***less than significant***.

b,c) The project is consistent with the General Plan, and will be required to construct any lines necessary to serve the project, as well as pay fees which fund the operation of the facilities and the construction of major infrastructure. Minor additional infrastructure will be constructed within the project site to tie the project into the major systems, but these facilities will be constructed in locations where site development has already occurred as part of the existing public charter school campus and office buildings; there are no additional substantial impacts specific or particular to the minor infrastructure improvements.

In terms of overall treatment capacity, sewage treatment was discussed in section a, above. An expansion of sewage treatment facilities is not required. Domestic water in the City of Roseville is treated at the City's Water Treatment Plant on Barton Road. The City's water treatment plant currently has a treatment capacity of 100 mgd, though due to pipe sizes a slightly smaller total capacity of 96.1 mgd can be conveyed to the plant for treatment. The Amoruso Ranch Specific Plan Water Supply Assessment (ARSP WSA, Appendix E of the Amoruso Ranch FEIR), dated May 2016, analyzed water demand at City buildout. The analysis indicates that peak treatment demand will be approximately 115 mgd, which is insufficient to serve peak demand at City buildout. However, the additional water demand will be provided through contracts with other water suppliers, such as the Placer County Water Agency and the San Juan Water District, rather than through a treatment plant expansion. The project is consistent with existing land use designations and will not require an expansion of water treatment capacity.

d) The City of Roseville 2015 Urban Water Management Plan (UWMP), adopted May 2016, estimates water demand and supply for the City through the year 2040, based on existing land use designations and population projections. In addition, the ARSP WSA estimates water demand and supply for ultimate General Plan buildout. The project is consistent with existing land use designations, and is therefore consistent with the assumptions of the UWMP and ARSP WSA. The UWMP indicates that existing water supply sources are sufficient to meet all near term needs, estimating an annual water demand of 45,475 acre-feet per year (AFY) by the year 2020 and existing surface and recycled water supplies in the amount of 70,421 AFY. The AR WSA estimates a Citywide buildout demand of 64,370 AFY when including recycled water, and of 59,657 AFY of potable water. The ARSP WSA indicates that surface water supply is sufficient to meet demand during normal rainfall years, but is insufficient during single- and multiple-dry years. However, the City's UWMP establishes mandatory water conservation measures and the use of groundwater to offset reductions in surface water supplies. Both the UWMP and AR WSA indicate that these measures, in combination with additional purchased water sources, will

ensure that supply meets projected demand. The project, which is consistent with existing land use designations, would not require new or expanded water supply entitlements.

f, g) The Western Placer Waste Management Authority is the regional agency handling recycling and waste disposal for Roseville and surrounding areas. The regional waste facilities include a Material Recovery Facility (MRF) and the Western Regional Sanitary Landfill (WRSL). Currently, the WRSL is permitted to accept up to 1,900 tons of municipal solid waste per day. According to the solid waste analysis of the Amoruso Ranch Specific Plan FEIR, under current projected development conditions the WRSL has a projected lifespan extending through 2058. There is sufficient existing capacity to serve the proposed project. Though the project will contribute incrementally to an eventual need to find other means of waste disposal, this impact of City buildout has already been disclosed and mitigation applied as part of each Specific Plan the City has approved, including the most recent Amoruso Ranch Specific Plan. All residences and business in the City pay fees for solid waste collection, a portion of which is collected to fund eventual solid waste disposal expansion. The project will not result in any new impacts associated with major infrastructure. Environmental Utilities staff has reviewed the project for consistency with policies, codes, and regulations related to waste disposal services and has found that the project design is in compliance.

XIX. Mandatory Findings of Significance

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, threatened or rare species, or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts which are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			X	

Environmental Issue	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Significance Criteria and Regulatory Setting:

The significance of impacts related to mandatory findings of significance is based directly on the CEQA Guidelines checklist items a–c listed above.

Discussion of Checklist Answers:

a–c) Long term environmental goals are not impacted by the proposed project. The cumulative impacts do not deviate beyond what was contemplated in the General Plan and Amaruso Ranch Specific Plan EIRs, and mitigation measures have already been incorporated. With implementation of the City's Mitigating Ordinances, Guidelines, and Standards and best management practices, mitigation measures described in this chapter, and permit conditions, the proposed project will not have a significant impact on the habitat of any plant or animal species. Based on the foregoing, the proposed project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of any wildlife species, or create adverse effects on human beings.

ENVIRONMENTAL DETERMINATION:

*In reviewing the site specific information provided for this project and acting as Lead Agency, the City of Roseville, Development Services Department, Planning Division has analyzed the potential environmental impacts created by this project and determined that with mitigation the impacts are less than significant. As demonstrated in the initial study checklist, there are no "project specific significant effects which are peculiar to the project or site" that cannot be reduced to less than significant effects through mitigation (CEQA Section 15183) and therefore an EIR **is not** required. Therefore, **on the basis of the foregoing initial study:***

[X] I find that the proposed project COULD, but with mitigation agreed to by the applicant, clearly will not have a significant effect on the environment and a *MITIGATED NEGATIVE DECLARATION* has been prepared.

Initial Study Prepared by:



Ron Miller, Associate Planner

City of Roseville, Development Services – Planning Division

Exhibits:

- A. Site Plan
- B. Grading Plan
- C. Landscape Plan
- D. Elevations
- E. Rendering
- F. Mitigation Monitoring Program

Attachments:

- 1. John Adams Campus Multi- Purpose Room Program Document
- 2. Kimley Horn Traffic Access and Circulation Evaluation – John Adams Academy – November 2015
- 3. Kimley Horn Traffic Impact Study – John Adams Academy – May 2017
- 4. Arborist Report/Tree Inventory

Memorandum

To: Marc Stout, P.E., City Engineer
City of Roseville

From: Matt Weir, P.E., T.E., PTOE

Re: **John Adams Academy**
Traffic Access and Circulation Evaluation

Date: January 13, 2016

The purpose of this memorandum is to document our evaluation of access and circulation within, and in the vicinity of, the John Adams Academy (JAA) campus in Roseville. Kimley-Horn understands that JAA proposes to construct an 11,600-square foot multi-purpose building on their campus located at 1 Sierragate Plaza. In addition, JAA recently acquired 7 Sierragate Plaza (the former Heald College building), which is anticipated to contribute to increasing the school's ultimate enrollment by 371 students. Based on data provided by JAA at initiation of this evaluation, the current enrollment was 1,239 K-12 students. At full occupancy (projected to be the 2022-23 academic year) and with the addition of 7 Sierragate Plaza, the campus is now anticipated to have a population of up to 1,610 students.

The purpose of this study was to evaluate JAA's existing operations including: on- and off-site traffic control; on-site signing and striping; on-site circulation patterns and related inefficiencies; student staggered arrival and departure schedules; and opportunities for operational improvements. This evaluation also considered the effect of the anticipated increase in students and makes recommendations for operational improvements that can be applied to current conditions, as well as those anticipated to be realized with enrollment at capacity.

The following is a summary of the recommendations that are supported by the technical analyses and discussion contained herein:

Offsite Recommendations

The offsite recommendations are those that address controlling traffic and maintaining/improvement safety within the public right-of-way. After considering numerous combinations of offsite operations improvements, it was determined that the following set of options results in improved operations at the Harding/JAA Driveway intersection, as well as reasonable queuing along the westbound Lead Hill approach to Harding (see attached **Exhibit 10**):

1. Harding/Lead Hill intersection:
 - o Removal of the existing westbound right-turn overlap and right-turns-on-red at Harding/Lead Hill.
 - o Conversion of the westbound Lead Hill approach from dual lefts/single right, to single left/dual rights.

Because of their ability to improve safety and overall operations within the public right-of-way, these offsite recommendations should be implemented as quickly as practicable.

Onsite Recommendations

The following onsite strategies are recommended for JAA and the neighboring businesses' consideration:

1. Use of a permanent, one-way onsite circulation pattern that remains in place 24-hours a day, 7 days a week. (As noted, JAA will be required to coordinate with, and seek concurrence from the neighboring businesses on any such circulation change to the comment, shared ring-road.)
2. Use of both exit lanes as right-turns during school peak periods at the Harding/JAA driveway intersection.
3. Use of improved staggered start/end times accounting for class building locations
4. Use of incentives for non-motorized or carpool commuting

JAA will be required to coordinate with, and seek concurrence from the neighboring businesses on circulation changes to the common, shared ring-road. If applied correctly, a permanent circulation pattern can actually allow for a simplified signing and striping program, improved safety associated with minimized wrong-way movements, and ultimately require fewer “staffed” traffic control locations.

The following sections describe the data used, and the technical analyses and key findings of this evaluation:

I. **Baseline Data**

The following are the primary data on which this evaluation was based:

- JAA Student Enrollment: 1,239 current, 1,610 projected (30% growth)
 - over 90% (362) of the growth is anticipated in Grades 7-12
- Monday-Thursday Start/End times are currently staggered as follows:
 - Drop-Off: 30% - 7:40 AM, Grades 7-12 (381 students)
64% - 8:00 AM, Grades TK-6 (789 students)
6% - 11:45 AM, Grades TK-K (69 students)
 - Pick-Up: 7% - 11:30 AM, Grades TK-K (80 students)
38% - 2:50 PM, Grades 1-4 (477 students)
55% - 3:15 PM, Grades TK, K, 5-6, and 7-12 (682 students)
 - Pick-Up (Friday): 12% - 11:30 AM, Grades TK-K (149 students)
57% - 12:00 PM, Grades 1-6 (709 students)
31% - 12:30 PM, Grades 7-12 (381 students)

II. **Off-Site Study Facilities**

Through consultation with the City, the following off-site intersections (see **Exhibit 1**) were identified for inclusion in this evaluation:

1. Harding Boulevard at JAA Driveway
2. Harding Boulevard at Wills Road
3. Harding Boulevard at Lead Hill Boulevard
4. Lead Hill Boulevard at Business Park Driveway
5. Lead Hill Boulevard at Sunrise Avenue

III. **Data Collection**

Traffic Counts

Off-site traffic counts were conducted for the AM (6:30-8:30) and school-PM (2:00-4:00) peak-periods during the week of October 26, 2015 (Tuesday, Wednesday, and Thursday). It is important to note that JAA modified their on-site circulation from one-way to a two-way pattern on Thursday, October 29th. Accordingly, because the two-way circulation pattern was observed to result in significant off-site queuing and longer drop-off and pick-up periods than observed for the one-way configuration, it was determined that data from that day

(Thursday) would not be appropriate for use in this study as it limited the ability to thoroughly capture all vehicles entering and exiting the site during the study period. Therefore, the traffic data from Tuesday and Wednesday were averaged and represent Baseline Conditions for use in this study. Existing peak-hour (AM, 7:15-8:15 and school-PM, 3:00-4:00) traffic volumes are depicted in **Exhibit 2**.

Trip Generation Rate

Because this evaluation includes consideration of a growth scenario in which an additional 371 students are anticipated to attend JAA, it was necessary to collect data appropriate for determining the site's unique trip generation rate. For the purposes of this evaluation, all JAA traffic was assumed to use the single Harding Boulevard site access driveway (study Intersection #1), and not access the site via other Sierragate business parking lots. As such, using the site driveway count data and knowledge of the enrollment at the time of the data collection, it was possible to calculate the following unique JAA trip generation rates:

AM Peak-Hour: 0.90 trips/student

School-PM Peak-Hour: 0.58 trips/student

Using these rates we were then able to approximate that the 371 additional students are anticipated to equate to 334 additional AM, and 216 additional school-PM peak-hour trips. These additional trips were added to the existing count data using the existing student trip distribution patterns to establish conditions anticipated to be realized at JAA full enrollment.

IV. Traffic Analysis Methodology

Level of Service (LOS) Analyses

Analysis of transportation facility operations is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 2010 (HCM)*.

The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. These procedures define LOS as a function of average control delay. **Table 1** presents intersection LOS definitions as defined in the HCM.

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay (sec/veh)	Control Delay per Vehicle (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80
<i>Source: Highway Capacity Manual, 2010</i>		

Consistent with methodology approved by the City, Levels of Service were determined using the SimTraffic® traffic analysis software. SimTraffic® is a microsimulation tool that is useful for analyzing complex situations such as closely spaced intersections and the effects of signals on nearby unsignalized intersections and driveways. The SimTraffic® models were validated based on field observations of traffic volumes, driver behavior, lane utilization, and maximum vehicle queue lengths. As a result of these observations, adjustments were incorporated that improve the accuracy of the simulated vehicles' behavior. For this simulation effort, a seed time of 10 minutes was used and 10 runs were averaged to obtain the results. The SimTraffic® Measures of Effectiveness (MOEs) were compared against the HCM intersection delay thresholds (**Table 1**) to equate the SimTraffic® results to HCM LOS.

Queuing Evaluations

Vehicle queuing for critical movements at the study intersections was also evaluated. Queuing for these movements was approximated using the aforementioned SimTraffic® models. 95th percentile vehicle queues were compared against baseline conditions and available vehicle storage lengths, and were used as a primary measure of the various improvement options' effectiveness.

Analysis Scenarios

This traffic evaluation considered the following analysis scenarios:

A. Baseline Conditions

Documents existing on-the-ground counts and conditions at the time of initiation of this evaluation. As previously discussed, these conditions reflect the JAA one-way on-site circulation pattern. Off-site improvement options were considered with these volumes to identify opportunities for improved operations and safety.

B. Baseline plus JAA Growth Conditions

Reflects conditions anticipated to be realized when JAA reaches full occupancy at 1,610 students. The approximate 30 percent increase in students is currently anticipated to be achieved for the 2022-23 academic year. Although it is acknowledged that the background traffic will certainly fluctuate over this period, for the purposes of this evaluation, the additional traffic associated with JAA's growth was added to Baseline Conditions and analyzed as such.

V. Baseline Conditions

As previously discussed, Baseline Conditions were established for use in this study by incorporating the following information:

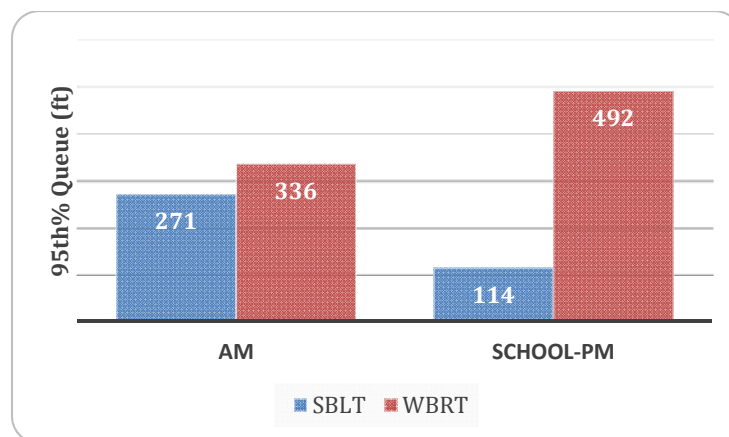
- Off-site traffic count data from October 27th and 28th, 2015.
- Field observations from October 7th and November 6th, 2015.
- Review of Harding Boulevard and Lead Hill Boulevard videos to establish existing queuing patterns and vehicle interactions at, and in the vicinity of the Harding Boulevard driveway and the Lead Hill Boulevard access driveway.
- Feedback from the City and JAA regarding typical peak-period operations including off-site conflicts, on-site challenges related to Sierragate businesses' access and concerns, and firsthand knowledge of the area's traffic patterns and tendencies.

Moreover, the Baseline Conditions (one-way on-site traffic circulation) were observed to result in the following:

- Frequent conflicts and observed frustration for drivers turning into and out of the site driveway along Harding Boulevard. These conflicts appear to be created by a limited number and size of gaps in the Harding Boulevard traffic stream which primarily affects the southbound left-turn into the site, and the outbound right-turn leaving the site.
- Extended peak period southbound left-turn queuing from Harding Boulevard into the site driveway that routinely extends north, past the existing apartment and dentist driveways, to the Dry Creek bridge.
- Excessive onsite queuing for traffic waiting to exit onto Harding Boulevard (a movement that is restricted to right-turn only during peak periods).
- Pick-up procedures that result in on-site queuing that frequently spills back to the main driveway intersection, however rarely adversely affecting off-site traffic flow along Harding Boulevard.

While the following section provides a more thorough discussion of the quantitative aspects of this evaluation, it is helpful to expound on the above Baseline Conditions by further discussing the current vehicle queuing that routinely occurs during peak periods. As reflected in **Exhibit 3**, the inbound (southbound) left-turn queue is worse during the AM peak-hour while the outbound (westbound) right-turn leaving the campus is worse during the school-PM peak-hour. These conditions are the primary contributors to the broad impression and frustrations associated with the Baseline Conditions.

Exhibit 3 – Baseline Conditions Queuing, Harding/JAA Driveway



VI. Offsite Recommendations

Off-site traffic operations were evaluated to quantify levels of service and queuing associated with several improvement options. The following options were included in this evaluation:

- **NRT:** Removal of the westbound Lead Hill right-turn-on-red (RTOR) to assist in creating gaps in the Harding traffic stream in the vicinity of the JAA driveway intersection
- **NOV:** Removal of the westbound Lead Hill right-turn overlap signal phase to assist in creating gaps in the Harding traffic stream in the vicinity of the JAA driveway intersection
- **TMGS:** Changes to the Harding/Lead Hill signal timings to assist in creating gaps in the Harding traffic stream in the vicinity of the JAA driveway intersection

- **Dual Right:** Modifications to the westbound Lead Hill approach lane designations to change from dual lefts/single right, to single left/dual rights to reduce the amount of queuing along the Lead Hill approach to Harding
- **(Onsite) Dual Right at JAA:** Conversion to dual right-turns departing JAA at Harding
- **G:** Incorporation of the JAA student growth and associated traffic
- **Traditional:** Consideration for the traditional PM peak-hour

Exhibits 4-6 present queuing results for three improvement conditions. As depicted in these exhibits, changes to the Harding/Lead Hill signal timings to improve conditions along Harding in the vicinity of the JAA driveway intersection result in excessive queuing along the westbound Lead Hill approach to Harding. As a result, the exhibits reflect the need for and effectiveness of the conversion to dual rights along the westbound Lead Hill approach. With this combined improvement option (NRT+NOV+Dual Right), additional gaps are provided along Harding in the vicinity of the JAA driveway intersection as a result of the restriction of right-turns on red and elimination of the right-turn overlap, and the westbound Lead Hill approach has adequate capacity to accommodate the additional westbound right-turn queuing that results from these operations changes. When compared to baseline conditions, these combined improvements are shown to equate to an approximately 25 percent reduction in the Harding/JAA Driveway southbound left-turn queue, a 19-33 percent reduction in the Harding/JAA Driveway westbound right-turn queue, and a 7-14 percent reduction in the Harding/Lead Hill westbound right-turn queue.

Exhibit 4 – Improvement Conditions Queuing, Harding/JAA Driveway - SBLT

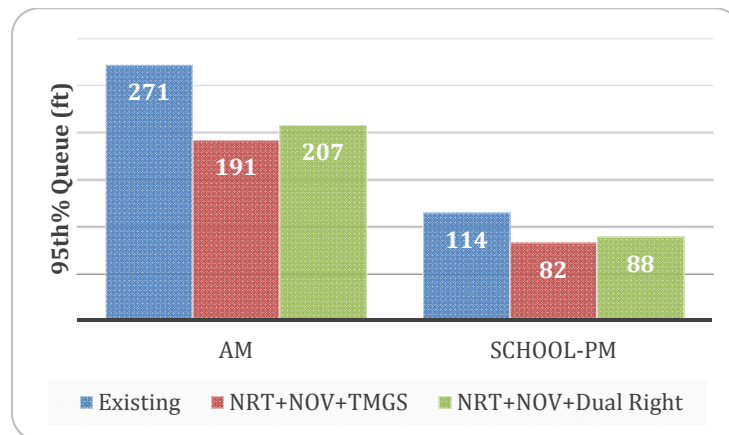


Exhibit 5 – Improvement Conditions Queuing, Harding/JAA Driveway - WBRT

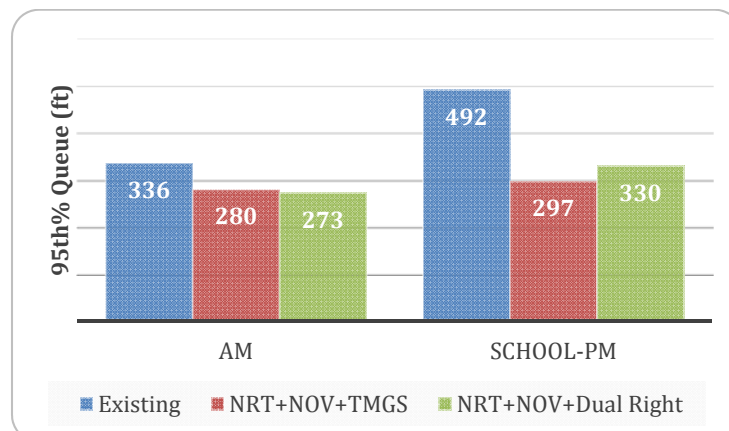
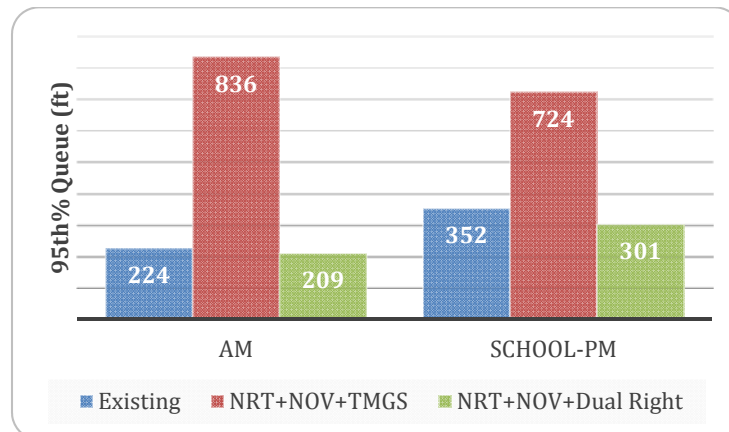


Exhibit 6 – Improvement Conditions Queuing, Harding/Lead Hill - WBRT



Summary tables of the intersection LOS analyses and approach queuing are provided in **Appendix A**. As shown in Appendix A, the improvement conditions accommodate the traditional PM peak-hour volumes with LOS and queuing values comparable to or better than existing conditions. An overview of the improvement condition is provided in **Exhibit 10**. Technical analysis worksheets are available upon request.

VII. Onsite Recommendations

Additional consideration for the combined improvement conditions included assessment of its ability to accommodate projected JAA growth and an additional operational improvement at the JAA driveway in which dual right turns are provided (presumably limited to the school peak periods) (see **Exhibits 7-9**). Doubling the outbound right-turn capacity at the JAA Driveway reduces the amount of onsite queuing, while the addition of the projected JAA growth demonstrates that additional evaluation may be required at the time that growth is realized to perform a refined assessment of the signal timings to better accommodate the anticipated demand and queuing.

Exhibit 7 – Improvement Conditions (plus Growth) Queuing, Harding/JAA Driveway – SBLT

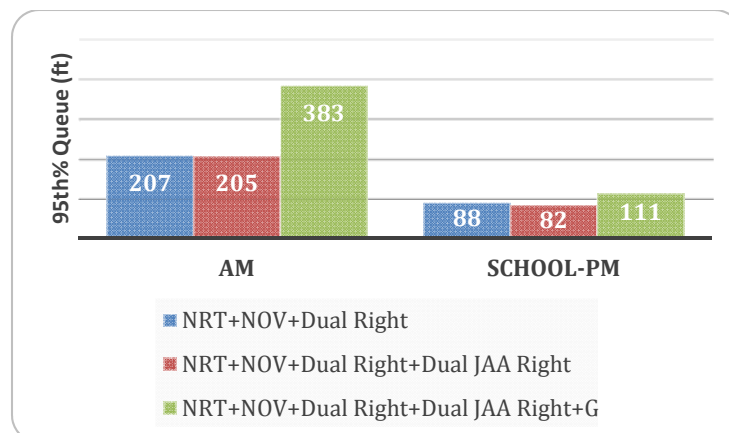


Exhibit 8 – Improvement Conditions (plus Growth) Queuing, Harding/JAA Driveway - WBRT

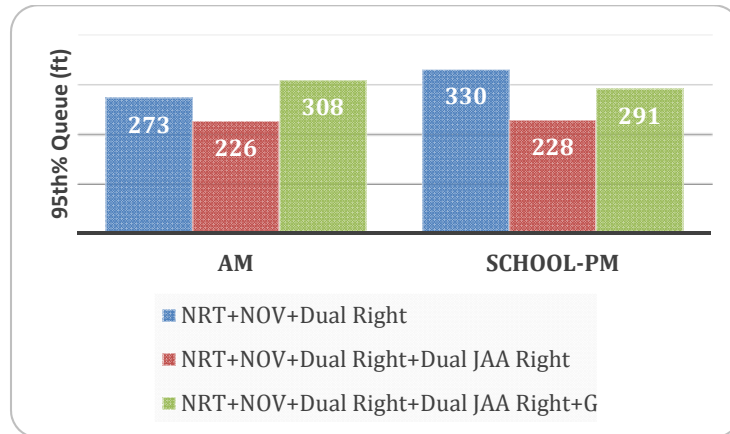
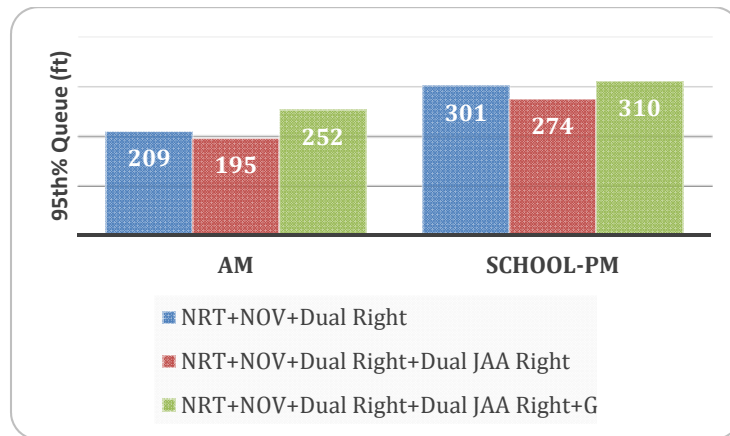


Exhibit 9 – Improvement Conditions (plus Growth) Queuing, Harding/Lead Hill - WBRT



Summary tables of the intersection LOS analyses and approach queuing are provided in **Appendix A**. Technical analysis worksheets are available upon request.

While we understand that there are existing reciprocal property rights that could cause challenges to implementing operational changes onsite, this discussion is intended to provide suggestions or tools for JAA's independent consideration. JAA is encouraged to review and implement these suggested actions in a manner that is acceptable to JAA and the other Sierragate businesses.

1. As previously stated, JAA is anticipating 30 percent growth to reach capacity. Upon review of the current and projected number of students, by grade, and by building, it was revealed that over 90 percent of the anticipated growth will occur in the former Heald College Building. As a result, the current traffic patterns at the other three buildings are long-term and represent the "worst case" scenario as these grades are essentially at capacity today.

When combined with the current bell schedules, there appear to be opportunities to improve the grouping of grades and buildings to create a stagger in the campus' schedule that serves to lessen the peak periods and improve the operations for both drop-off and pick-up activities. As an example, the current bell schedule has Grades 1-4 released "early" at 2:50, however these grades are located in three different buildings. As a result, it is difficult to envision the grouping of these students for a concentrated pick-up because their class locations are dispersed.

It is recommended that JAA re-examine the staggered start/end times with an eye toward combining the various groups at certain areas of the designated parking lots. If this dynamic can be achieved, it may be possible to make better use of the multiple drive aisles to dramatically increase the capacity and improve the (predominantly pick-up) operations. Well vetted and thoughtful staggered start/end times have the potential to minimize conflicts, alleviate current “peak” traffic periods, and improve the overall site operations. Consideration will have to be given to those families (149 currently) with students in multiple grades, in multiple buildings, etc. Perhaps those cases are specifically addressed with direction to abide by the student’s schedule who ends the latest.

2. While we don’t anticipate that even the most elaborate of incentives could get enough students out of their cars to alleviate the traffic congestion currently being experienced, we do recognize that there are inevitably benefits to be gained from reducing the number of vehicles, even if in small quantities. Similar to other driver behavior, most families will only adjust their commute habits with incentives that are significant enough to justify the desired action. To this point, the following incentive concepts have been identified: carpooling, walk/bike, and remote shuttling.

It is recommended that JAA consider incentives that are likely to be effective in altering students’ commute behavior. Some primary examples include carpool (3 or 4+) use of the parking lot located closest to Harding Boulevard to bypass the majority of the loop, and offering “JAA gear” to those who arrive by foot/bike. In addition, there should be incentives for the JAA families to patronize the Sierragate businesses.

3. Recognizing that JAA has used both one-way and two-way circulation plans this school year, they have the unique benefit of being able to compare and contrast the two. As such it is recommended that, in addition to implementation of a permanent one-way onsite circulation pattern that remains in place 24-hours a day, 7 days a week, JAA consider on-site operational changes that are aimed at improving the efficiency of the drop-off and pick-up activities. Some initial strategies include grouping of grades to allow for more efficient use of the multiple parking lot drive aisles, clear and consistent student or “area” designations (by color and/or letter), and improved signing and striping.
4. We understand that this school year has seen the use of both one-way and two-way on-site circulation patterns. At the time of our field observations, JAA was using a time-of-day program in which one-way operation was used only during peak JAA periods, reverting back to two-way during the off-peak periods. Time-of-Day traffic control strategies are largely considered to be confusing to JAA and the other businesses’ traffic, and seems to add an unnecessary additional layer of inefficiency.

It is recommended that JAA consider the use of a permanent on-site circulation pattern that remains in place 24 hours a day, 7 days a week. It is acknowledged that JAA will need to coordinate with, and seek concurrence from the neighboring businesses on any such circulation change to the common, shared ring-road. If applied correctly, a permanent circulation pattern can actually allow for a simplified signing and striping program, improved safety associated with minimized wrong-way movements, and ultimately require fewer “staffed” traffic control locations.

VIII. **Summary of Recommendations**

Based on the information and analyses presented herein, the following recommendations are offered:

A. **Offsite**

The offsite recommendations are those that address controlling traffic and maintaining/improvement safety within the public right-of-way. After considering numerous combinations of offsite operations improvements, it was determined that the following set of options results in improved operations at the Harding/JAA Driveway intersection, as well as reasonable queuing along the westbound Lead Hill approach to Harding (see **Exhibit 10**):

1. Harding/Lead Hill intersection:
 - o Removal of the existing westbound right-turn overlap and right-turns-on-red at Harding/Lead Hill.
 - o Conversion of the westbound Lead Hill approach from dual lefts/single right, to single left/dual rights.

Because of their ability to improve safety and overall operations within the public right-of-way, these offsite recommendations should be implemented as quickly as practicable.

B. **Onsite**

The following onsite strategies are recommended for JAA and the neighboring businesses' consideration:

1. Use of a permanent, one-way onsite circulation pattern that remains in place 24-hours a day, 7 days a week. (As noted, JAA will be required to coordinate with, and seek concurrence from the neighboring businesses on any such circulation change to the common, shared ring-road.)
2. Use of both exit lanes as right-turns during school peak periods at the Harding/JAA driveway intersection.
3. Use of improved staggered start/end times accounting for class building locations
4. Use of incentives for non-motorized or carpool commuting

As previously noted, JAA will be required to coordinate with, and seek concurrence from the neighboring businesses on circulation changes to the common, shared ring-road. If applied correctly, a permanent circulation pattern can actually allow for a simplified signing and striping program, improved safety associated with minimized wrong-way movements, and ultimately require fewer "staffed" traffic control locations.

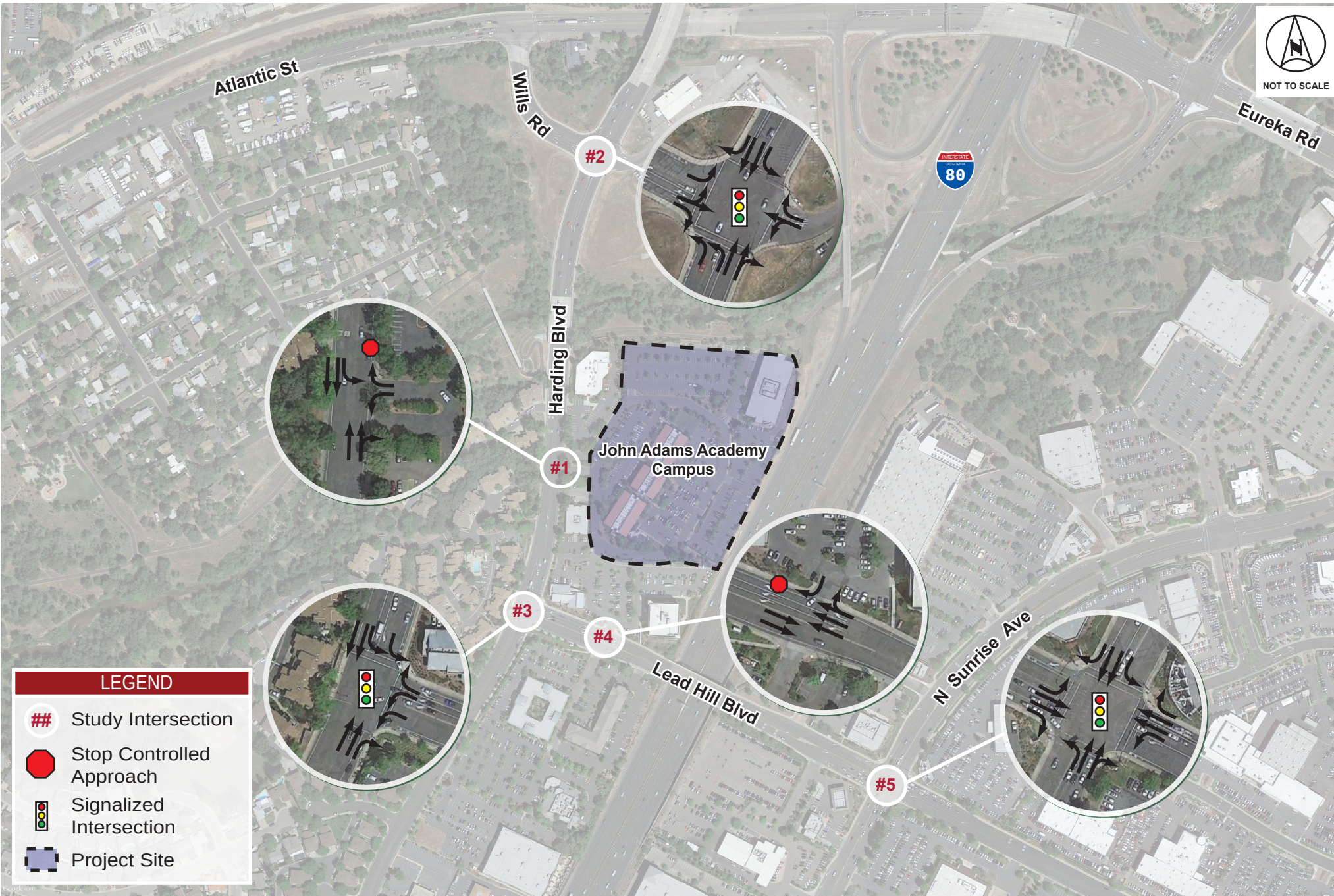
Attachments:

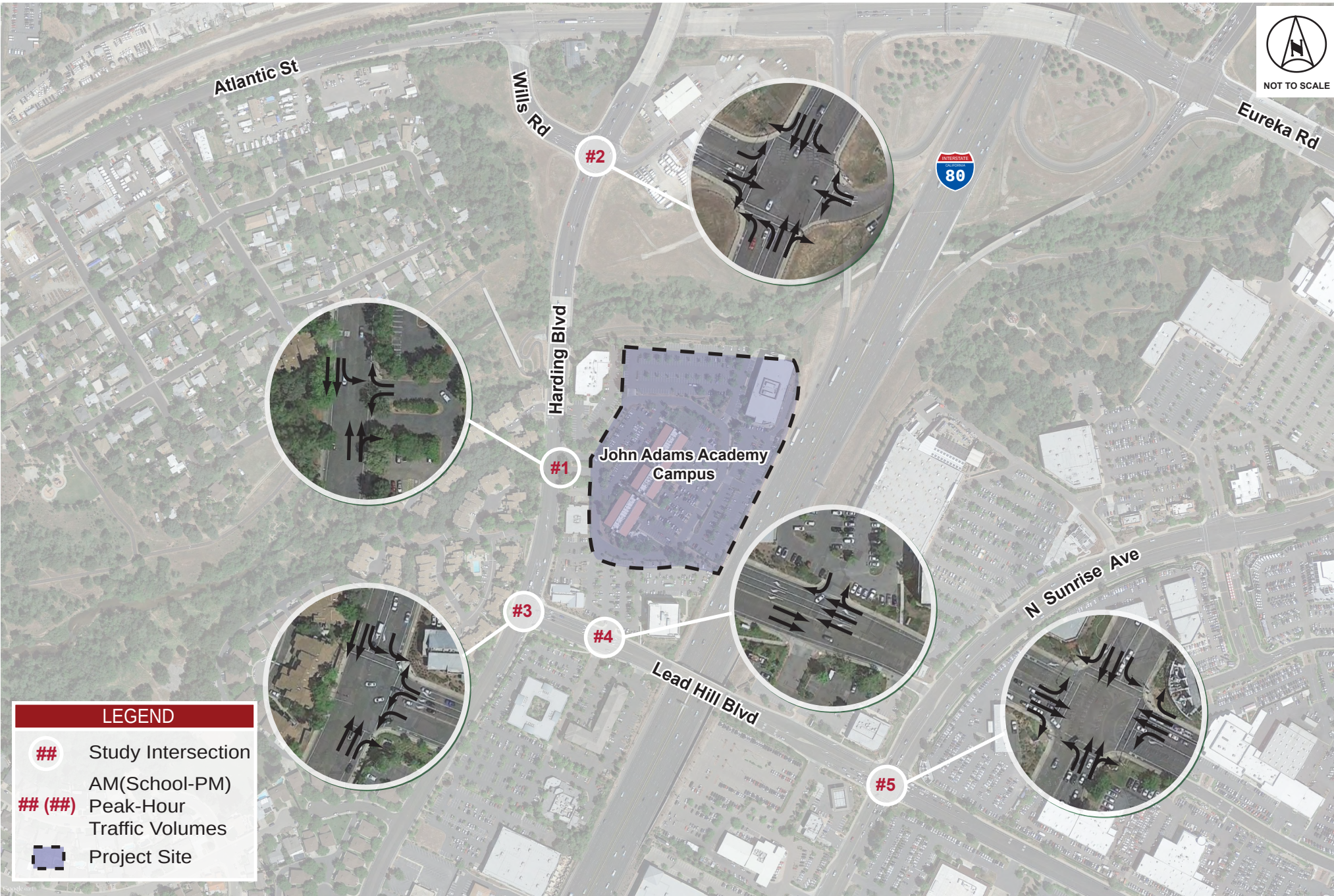
Exhibit 1 – Study Intersections, Traffic Control, and Lane Geometries

Exhibit 2 – Baseline Peak-Hour Traffic Volumes

Exhibit 10 – Offsite Recommendations

Appendix A – Intersection LOS and Queuing Analysis Results Tables







Appendix A

Intersection LOS and Queuing Analysis Results Tables

Intersection / Analysis Scenario	Control	AM Peak-Hour		PM Peak-Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
#1, Harding Blvd at Project Driveway	SSSC*				
Existing		11.6 (20.5 WBR)	C	13.7 (54.6 WBR)	F
Existing + NRT		12.3 (20.7 WBR)	C	13.8 (59.9 WBR)	F
Existing + NOV		11.2 (20.4 WBR)	C	12.6 (49.4WBR)	E
Existing + NRT + NOV		10.3 (21.1 WBR)	C	7.7 (20.4 WBR)	C
Existing + NRT + NOV + TMGS		9.2 (16.3 WBR)	C	8.4 (24.2 WBR)	C
Existing + NRT + NOV + Dual Right		9.2 (16.1 WBR)	C	8.9 (29.6 WBR)	D
Existing + NRT + NOV + Dual Right + Dual Right at JAA		9.4 (16.8 WBR)	C	8.5 (27.7 WBR)	D
Existing + NRT + NOV + TMGS + Dual Right		9.5 (17.1 WBR)	C	8.9 (30.8 WBR)	D
Existing + NRT + NOV + Dual Right + TMGS		10.5 (24.1 WBR)	C	9.5 (33.4 WBR)	D
Ex + G + NRT + NOV + Dual Right		26.6 (63.1 WBR)	F	21.4 (96.5 WBR)	F
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA		14.7 (22.0 WBR)	C	10.9 (34.8 WBR)	D
Traditional		PM Only		3.8 (10.5 WBR)	B
Traditional + Dual Right				3.6 (9.6 WBR)	A
Traditional + Dual Right + NRT + NOV				3.6 (8.1 WBR)	A
#2, Harding Blvd at Wills Rd	Signal				
Existing		22.8	C	26.3	C
Existing + NRT		23.5	C	25.5	C
Existing + NOV		23.7	C	24.7	C
Existing + NRT + NOV		23.7	C	24.2	C
Existing + NRT + NOV + TMGS		23.3	C	24.0	C
Existing + NRT + NOV + Dual Right		24.5	C	24.2	C
Existing + NRT + NOV + Dual Right + Dual Right at JAA		24.8	C	26.4	C
Existing + NRT + NOV + TMGS + Dual Right		23.3	C	24.9	C
Existing + NRT + NOV + Dual Right + TMGS		23.4	C	24.9	C
Ex + G + NRT + NOV + Dual Right		31.5	C	26.6	C
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA		28.9	C	26.8	C
Traditional		PM Only		17.9	B
Traditional + Dual Right				17.7	B
Traditional + Dual Right + NRT + NOV				17.9	B
#3, Harding Blvd at Lead Hill Blvd	Signal				
Existing		15.4	B	17.1	B
Existing + NRT		16.3	B	19.7	B
Existing + NOV		18.6	B	22.0	C
Existing + NRT + NOV		29.7	C	28.5	C
Existing + NRT + NOV + TMGS		29.3	C	28.3	C
Existing + NRT + NOV + Dual Right		20.6	C	23.7	C
Existing + NRT + NOV + Dual Right + Dual Right at JAA		20.6	C	23.6	C
Existing + NRT + NOV + TMGS + Dual Right		21.5	C	23.5	C
Existing + NRT + NOV + Dual Right + TMGS		23.1	C	25.7	C
Ex + G + NRT + NOV + Dual Right		22.4	C	23.2	C
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA		22.2	C	24.0	C
Traditional		PM Only		16.7	B
Traditional + Dual Right				16.2	B
Traditional + Dual Right + NRT + NOV				22.5	C

Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.

*Side Street Stop Controlled (SSSC) intersections are reported as the overall intersection delay followed by the critical minor street approach movement's delay. The reported LOS corresponds to the critical minor street approach movement.

Intersection / Analysis Scenario	Control	AM Peak-Hour		PM Peak-Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
#4, Lead Hill Blvd at Project Driveway	SSSC*				
Existing		1.0 (6.2 SBR)	A	1.7 (13.7 SBR)	B
Existing + NRT		1.2 (9.8 SBR)	A	6.4 (54.8 SBR)	F
Existing + NOV		1.2 (7.0 SBR)	A	4.3 (36.1 SBR)	E
Existing + NRT + NOV		34.5 (523.7 SBR)	F	63.2 (958.5 SBR)	F
Existing + NRT + NOV + TMGS		24.7 (237.5 SBR)	F	65.9 (1169.9 SBR)	F
Existing + NRT + NOV + Dual Right		0.8 (4.5 SBR)	A	1.3 (9.6 SBR)	A
Existing + NRT + NOV + Dual Right + Dual Right at JAA		0.8 (4.2 SBR)	A	1.2 (8.3 SBR)	A
Existing + NRT + NOV + TMGS + Dual Right		0.8 (3.9 SBR)	A	1.3 (10.1 SBR)	B
Existing + NRT + NOV + Dual Right + TMGS		0.8 (5.9 SBR)	A	2.1 (11.3 SBR)	B
Ex + G + NRT + NOV + Dual Right		0.8 (4.3 SBR)	A	1.2 (9.1 SBR)	A
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA		0.9 (5.3 SBR)	A	1.4 (11.0 SBR)	B
Traditional		PM Only		4.5 (51.8 SBR)	F
Traditional + Dual Right				1.3 (10.4 SBR)	B
Traditional + Dual Right + NRT + NOV				2.3 (12.7 SBR)	B
#5, Lead Hill Blvd at N. Sunrise Ave	Signal				
Existing		21.4	C	40.6	D
Existing + NRT		21.2	C	41.0	D
Existing + NOV		21.6	C	39.9	D
Existing + NRT + NOV		24.5	C	72.3	E
Existing + NRT + NOV + TMGS		22.3	C	76.1	E
Existing + NRT + NOV + Dual Right		22.0	C	40.3	D
Existing + NRT + NOV + Dual Right + Dual Right at JAA		22.7	C	39.9	D
Existing + NRT + NOV + TMGS + Dual Right		21.6	C	39.2	D
Existing + NRT + NOV + Dual Right + TMGS		21.3	C	39.6	D
Ex + G + NRT + NOV + Dual Right		22.6	C	41.0	D
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA		22.3	C	40.6	D
Traditional		PM Only		49.6	D
Traditional + Dual Right				47.0	D
Traditional + Dual Right + NRT + NOV				47.2	D
Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.					
*Side Street Stop Controlled (SSSC) intersections are reported as the overall intersection delay followed by the critical minor street approach movement's delay. The reported LOS corresponds to the critical minor street approach movement.					

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95 th % Queue (ft)	Available Storage (ft)	95 th % Queue (ft)
#1, Harding Blvd at Project Driveway	SBL				
Existing	175 (Driveway) 425 (Bridge)		271	175 (Driveway) 425 (Bridge)	114
Existing + NRT			289		101
Existing + NOV			244		98
Existing + NRT + NOV			220		82
Existing + NRT + NOV + TMGS			191		82
Existing + NRT + NOV + Dual Right			207		88
Existing + NRT + NOV + Dual Right + Dual Right at JAA			205		82
Existing + NRT + NOV + TMGS + Dual Right			205		78
Existing + NRT + NOV + Dual Right + TMGS			187		85
Ex + G + NRT + NOV + Dual Right			398		109
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	383	111			
Traditional	PM Only				29
Traditional + Dual Right				28	
Traditional + Dual Right + NRT + NOV				23	
	NBR				
Existing	440* (Lead Hill)		41	440* (Lead Hill)	20
Existing + NRT			46		20
Existing + NOV			39		21
Existing + NRT + NOV			39		19
Existing + NRT + NOV + TMGS			43		15
Existing + NRT + NOV + Dual Right			35		15
Existing + NRT + NOV + Dual Right + Dual Right at JAA			46		31
Existing + NRT + NOV + TMGS + Dual Right			32		15
Existing + NRT + NOV + Dual Right + TMGS			32		17
Ex + G + NRT + NOV + Dual Right			40		20
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	58	35			
Traditional	PM Only				0
Traditional + Dual Right				0	
Traditional + Dual Right + NRT + NOV				0	
	WBR				
Existing			336		492
Existing + NRT			323		521
Existing + NOV			338		447
Existing + NRT + NOV			346		259
Existing + NRT + NOV + TMGS			280		297
Existing + NRT + NOV + Dual Right			273		330
Existing + NRT + NOV + Dual Right + Dual Right at JAA			226		228
Existing + NRT + NOV + TMGS + Dual Right			279		349
Existing + NRT + NOV + Dual Right + TMGS			402		374
Ex + G + NRT + NOV + Dual Right			707		717
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	308	291			
Traditional	PM Only				44
Traditional + Dual Right				45	
Traditional + Dual Right + NRT + NOV				44	
Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.					

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95 th % Queue (ft)	Available Storage (ft)	95 th % Queue (ft)
#3, Harding Blvd at Lead Hill Blvd	WBR				
Existing	230 (JAA)	300 (Pocket)	224	230 (JAA)	352
Existing + NRT			294		601
Existing + NOV			301		516
Existing + NRT + NOV			869		745
Existing + NRT + NOV + TMGS			836		724
Existing + NRT + NOV + Dual Right			209		301
Existing + NRT + NOV + Dual Right + Dual Right at JAA			195		274
Existing + NRT + NOV + TMGS + Dual Right			201		285
Existing + NRT + NOV + Dual Right + TMGS			228		355
Ex + G + NRT + NOV + Dual Right			231		284
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	252	310			
Traditional	PM Only				558
Traditional + Dual Right					173
Traditional + Dual Right + NRT + NOV					355
	WBL				
Existing	230 (JAA)	300 (Pocket)	62	230 (JAA)	129
Existing + NRT			55		134
Existing + NOV			58		126
Existing + NRT + NOV			60		110
Existing + NRT + NOV + TMGS			62		112
Existing + NRT + NOV + Dual Right			96		226
Existing + NRT + NOV + Dual Right + Dual Right at JAA			104		228
Existing + NRT + NOV + TMGS + Dual Right			104		224
Existing + NRT + NOV + Dual Right + TMGS			115		231
Ex + G + NRT + NOV + Dual Right			98		229
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	104	225			
Traditional	PM Only				159
Traditional + Dual Right					253
Traditional + Dual Right + NRT + NOV					258
	SBL				
Existing	235 (Driveway)	465 (JAA)	223	235 (Driveway)	236
Existing + NRT			215		224
Existing + NOV			230		262
Existing + NRT + NOV			253		257
Existing + NRT + NOV + TMGS			256		244
Existing + NRT + NOV + Dual Right			234		250
Existing + NRT + NOV + Dual Right + Dual Right at JAA			230		255
Existing + NRT + NOV + TMGS + Dual Right			209		253
Existing + NRT + NOV + Dual Right + TMGS			224		233
Ex + G + NRT + NOV + Dual Right			235		231
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA	229	245			
Traditional	PM Only				203
Traditional + Dual Right					219
Traditional + Dual Right + NRT + NOV					209
Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.					

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95 th % Queue (ft)	Available Storage (ft)	95 th % Queue (ft)
#3, Harding Blvd at Lead Hill Blvd	SBT				
Existing			91		139
Existing + NRT			93		139
Existing + NOV			109		171
Existing + NRT + NOV			115		174
Existing + NRT + NOV + TMGS			106		166
Existing + NRT + NOV + Dual Right			111		162
Existing + NRT + NOV + Dual Right + Dual Right at JAA			111		171
Existing + NRT + NOV + TMGS + Dual Right			109		173
Existing + NRT + NOV + Dual Right + TMGS			111		174
Ex + G + NRT + NOV + Dual Right			112		161
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA			112		161
Traditional	PM Only			143	
Traditional + Dual Right				156	
Traditional + Dual Right + NRT + NOV				164	
	NBT				
Existing			153		212
Existing + NRT			159		215
Existing + NOV			177		220
Existing + NRT + NOV			171		228
Existing + NRT + NOV + TMGS			177		221
Existing + NRT + NOV + Dual Right			163		210
Existing + NRT + NOV + Dual Right + Dual Right at JAA			171		225
Existing + NRT + NOV + TMGS + Dual Right			176		221
Existing + NRT + NOV + Dual Right + TMGS			195		234
Ex + G + NRT + NOV + Dual Right			198		224
Ex + G + NRT + NOV + Dual Right + Dual Right at JAA			199		225
Traditional	PM Only			218	
Traditional + Dual Right				221	
Traditional + Dual Right + NRT + NOV				219	

Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.

Source: Highway Capacity Manual (HCM) 2010 methodology per Synchro® v9.

Traffic Impact Study

John Adams Academy
Multi-Purpose Room (MPR)
Roseville, California

June 28, 2017

Prepared for:

City of Roseville, California

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EXECUTIVE SUMMARY

This report documents the results of a traffic impact study completed for the John Adams Academy (JAA) Multi-Purpose Room ("MPR", the "proposed project", or "project"). The project proposes to construct an 11,600-square foot multi-purpose room on their campus located at 1 Sierragate Plaza in Roseville. Based on information provided by JAA, the Academy is understood to currently serve 1,305 students, with a full occupancy target of 1,608 students. The addition of the MPR is understood to add an additional 42 students bringing the maximum occupancy to 1,650 students. Access to the site is currently, and will continue to be provided at the existing single site driveway intersection with Harding Boulevard.

The purpose of this impact study is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the scope of work approved by the City of Roseville, and in a manner consistent with the City of Roseville's standards.

The following intersections are included in this evaluation:

1. Atlantic Street @ Wills Road
2. Atlantic Street @ I-80 Westbound On-Ramp
3. Atlantic Street @ I-80 Eastbound Off-Ramp/Taylor Road
4. Eureka Road @ Sunrise Avenue
5. Galleria Boulevard @ Roseville Parkway
6. Harding Boulevard @ Wills Road
7. Harding Boulevard @ Lead Hill Boulevard
8. Sunrise Avenue @ Lead Hill Boulevard
9. Harding Boulevard @ Estates Drive
10. Harding Boulevard @ Roseville Square
11. Douglas Boulevard @ Harding Boulevard
12. Douglas Boulevard @ I-80 Westbound Off-Ramp
13. Douglas Boulevard @ I-80 Eastbound Off-Ramp
14. Douglas Boulevard @ Sunrise Avenue

This traffic impact study was conducted for the study facilities for the following scenarios:

- A. Existing (2017) Conditions
- B. Existing (2017) plus Proposed Project Conditions⁺
- C. CIP Cumulative (2035) Conditions⁺⁺
- D. CIP Cumulative (2035) plus Proposed Project Conditions⁺⁺⁺

⁺ Scenario adds traffic associated with 42 new students to Existing (2017) Conditions

⁺⁺ Scenario considers the current City CIP Cumulative Travel Demand Model (TDM) land uses for the project site and adjusts the forecasts to reflect 1,608 students.

⁺⁺⁺ Scenario adds traffic associated with 42 new students to CIP Cumulative (2035) Conditions

Significant findings of this study include:

- The proposed project is estimated to generate 38 new trips during the AM peak-hour, 24 new trips during the School PM peak-hour, and 8 new trips during the traditional PM peak-hour.
- The proposed project is located in Traffic Analysis Zone (TAZ) (#78). This study considered the City's CIP Cumulative Travel Demand Model (TDM) land uses for the project site and adjusted the forecasts to reflect 1,608 students. Therefore, the CIP Cumulative (2035) scenario incorporates vehicle trips from the currently projected build-out of the JAA campus at 1,608 students. The effect of the project under CIP Cumulative (2035) conditions adds traffic associated with 42 new students.

- As defined by the City, the addition of the proposed project to the Cumulative (2035) scenario results in an impact at the Harding Boulevard intersection with Douglas Boulevard (Intersection #11) during the AM peak-hour. However, this impact can be mitigated to be *less than significant*.

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INTRODUCTION

This report documents the results of a traffic impact study completed for the John Adams Academy (JAA) Multi-Purpose Room (“MPR”, the “proposed project”, or “project”). The project proposes to construct an 11,600-square foot multi-purpose room on their campus located at 1 Sierragate Plaza in Roseville. Based on information provided by JAA, the Academy is understood to currently serve 1,305 students, with a full occupancy target of 1,608 students. The addition of the MPR is understood to add an additional 42 students bringing the maximum occupancy to 1,650 students. Access to the site is currently, and will continue to be provided at the existing single site driveway intersection with Harding Boulevard.

The purpose of this impact study is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the scope of work approved by the City of Roseville, and in a manner consistent with the City of Roseville's standards¹. The remaining sections of this report document the proposed project, analysis methodologies, impacts and mitigation, and general study conclusions.

PROJECT DESCRIPTION

The project proposes to construct an 11,600-square foot multi-purpose room (MPR) on their campus located at 1 Sierragate Plaza. The addition of the MPR adds an additional 42 students to the campus, bringing the maximum occupancy to 1,650 students. Access to the site is currently, and will continue to be provided at the existing single site driveway intersection with Harding Boulevard. The project location is shown in **Figure 1**, and the proposed project site plan is shown in **Figure 2**. The following intersections are included in this evaluation:

1. Atlantic Street @ Wills Road
2. Atlantic Street @ I-80 Westbound On-Ramp
3. Atlantic Street @ I-80 Eastbound Off-Ramp/Taylor Road
4. Eureka Road @ Sunrise Avenue
5. Galleria Boulevard @ Roseville Parkway
6. Harding Boulevard @ Wills Road
7. Harding Boulevard @ Lead Hill Boulevard
8. Sunrise Avenue @ Lead Hill Boulevard
9. Harding Boulevard @ Estates Drive
10. Harding Boulevard @ Roseville Square
11. Douglas Boulevard @ Harding Boulevard
12. Douglas Boulevard @ I-80 Westbound Off-Ramp
13. Douglas Boulevard @ I-80 Eastbound Off-Ramp
14. Douglas Boulevard @ Sunrise Avenue

Figure 3 illustrates the study intersections facilities, existing traffic control, and existing lane configurations.

¹ Section 4 *Traffic Impact Studies*, City of Roseville Design Standards, January 2016.



LEGAL DESCRIPTION

ADDRESS: 1 SIERRA GATE PLAZA
ROSEVILLE CA, 95678

7 SIERRA GATE PLAZA
ROSEVILLE CA, 95678

APN: 015-240-13
015-240-24
015-240-42

ZONING: BP

SETBACKS: TO BE DETERMINED

SITE AREA: 4.5 ACRES
6.15 ACRES

VEHICLE PARKING ANALYSIS

K-8 CLASSROOMS: 27 PARKING REQ'D.: 54 LOADING ZONE: 486'
K-8 PARKING PROVIDED: 171 STANDARD STALLS

9-12 CLASSROOMS: 23 PARKING REQ'D.: 196 LOADING ZONE: 207'
9-12 PARKING PROVIDED: 309 STANDARD STALLS

MULTI-PURPOSE PARKING REQ'D. (2 CLASSROOMS + ASSEMBLY): 193
TOTAL PARKING REQUIRED: 443
TOTAL PARKING PROVIDED: 480

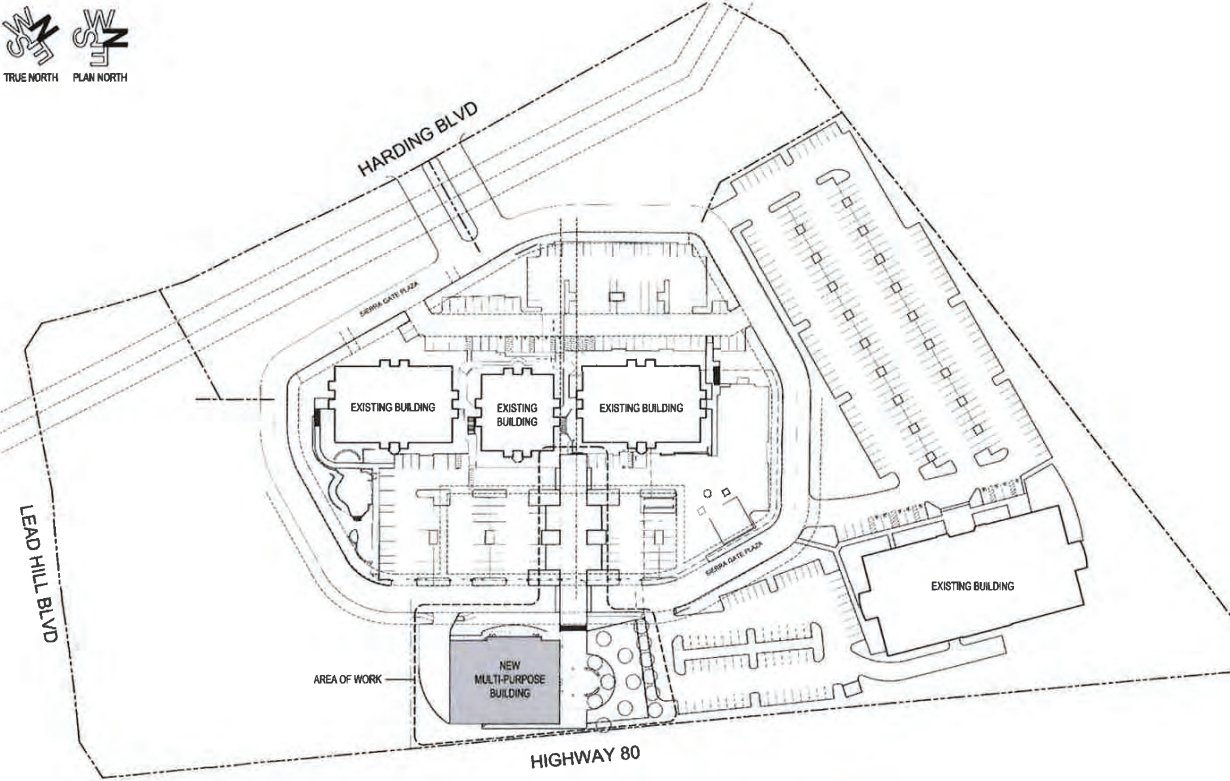
NEW BUILDING INFORMATION

BUILDING GROSS AREA: 11,400 SQ FT

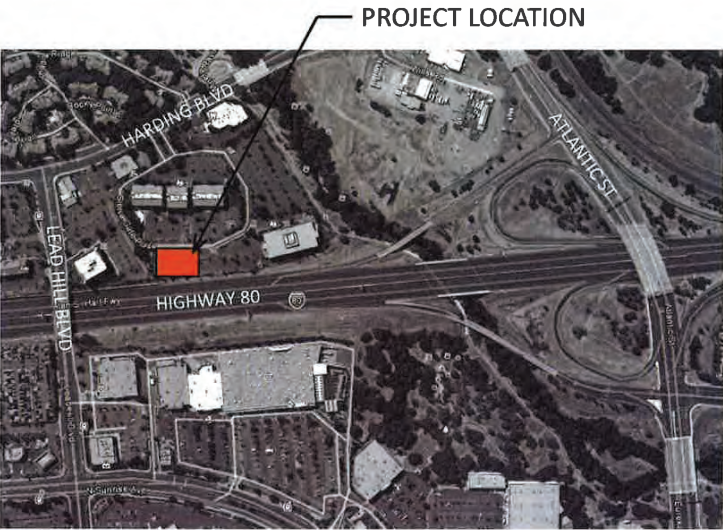
BUILDING HEIGHT: 36'-0"

BUILDING USE: ASSEMBLY
EDUCATION

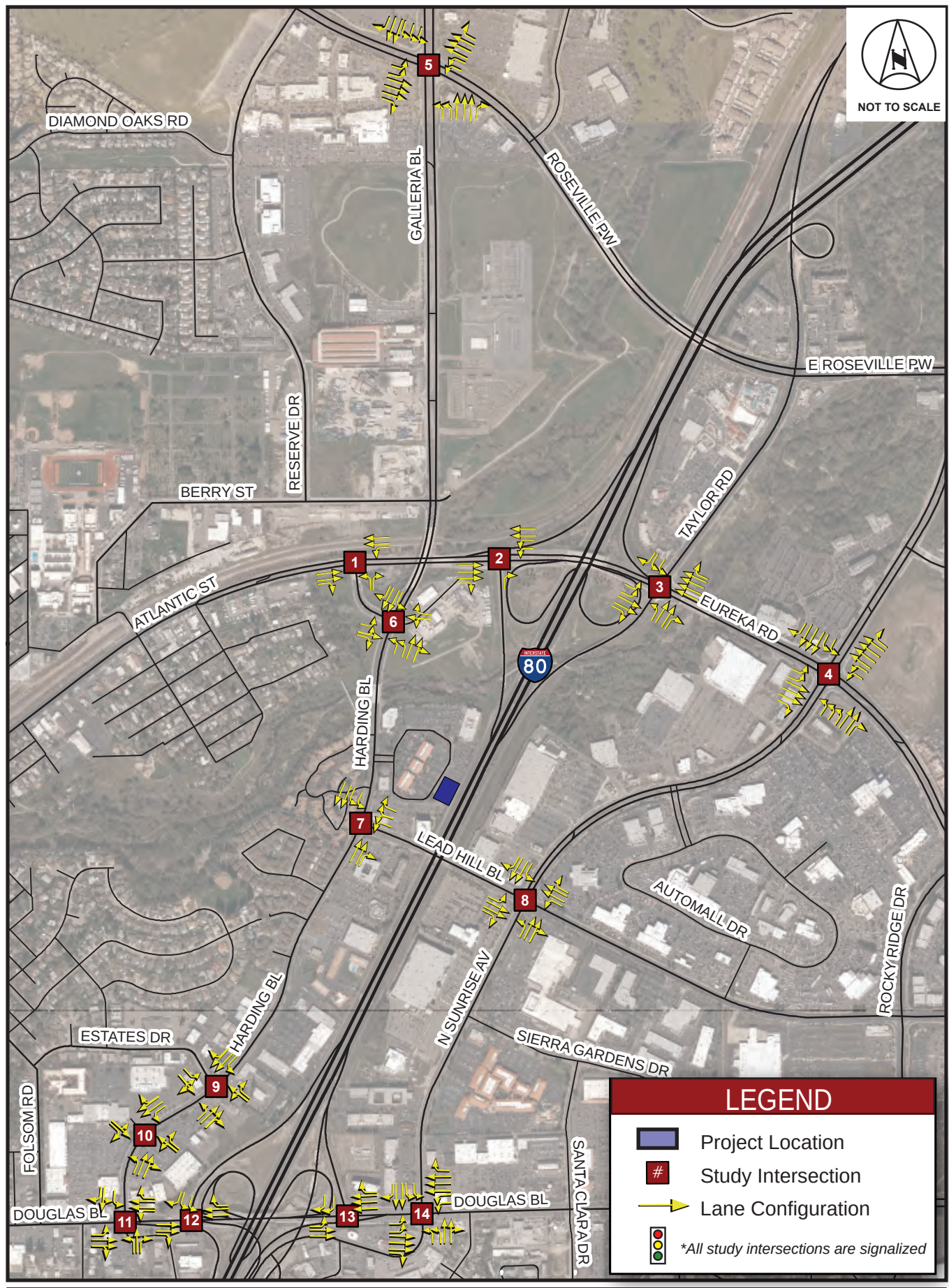
SITE PLAN



VICINITY MAP



williams + paddon ARCHITECTS // PLANNERS // PEOPLE



PROJECT AREA ROADWAYS

The following are descriptions of the primary roadways in the vicinity of the project.

Interstate 80 (I-80) is a freeway facility that forms the western boundary of the proposed project site. I-80 is the primary east-west transportation route in Northern California regionally connecting the San Francisco Bay Area with Sacramento and the Lake Tahoe Basin. Through the project area, I-80 have five travel lanes in each direction and accommodates approximately 183,000 vehicles per day (vpd)². Two nearby interchanges provide access to the project site, Atlantic Street/Eureka Road and Douglas Boulevard.

Harding Boulevard is a north-south arterial roadway adjacent to the proposed project site. This roadway provides connectivity between Douglas Boulevard and Atlantic Street, after which it changes names and becomes Galleria Boulevard. Harding Boulevard provides access to numerous commercial and residential areas though the general project area. Adjacent to the project site this roadway has two travel lanes in each direction and a continuous, two-way left turn lane (TWLTL).

Lead Hill Boulevard is an east-west arterial facility that links Harding Boulevard on the west with East Roseville Parkway on the east. Between these connections, this roadway provides access to the City's core office and commercial district. Through its overcrossing of I-80, Lead Hill Boulevard provides connectivity between the project site and areas to the east of I-80.

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation and Assignment

The number of trips anticipated to be generated by the proposed project was derived using site-specific trip generation rates previously developed for the project³, as well as data included in the *Trip Generation Manual, 9th Edition*, published by the Institute for Traffic Engineering (ITE). As presented in the previous study, a unique trip generation rate of 0.58 was calculated for the School PM Peak-Hour. However, considering that the School PM Peak-Hour occurs between 3:00 and 4:00 PM, this rate was determined to not be appropriate for use in the traditional PM Peak-Hour analyzed within this study (4:00-6:00 PM). Therefore, a proportional rate for the traditional PM Peak-Hour was calculated using ITE Land Use Code 536 for Private Schools (K-12), which indicates an AM Peak-Hour rate of 0.81 and a PM Peak-Hour rate of 0.17. In this case, the PM Peak-Hour rate is approximately 21-percent of the AM Peak-Hour Rate. Applying this peak-hour relationship to the JAA site-specific AM Peak-Hour rate, the proportional traditional PM Peak-Hour rate would be 0.19. This rate is considered appropriate for traditional PM Peak-Hour trip generation. As a result, the following rates represent unique John Adams Academy trip generation rates used in this evaluation:

AM Peak-Hour:	0.90 trips/student
School PM Peak-Hour:	0.58 trips/student
PM Peak-Hour:	0.19 trips/student

AM, School PM, and PM Peak-Hour in and out percentages were calculated based on the previous study. The proposed project trip generation for the three peak-hours are presented in **Table 1**.

As shown in **Table 1**, the proposed project is estimated to generate 38 new trips during the AM peak-hour, 24 new trips during the School PM peak-hour, and 8 new trips during the traditional PM peak-hour. Project traffic was distributed to the roadway network based on existing traffic volumes, output from the City's travel demand model, and professional judgment. The project trip distribution percentages are provided in **Figure 4** (2017 scenario), and the assignment of project trips is depicted in **Figure 5**.

² <http://www.dot.ca.gov/trafficops/census/volumes2015/Route71-80.html>

³ *John Adams Academy Traffic Access and Circulation Evaluation*, Kimley-Horn and Associates, Inc., January 13, 2016.



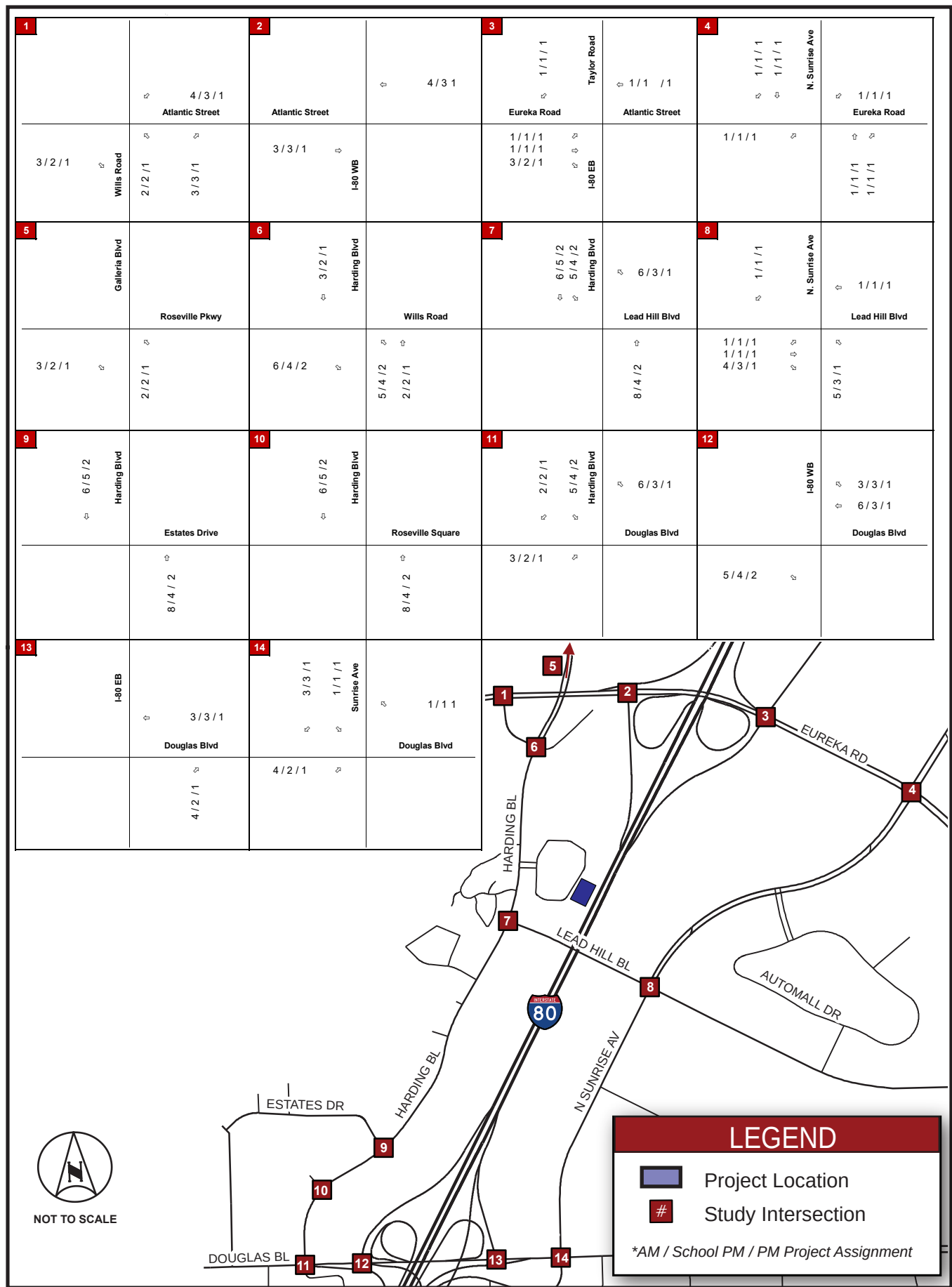


Table 1 – Proposed Project Trip Generation

Land Use	Size (students)	AM Peak-Hour					School PM Peak-Hour					PM Peak-Hour				
		Total Trips	IN		OUT		Total Trips	IN		OUT		Total Trips	IN		OUT	
			%	Trips	%	Trips		%	Trips	%	Trips		%	Trips	%	Trips
John Adams Academy	42	38	56%	21	44%	17	24	46%	11	54%	13	8	46%	4	54%	4
<i>Net New External Trips:</i>		38		21		17	24		11		13	8		4		4

Trip Rate Source: *John Adams Academy Traffic Access and Circulation Evaluation*, Kimley-Horn and Associates Inc., 2016.
Note: School PM Peak-Hour (2:00 - 4:00 PM), Traditional PM Peak-Hour (4:00 - 6:00 PM)

TRANSPORTATION IMPACT STUDY METHODOLOGY

This traffic impact study was performed in accordance with the City's requirements¹.

Level of Service Definitions

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual (HCM) 2010*.

Intersection Analysis

The HCM includes procedures for analyzing signalized intersections. The signalized intersection procedure defines LOS as a function of average control delay for the intersection as a whole. **Table 2** presents intersection LOS definitions as defined in the HCM.

Table 2 – Intersection Level of Service Criteria

Level of Service (LOS)	Un-Signalized	Signalized
	Average Control Delay* (sec/veh)	Average Control Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: *Highway Capacity Manual, 2010*

* Applied to the worst lane/lane group(s) for SSSC

Analysis Scenarios

Based on direction received from the City, and in a manner consistent with the City's guidelines¹, this LOS analysis was conducted for the study facilities for the following scenarios:

- Existing (2017) Conditions
- Existing (2017) plus Proposed Project Conditions⁺
- CIP Cumulative (2035) Conditions⁺⁺
- CIP Cumulative (2035) plus Proposed Project Conditions⁺⁺⁺

⁺ Scenario adds traffic associated with 42 new students to Existing (2017) Conditions

⁺⁺ Scenario considers the current City CIP Cumulative Travel Demand Model (TDM) land uses for the project site and adjusts the forecasts to reflect 1,608 students.

⁺⁺⁺ Scenario adds traffic associated with 42 new students to CIP Cumulative (2035) Conditions

EXISTING (2017) CONDITIONS

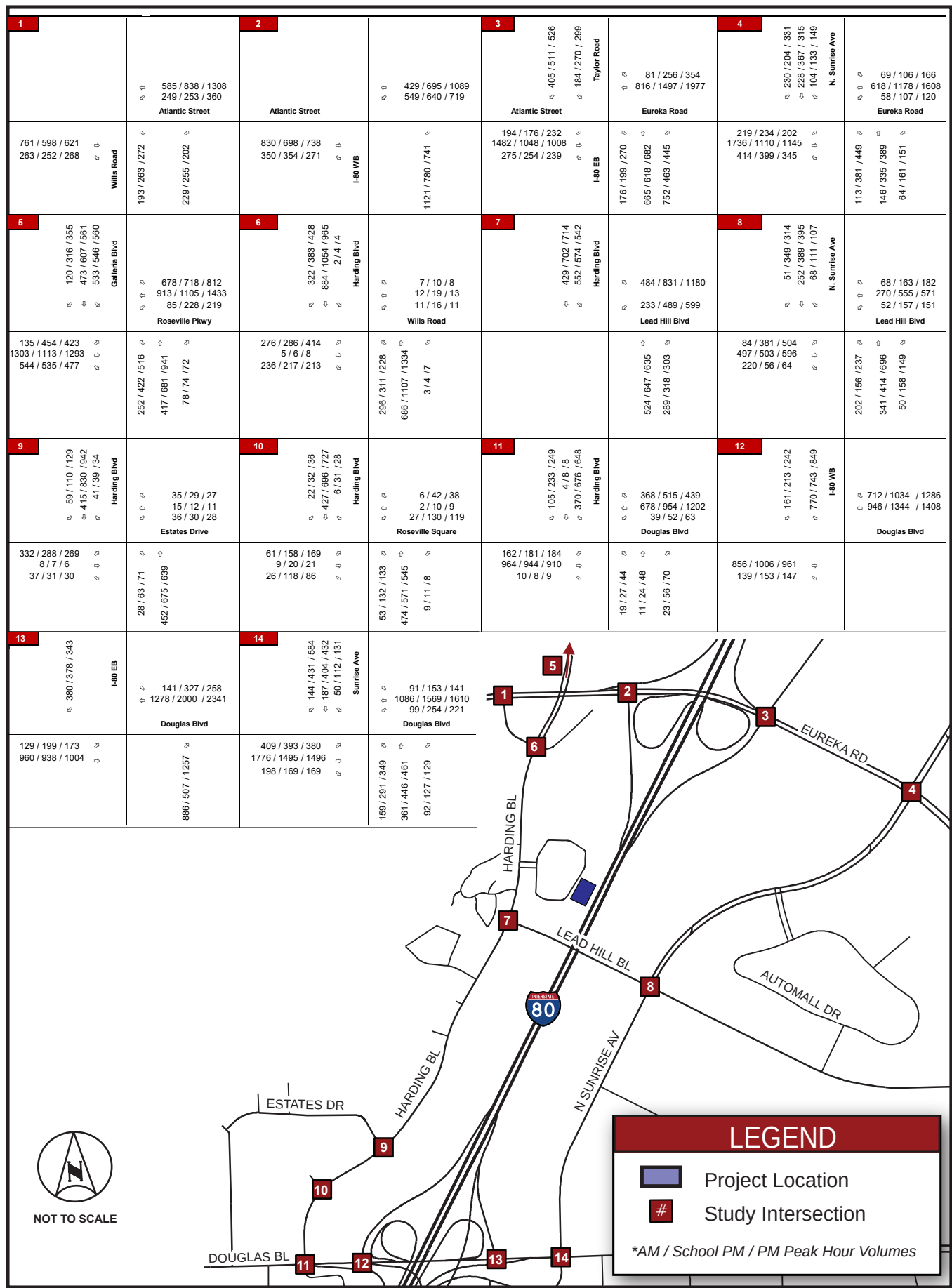
Weekday intersection turning movement traffic counts were obtained from the City for the fourteen (14) study intersections. This count data was collected through the City's Intelligent Transportation System (ITS) on Thursday, April 27, 2017. The count data was provided for the 24-hour period from which the individual intersections' peak-hours were identified. Existing (2017) peak-hour turn movement volumes are presented in **Figure 6**, and the traffic count data sheets are provided in **Appendix A**. Analysis worksheets for this scenario are provided in **Appendix B**. **Table 3** presents the intersection operating conditions for this analysis scenario. As indicated in **Table 3**, the study intersections operate from LOS A to LOS F.

Table 3 – Existing (2017) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2017)	
				Delay (sec)	LOS
1	Atlantic Street @ Wills Road	Signal	AM	11.4	B
			School PM	9.7	A
			PM	11.2	B
2	Atlantic Street @ I-80 WB Ramps	Signal	AM	137.3	F
			School PM	23.2	C
			PM	19.7	B
3	Atlantic Street/Eureka Road @ US-80 EB Ramps/Taylor Road	Signal	AM	26.9	C
			School PM	24.0	C
			PM	38.8	D
4	N. Sunrise Avenue @ Eureka Road	Signal	AM	17.9	B
			School PM	16.9	B
			PM	19.4	B
5	Galleria Blvd @ Roseville Pkwy	Signal	AM	19.3	B
			School PM	27.2	C
			PM	34.1	C
6	Harding Blvd @ Wills Road	Signal	AM	17.2	B
			School PM	17.1	B
			PM	17.4	B
7	Harding Blvd @ Lead Hill Blvd	Signal	AM	12.7	B
			School PM	14.6	B
			PM	41.9	D
8	N. Sunrise Aveue @ Lead Hill Blvd	Signal	AM	18.4	B
			School PM	33.2	C
			PM	71.0	E
9	Harding Blvd @ Estates Drive	Signal	AM	16.7	B
			School PM	15.4	B
			PM	18.7	B
10	Harding Blvd @ Roseville Square	Signal	AM	10.9	B
			School PM	19.2	B
			PM	19.9	B
11	Harding Blvd @ Douglas Blvd	Signal	AM	20.4	C
			School PM	27.8	C
			PM	36.9	D
12	Douglas Blvd @ I-80 WB Ramps	Signal	AM	8.3	A
			School PM	9.2	A
			PM	11.6	B
13	Douglas Blvd @ I-80 EB Ramps	Signal	AM	6.9	A
			School PM	10.1	B
			PM	10.7	B
14	Douglas Blvd @ Sunrise Avenue	Signal	AM	23.3	C
			School PM	33.6	C
			PM	41.0	D

Notes:

Bold represents substandard operations.



EXISTING (2017) PLUS PROPOSED PROJECT CONDITIONS

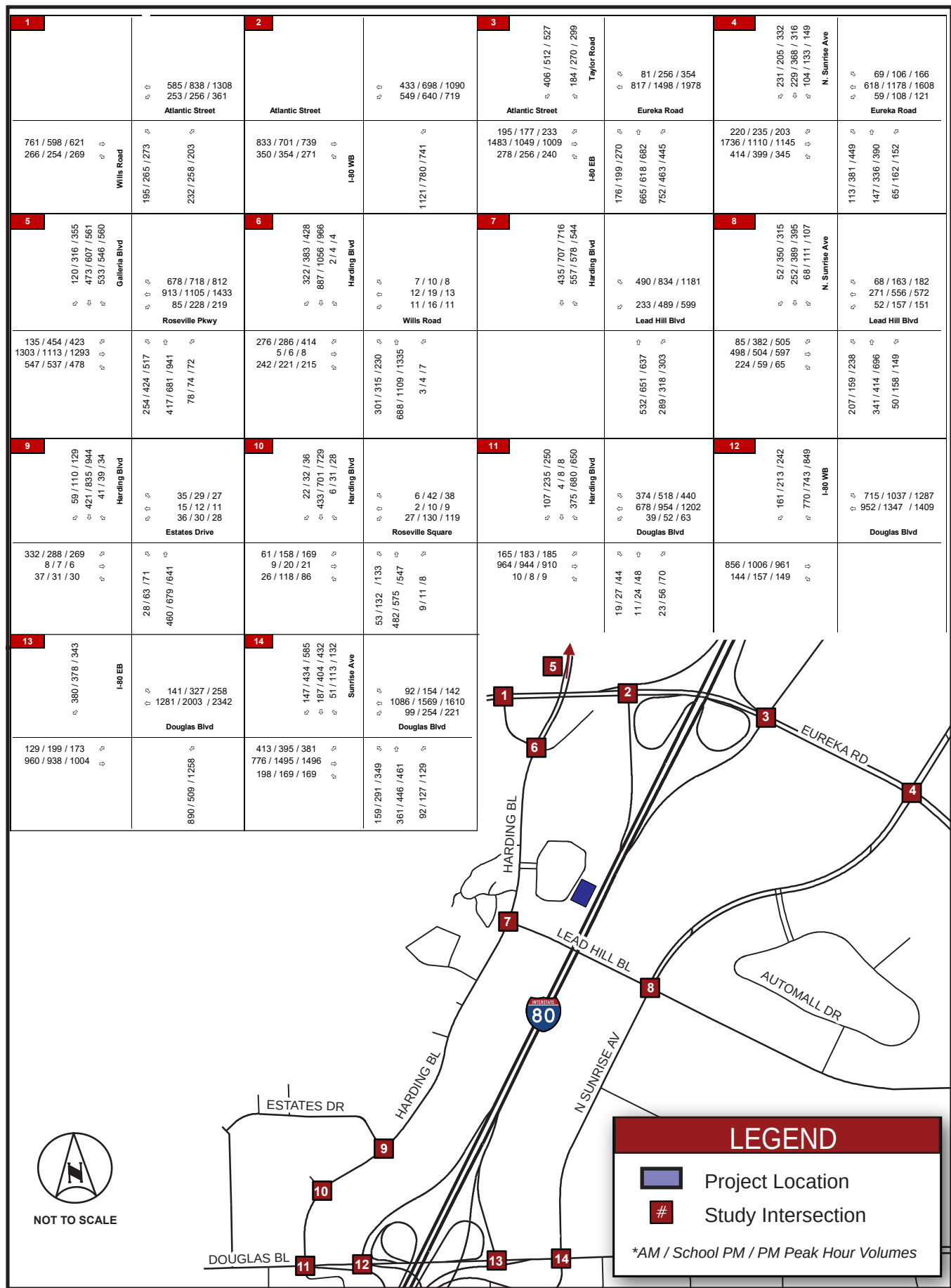
As previously discussed, the number of trips anticipated to be generated by the proposed project was derived using site-specific trip generation rates previously developed for the project, as well as data published by ITE. These trips were then assigned to the roadway network based on existing traffic volumes, output from the City's travel demand model, and professional judgment. Using these volumes, levels of service were determined at the study facilities. Peak-hour turn movement volumes for this scenario are presented in **Figure 7** and analysis worksheets are provided in **Appendix C**. **Table 4** presents the intersection operating conditions for this analysis scenario. As indicated in **Table 4**, the study intersections operate from LOS A to LOS F.

Table 4 – Existing (2017) and Existing (2017) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2017)		Existing (2017) plus Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Atlantic Street @ Wills Road	Signal	AM	11.4	B	12.0	B
			School PM	9.7	A	9.8	A
			PM	11.2	B	11.2	B
2	Atlantic Street @ I-80 WB Ramps	Signal	AM	137.3	F	137.0	F
			School PM	23.2	C	23.2	C
			PM	19.7	B	19.8	B
3	Atlantic Street/Eureka Road @ US-80 EB Ramps/Taylor Road	Signal	AM	26.9	C	26.9	C
			School PM	24.0	C	24.0	C
			PM	38.8	D	38.8	D
4	N. Sunrise Avenue @ Eureka Road	Signal	AM	17.9	B	17.9	B
			School PM	16.9	B	16.9	B
			PM	19.4	B	19.4	B
5	Galleria Blvd @ Roseville Pkwy	Signal	AM	19.3	B	19.3	B
			School PM	27.2	C	27.2	C
			PM	34.1	C	34.1	C
6	Harding Blvd @ Wills Road	Signal	AM	17.2	B	17.3	B
			School PM	17.1	B	17.2	B
			PM	17.4	B	17.4	B
7	Harding Blvd @ Lead Hill Blvd	Signal	AM	12.7	B	12.7	B
			School PM	14.6	B	14.6	B
			PM	41.9	D	41.9	D
8	N. Sunrise Aveue @ Lead Hill Blvd	Signal	AM	18.4	B	18.5	B
			School PM	33.2	C	33.3	C
			PM	71.0	E	72.1	E
9	Harding Blvd @ Estates Drive	Signal	AM	16.7	B	16.7	B
			School PM	15.4	B	15.4	B
			PM	18.7	B	18.7	B
10	Harding Blvd @ Roseville Square	Signal	AM	10.9	B	10.9	B
			School PM	19.2	B	19.2	B
			PM	19.9	B	19.9	B
11	Harding Blvd @ Douglas Blvd	Signal	AM	20.4	C	20.5	C
			School PM	27.8	C	27.9	C
			PM	36.9	D	37.1	D
12	Douglas Blvd @ I-80 WB Ramps	Signal	AM	8.3	A	8.3	A
			School PM	9.2	A	9.2	A
			PM	11.6	B	11.6	B
13	Douglas Blvd @ I-80 EB Ramps	Signal	AM	6.9	A	6.9	A
			School PM	10.1	B	10.1	B
			PM	10.7	B	10.8	B
14	Douglas Blvd @ Sunrise Avenue	Signal	AM	23.3	C	23.3	C
			School PM	33.6	C	33.7	C
			PM	41.0	D	41.2	D

Notes:

Bold represents substandard operations.



CIP CUMULATIVE (2035) CONDITIONS

This analysis scenario represents conditions anticipated to be realized based on reasonably foreseeable land developments and roadway improvements by 2035, including vehicle trips from the currently projected build-out of the JAA campus at 1,608 students. The 2035 AM and PM peak-hour traffic volumes were provided by the City. The forecast school-PM peak-hour volumes were developed for use in the study by applying the Existing (2017) relationship between school-PM and PM peak-hours. Cumulative (2035) lane geometries and peak-hour turn movement volumes are presented in **Figure 8** and **Figure 9**, respectively. Analysis worksheets for this scenario are provided in **Appendix D**. **Table 5** presents the intersection operating conditions. As indicated in **Table 5**, the study intersections operate from LOS A to LOS F.

Table 5 – CIP Cumulative (2035) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	CIP Cumulative (2035)	
				Delay (sec)	LOS
1	Atlantic Street @ Wills Road	Signal	AM	12.7	B
			School PM	16.8	B
			PM	12.1	B
2	Atlantic Street @ I-80 WB Ramps	Signal	AM	74.4	E
			School PM	101.4	F
			PM	70.5	E
3	Atlantic Street/Eureka Road @ US-80 EB Ramps/Taylor Road	Signal	AM	15.9	B
			School PM	16.3	B
			PM	37.6	D
4	N. Sunrise Avenue @ Eureka Road	Signal	AM	19.0	B
			School PM	22.7	C
			PM	26.4	C
5	Galleria Blvd @ Roseville Pkwy	Signal	AM	47.1	D
			School PM	40.8	D
			PM	54.9	D
6	Harding Blvd @ Wills Road	Signal	AM	16.1	B
			School PM	24.0	C
			PM	20.7	C
7	Harding Blvd @ Lead Hill Blvd	Signal	AM	15.0	B
			School PM	29.5	C
			PM	42.5	D
8	N. Sunrise Avenue @ Lead Hill Blvd	Signal	AM	23.2	C
			School PM	24.3	C
			PM	35.2	D
9	Harding Blvd @ Estates Drive	Signal	AM	16.5	B
			School PM	23.5	C
			PM	22.1	C
10	Harding Blvd @ Roseville Square	Signal	AM	9.6	A
			School PM	29.9	C
			PM	25.6	C
11	Harding Blvd @ Douglas Blvd	Signal	AM	34.5	C
			School PM	75.1	E
			PM	84.9	F
12	Douglas Blvd @ I-80 WB Ramps	Signal	AM	9.8	A
			School PM	13.7	B
			PM	24.1	C
13	Douglas Blvd @ I-80 EB Ramps	Signal	AM	15.0	B
			School PM	18.8	B
			PM	15.7	B
14	Douglas Blvd @ Sunrise Avenue	Signal	AM	21.5	C
			School PM	33.7	C
			PM	39.3	D

Notes:

Bold represents substandard operations.

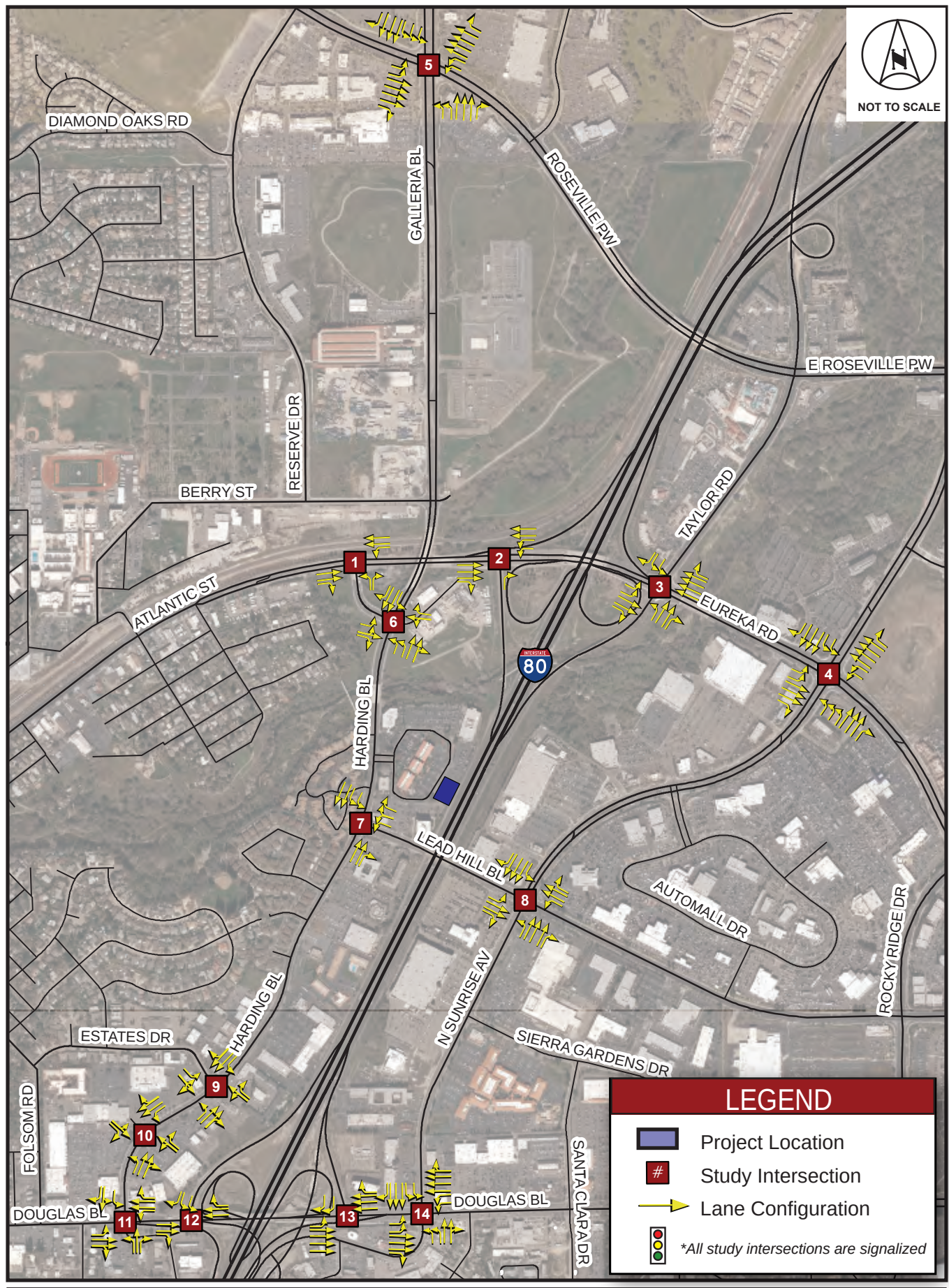
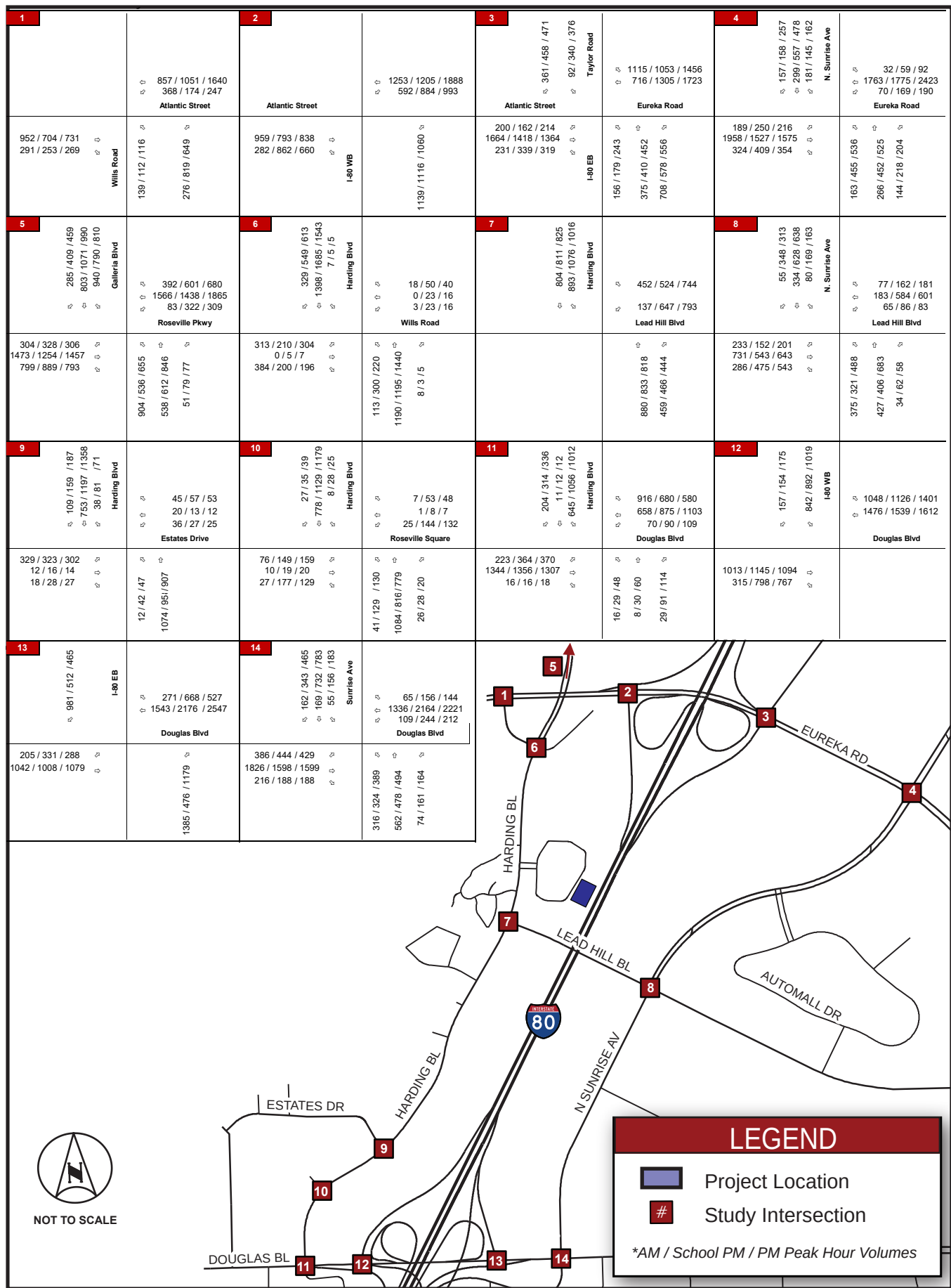


Figure 8



CIP CUMULATIVE (2035) PLUS PROPOSED PROJECT CONDITIONS

The number of trips estimated to be generated by the proposed project were determined using the ITE *Trip Generation Manual* and were then assigned to the roadway network based on existing traffic volumes, output from the City's travel demand model, and professional judgment. Using these volumes, levels of service were determined at the study facilities. Cumulative (2035) plus Proposed Project peak-hour turn movement volumes are presented in **Figure 10**. Analysis worksheets for this scenario are provided in **Appendix E**. **Table 6** presents the intersection operating conditions for this analysis scenario. As indicated in **Table 6**, the addition of the proposed project results in a significant impact at the Harding Boulevard intersection with Douglas Boulevard (Intersection #11).

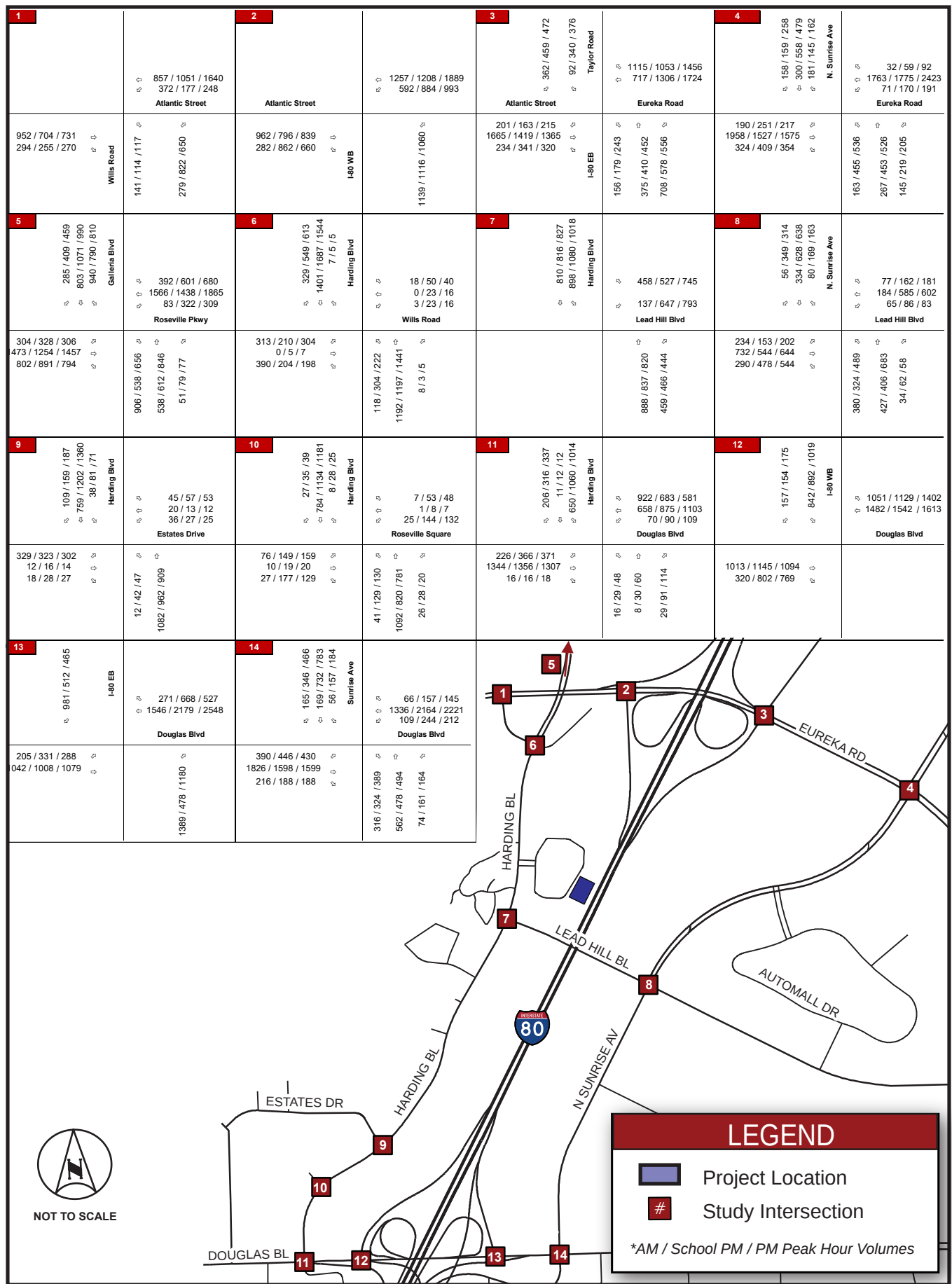
Table 6 – CIP Cumulative (2035) plus Proposed Project Intersection Levels of Service

vv	Intersection	Control	Peak Hour	CIP Cumulative (2035)		CIP Cumulative (2035) plus Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Atlantic Street @ Wills Road	Signal	AM	12.7	B	12.9	B
			School PM	16.8	B	17.2	B
			PM	12.1	B	12.2	B
2	Atlantic Street @ I-80 WB Ramps	Signal	AM	74.4	E	74.4	E
			School PM	101.4	F	101.4	F
			PM	70.5	E	70.6	E
3	Atlantic Street/Eureka Road @ US-80 EB Ramps/Taylor Road	Signal	AM	15.9	B	15.9	B
			School PM	16.3	B	16.4	B
			PM	37.6	D	37.8	D
4	N. Sunrise Avenue @ Eureka Road	Signal	AM	19.0	B	19.1	B
			School PM	22.7	C	22.7	C
			PM	26.4	C	26.4	C
5	Galleria Blvd @ Roseville Pkwy	Signal	AM	47.1	D	47.1	D
			School PM	40.8	D	40.9	D
			PM	54.9	D	55.0	D
6	Harding Blvd @ Wills Road	Signal	AM	16.1	B	16.2	B
			School PM	24.0	C	24.1	C
			PM	20.7	C	20.7	C
7	Harding Blvd @ Lead Hill Blvd	Signal	AM	15.0	B	15.2	B
			School PM	29.5	C	29.8	C
			PM	42.5	D	42.7	D
8	N. Sunrise Aveue @ Lead Hill Blvd	Signal	AM	23.2	C	23.4	C
			School PM	24.3	C	24.4	C
			PM	35.2	D	35.3	D
9	Harding Blvd @ Estates Drive	Signal	AM	16.5	B	16.5	B
			School PM	23.5	C	23.5	C
			PM	22.1	C	22.2	C
10	Harding Blvd @ Roseville Square	Signal	AM	9.6	A	9.6	A
			School PM	29.9	C	30.0	C
			PM	25.6	C	25.6	C
11	Harding Blvd @ Douglas Blvd	Signal	AM	34.5	C	35.2	D
			School PM	75.1	E	75.7	E
			PM	84.9	F	85.2	F
12	Douglas Blvd @ I-80 WB Ramps	Signal	AM	9.8	A	9.8	A
			School PM	13.7	B	13.8	B
			PM	24.1	C	24.1	C
13	Douglas Blvd @ I-80 EB Ramps	Signal	AM	15.0	B	15.1	B
			School PM	18.8	B	18.8	B
			PM	15.7	B	15.7	B
14	Douglas Blvd @ Sunrise Avenue	Signal	AM	21.5	C	21.6	C
			School PM	33.7	C	33.7	C
			PM	39.3	D	39.4	D

Notes:

Bold represents substandard operations. Shaded represents significant impact.

City of Roseville, John Adams Academy MPR - Traffic Impact Study



IMPACTS AND MITIGATION

Standards of Significance

Project impacts were determined by comparing conditions with the proposed project to those without the project. Impacts for intersections are created when traffic from the proposed project forces the LOS to fall below a specific threshold. The City's *General Plan*⁴ specifies the following:

"Level of Service (LOS) expresses the City's targeted level of mobility during the life of the General Plan. Its policies and implementation measures reflect the City's desire to maintain uncongested traffic operations (LOS "C" or better at 70% of the signalized intersections during the a.m. and p.m. peak periods) on its roadway system for all hours of the day. The level of service implementation measures provide criteria to be evaluated where the City may consider a modification to the level of service "C" policy."

Based on this guidance and in a manner consistent with other traffic studies completed in the City, the project would have a significant impact if it would:

1. Cause a signalized intersection to be degraded as follows under Existing or CIP Cumulative (2035) conditions during the AM or PM peak hours:
 - o For intersections currently operating at LOS C or better: worsen operations to LOS D or worse.
 - o For intersections currently operating at LOS D, E, or F: cause operations to further worsen by one or more service levels.
2. Cause the overall percentage of signalized intersections operating at LOS C or better during the AM and PM peak hours to fall below 70 percent.

Impacts and Mitigation

As reflected in **Table 4**, under Existing (2017) plus Proposed Project conditions, the addition of the proposed project does not result in a significant impact, as defined by the City. As reflected in **Table 6**, under Cumulative (2035) plus Proposed Project conditions, the addition of the proposed project results in a significant impact in the AM peak-hour at the Harding Boulevard intersection with Douglas Boulevard (Intersection #11), as defined by the City. The following mitigation is recommended:

M1. Intersection #11, Harding Boulevard @ Douglas Boulevard

The significant impact at this intersection during the AM peak-hour can be mitigated by the addition of a westbound right-turn overlap signal phase. As shown in **Table 7**, this mitigation measure results in the intersection operating at LOS C during the AM peak-hour. Therefore, **this impact is less than significant**. Analysis worksheets are provided in **Appendix E**.

Table 7 – CIP Cumulative (2035) plus Proposed Project Mitigated Intersection Level of Service

ID	Intersection	Control	Peak Hour	CIP Cumulative (2035)		CIP Cumulative (2035) plus Project - Mitigated	
				Delay (sec)	LOS	Delay (sec)	LOS
11	Harding Blvd @ Douglas Blvd	Signal	AM	34.5	C	30.5	C
			School PM	75.1	E	63.1	E
			PM	84.9	F	81.8	F

Notes:

Bold represents substandard operations.

⁴ Roseville General Plan 2035, Circulation Element, City of Roseville, August 17, 2016.

CONCLUSIONS

Significant findings of this study include:

- The proposed project is estimated to generate 38 new trips during the AM peak-hour, 24 new trips during the School PM peak-hour, and 8 new trips during the traditional PM peak-hour.
- The proposed project is located in Traffic Analysis Zone (TAZ) (#78). This study considered the City's CIP Cumulative Travel Demand Model (TDM) land uses for the project site and adjusted the forecasts to reflect 1,608 students. Therefore, the CIP Cumulative (2035) scenario incorporates vehicle trips from the currently projected build-out of the JAA campus at 1,608 students. The effect of the project under CIP Cumulative (2035) conditions adds traffic associated with 42 new students.
- As defined by the City, the addition of the proposed project to the Cumulative (2035) scenario results in an impact at the Harding Boulevard intersection with Douglas Boulevard (Intersection #11) during the AM peak-hour. However, this impact can be mitigated to be *less than significant*.

Appendix A

Traffic Count Data Sheets



Turning Movement Volume Report

Report Date: 4/28/2017 8:03:18 AM
From 4/27/2017 to 4/27/2017

Intersection: 71

Time	N				S				E				W					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15	6		5	11				0		8	2	10	2	17		19	40	
27/04/17 00:15-00:30	2		4	6				0		12	4	16	4	13		17	39	
27/04/17 00:30-00:45	3		1	4				0		9	2	11	4	15		19	34	
27/04/17 00:45-01:00	2		2	4				0		1	2	3	4	11		15	22	
27/04/17 01:00-01:15	2		1	3				0		10	4	14	3	9		12	29	
27/04/17 01:15-01:30	1		2	3				0		5	1	6	2	12		14	23	
27/04/17 01:30-01:45	1		1	2				0		3	0	3	0	4		4	9	
27/04/17 01:45-02:00	2		2	4				0		2	0	2	0	5		5	11	
27/04/17 02:00-02:15	3		4	7				0		1	2	3	1	7		8	18	
27/04/17 02:15-02:30	1		1	2				0		0	0	0	1	2		3	5	
27/04/17 02:30-02:45	2		1	3				0		7	0	7	0	3		3	13	
27/04/17 02:45-03:00	0		0	0				0		3	2	5	1	4		5	10	
27/04/17 03:00-03:15	0		0	0				0		1	1	2	1	2		3	5	
27/04/17 03:15-03:30	0		1	1				0		2	2	4	0	2		2	7	
27/04/17 03:30-03:45	0		0	0				0		5	1	6	1	5		6	12	
27/04/17 03:45-04:00	1		1	2				0		2	1	3	1	3		4	9	
27/04/17 04:00-04:15	1		1	2				0		13	2	15	4	1		5	22	
27/04/17 04:15-04:30	1		1	2				0		5	0	5	1	3		4	11	
27/04/17 04:30-04:45	0		0	0				0		5	0	5	1	4		5	10	
27/04/17 04:45-05:00	1		4	5				0		19	1	20	2	10		12	37	
27/04/17 05:00-05:15	0		4	4				0		23	4	27	5	9		14	45	
27/04/17 05:15-05:30	3		2	5				0		27	2	29	2	9		11	45	
27/04/17 05:30-05:45	1		1	2				0		18	0	18	4	23		27	47	
27/04/17 05:45-06:00	3		6	9				0		27	8	35	5	29		34	78	
27/04/17 06:00-06:15	0		10	10				0		60	13	73	16	32		48	131	
27/04/17 06:15-06:30	7		12	19				0		68	13	81	11	52		63	163	
27/04/17 06:30-06:45	9		10	19				0		66	15	81	10	63		73	173	
27/04/17 06:45-07:00	13		26	39				0		112	12	124	19	91		110	273	
27/04/17 07:00-07:15	10		20	30				0		117	16	133	27	102		129	292	
27/04/17 07:15-07:30	14		32	46				0		131	29	160	42	124		166	372	
27/04/17 07:30-07:45	30		48	78				0		133	57	190	52	138		190	458	
27/04/17 07:45-08:00	62		71	133				0		220	72	292	60	135		195	620	
27/04/17 08:00-08:15	56		63	119				0		227	75	302	89	182		271	692	
27/04/17 08:15-08:30	45		47	92				0		181	59	240	48	130		178	510	
27/04/17 08:30-08:45	28		28	56				0		198	37	235	44	127		171	462	
27/04/17 08:45-09:00	21		35	56				0		145	39	184	34	131		165	405	
27/04/17 09:00-09:15	32		48	80				0		308	98	406	104	282		386	872	
27/04/17 09:15-09:30	28		29	57				0		130	38	168	34	114		148	373	
27/04/17 09:30-09:45	30		23	53				0		110	26	136	46	82		128	317	
27/04/17 09:45-10:00	36		32	68				0		108	35	143	37	122		159	370	
27/04/17 10:00-10:15	36		24	60				0		109	32	141	55	99		154	355	
27/04/17 10:15-10:30	30		18	48				0		104	52	156	41	93		134	338	
27/04/17 10:30-10:45	38		19	57				0		104	46	150	40	94		134	341	
27/04/17 10:45-11:00	24		25	49				0		89	48	137	48	96		144	330	
27/04/17 11:00-11:15	28		33	61				0		96	41	137	46	123		169	367	
27/04/17 11:15-11:30	46		33	79				0		105	42	147	35	135		170	396	
27/04/17 11:30-11:45	35		37	72				0		99	56	155	51	125		176	403	
27/04/17 11:45-12:00	60		50	110				0		131	51	182	65	136		201	493	
27/04/17 12:00-12:15	46		40	86				0		124	48	172	46	158		204	462	
27/04/17 12:15-12:30	55		44	99				0		136	62	198	45	158		203	500	
27/04/17 12:30-12:45	37		43	80				0		92	45	137	45	120		165	382	
27/04/17 12:45-13:00	48		52	100				0		109	60	169	54	159		213	482	
27/04/17 13:00-13:15	60		37	97				0		125	46	171	60	144		204	472	
27/04/17 13:15-13:30	57		45	102				0		129	33	162	51	126		177	441	
27/04/17 13:30-13:45	42		48	90				0		124	37	161	56	143		199	450	
27/04/17 13:45-14:00	48		44	92				0		139	57	196	55	132		187	475	
27/04/17 14:00-14:15	46		47	93				0		121	59	180	42	147		189	462	
27/04/17 14:15-14:30	44		36	80				0		124	36	160	54	165		219	459	
27/04/17 14:30-14:45	66		45	111				0		130	46	176	50	199		249	536	
27/04/17 14:45-15:00	83		53	136				0		140	64	204	53	177		230	570	
27/04/17 15:00-15:15	56		51	107				0		152	76	228	57	184		241	576	
27/04/17 15:15-15:30	63		66	129				0		158	65	223	61	173		234	586	
27/04/17 15:30-15:45	67		74	141				0		144	54	198	60	227		287	626	
27/04/17 15:45-16:00	77		64	141				0		144	57	201	75	254		329	671	
27/04/17 16:00-16:15	65		48	113				0		135	57	192	73	235		308	613	
27/04/17 16:15-16:30	83		38	121				0		178	54	232	70	239		309	662	
27/04/17 16:30-16:45	69		57	126				0		152	59	211	71	285		356	693	
27/04/17 16:45-17:00	66		58	124				0		156	73	229	83	266		349	702	
27/04/17 17:00-17:15	67		47	114				0		144	68	212	90	315		405	731	
27/04/17 17:15-17:30	80		54</															



Turning Movement Volume Report

Report Date: 4/28/2017 8:04:02 AM
From 4/27/2017 to 4/27/2017

Intersection: 130

Time	N				S				E				W					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15				0				0		8	10	18	32	13			45	63
27/04/17 00:15-00:30				0				0		10	9	19	32	12			44	63
27/04/17 00:30-00:45				0				0		12	8	20	24	9			33	53
27/04/17 00:45-01:00				0				0		2	7	9	18	8			26	35
27/04/17 01:00-01:15				0				0		8	1	9	19	5			24	33
27/04/17 01:15-01:30				0				0		8	5	13	18	10			28	41
27/04/17 01:30-01:45				0				0		2	3	5	9	2			11	16
27/04/17 01:45-02:00				0				0		1	3	4	7	5			12	16
27/04/17 02:00-02:15				0				0		2	9	11	4	5			9	20
27/04/17 02:15-02:30				0				0		1	3	4	6	1			7	11
27/04/17 02:30-02:45				0				0		6	2	8	5	1			6	14
27/04/17 02:45-03:00				0				0		3	0	3	4	4			8	11
27/04/17 03:00-03:15				0				0		1	0	1	3	0			3	4
27/04/17 03:15-03:30				0				0		0	4	4	5	1			6	10
27/04/17 03:30-03:45				0				0		5	3	8	5	5			10	18
27/04/17 03:45-04:00				0				0		2	5	7	8	4			12	19
27/04/17 04:00-04:15				0				0		13	8	21	10	2			12	33
27/04/17 04:15-04:30				0				0		4	5	9	15	2			17	26
27/04/17 04:30-04:45				0				0		6	5	11	15	3			18	29
27/04/17 04:45-05:00				0				0		16	8	24	20	10			30	54
27/04/17 05:00-05:15				0				0		24	7	31	22	5			27	58
27/04/17 05:15-05:30				0				0		23	12	35	22	4			26	61
27/04/17 05:30-05:45				0				0		14	11	25	21	17			38	63
27/04/17 05:45-06:00				0				0		22	23	45	39	21			60	105
27/04/17 06:00-06:15				0				0		60	30	90	49	28			77	167
27/04/17 06:15-06:30				0				0		52	42	94	70	30			100	194
27/04/17 06:30-06:45				0				0		60	38	98	99	37			136	234
27/04/17 06:45-07:00				0				0		104	60	164	107	58			165	329
27/04/17 07:00-07:15				0				0		108	54	162	103	63			166	328
27/04/17 07:15-07:30				0				0		142	73	215	122	98			220	435
27/04/17 07:30-07:45				0				0		148	80	228	131	92			223	451
27/04/17 07:45-08:00				0				0		238	98	336	146	110			256	592
27/04/17 08:00-08:15				0				0		247	92	339	127	137			264	603
27/04/17 08:15-08:30				0				0		197	80	277	145	90			235	512
27/04/17 08:30-08:45				0				0		196	62	258	106	95			201	459
27/04/17 08:45-09:00				0				0		161	60	221	119	97			216	437
27/04/17 09:00-09:15				0				0		308	114	422	242	216			458	880
27/04/17 09:15-09:30				0				0		139	44	183	91	91			182	365
27/04/17 09:30-09:45				0				0		116	35	151	106	71			177	328
27/04/17 09:45-10:00				0				0		117	68	185	104	84			188	373
27/04/17 10:00-10:15				0				0		112	53	165	146	90			236	401
27/04/17 10:15-10:30				0				0		119	44	163	105	79			184	347
27/04/17 10:30-10:45				0				0		104	38	142	123	71			194	336
27/04/17 10:45-11:00				0				0		95	39	134	105	86			191	325
27/04/17 11:00-11:15				0				0		109	39	148	109	91			200	348
27/04/17 11:15-11:30				0				0		132	52	184	134	96			230	414
27/04/17 11:30-11:45				0				0		114	52	166	122	101			223	389
27/04/17 11:45-12:00				0				0		150	71	221	126	125			251	472
27/04/17 12:00-12:15				0				0		146	45	191	111	107			218	409
27/04/17 12:15-12:30				0				0		161	68	229	150	133			283	512
27/04/17 12:30-12:45				0				0		106	62	168	137	104			241	409
27/04/17 12:45-13:00				0				0		124	68	192	152	136			288	480
27/04/17 13:00-13:15				0				0		149	57	206	146	127			273	479
27/04/17 13:15-13:30				0				0		159	70	229	143	108			251	480
27/04/17 13:30-13:45				0				0		133	74	207	127	131			258	465
27/04/17 13:45-14:00				0				0		143	66	209	147	127			274	483
27/04/17 14:00-14:15				0				0		146	62	208	159	111			270	478
27/04/17 14:15-14:30				0				0		128	77	205	151	122			273	478
27/04/17 14:30-14:45				0				0		141	75	216	156	165			321	537
27/04/17 14:45-15:00				0				0		141	90	231	173	154			327	558
27/04/17 15:00-15:15				0				0		177	90	267	159	159			318	585
27/04/17 15:15-15:30				0				0		166	103	269	160	151			311	580
27/04/17 15:30-15:45				0				0		177	87	264	163	189			352	616
27/04/17 15:45-16:00				0				0		178	74	252	158	196			354	606
27/04/17 16:00-16:15				0				0		152	63	215	189	181			370	585
27/04/17 16:15-16:30				0				0		185	74	259	188	198			386	645
27/04/17 16:30-16:45				0				0		183	71	254	172	224			396	650
27/04/17 16:45-17:00				0				0		189	64	253	178	236			414	667
27/04/17 17:00-17:15				0				0		172	67	239	170	254			424	663
27/04/17 17:15-17:30				0				0		195	71	266	196	294			490	75



Turning Movement Volume Report

Report Date: 4/28/2017 8:04:50 AM
From 4/27/2017 to 4/27/2017

Intersection: 131

	NW				SE				NE				SW					
Time	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Int Total	
27/04/17 00:00-00:15		49	7	56	4	12	3	19	0	14	8	22	4		23	27	124	
27/04/17 00:15-00:30		34	11	45	3	12	5	20	4	17	5	26	6		34	40	131	
27/04/17 00:30-00:45		35	4	39	2	11	5	18	4	12	12	28	3		18	21	106	
27/04/17 00:45-01:00		29	2	31	2	7	2	11	4	11	7	22	2		12	14	78	
27/04/17 01:00-01:15		21	5	26	2	10	4	16	1	9	3	13	3		13	16	71	
27/04/17 01:15-01:30		17	3	20	5	9	2	16	4	4	3	11	3		16	19	66	
27/04/17 01:30-01:45		14	1	15	2	4	1	7	1	8	5	14	0		9	9	45	
27/04/17 01:45-02:00		5	1	6	0	6	0	6	2	6	5	13	1		14	15	40	
27/04/17 02:00-02:15		7	0	7	1	6	1	8	3	3	3	9	3		1	4	28	
27/04/17 02:15-02:30		10	0	10	1	4	0	5	0	7	3	10	1		5	6	31	
27/04/17 02:30-02:45		7	1	8	1	6	3	10	1	7	2	10	2		6	8	36	
27/04/17 02:45-03:00		11	0	11	2	3	1	6	1	1	3	5	2		4	6	28	
27/04/17 03:00-03:15		9	1	10	2	7	1	10	1	4	3	8	0		4	4	32	
27/04/17 03:15-03:30		5	0	5	2	5	0	7	0	5	2	7	2		3	5	24	
27/04/17 03:30-03:45		10	3	13	1	8	2	11	4	4	4	12	1		5	6	42	
27/04/17 03:45-04:00		4	1	5	1	11	0	12	3	3	6	12	0		9	9	38	
27/04/17 04:00-04:15		7	2	9	4	11	6	21	2	8	3	13	3		6	9	52	
27/04/17 04:15-04:30		12	2	14	3	11	3	17	2	5	3	10	1		10	11	52	
27/04/17 04:30-04:45		16	4	20	3	13	3	19	2	10	5	17	0		10	10	66	
27/04/17 04:45-05:00		22	2	24	5	26	5	36	4	18	11	33	5		10	15	108	
27/04/17 05:00-05:15		16	1	17	12	44	8	64	4	22	14	40	5		16	21	142	
27/04/17 05:15-05:30		25	2	27	10	41	9	60	0	23	10	33	6		16	22	142	
27/04/17 05:30-05:45		37	5	42	5	53	3	61	6	36	22	64	2		19	21	188	
27/04/17 05:45-06:00		45	4	49	10	69	5	84	13	31	24	68	7		26	33	234	
27/04/17 06:00-06:15		63	8	71	14	116	18	148	19	51	42	112	6		28	34	365	
27/04/17 06:15-06:30		72	10	82	19	103	19	141	13	48	49	110	9		46	55	388	
27/04/17 06:30-06:45		92	17	109	25	175	20	220	20	70	77	167	14		76	90	586	
27/04/17 06:45-07:00		122	12	134	39	214	26	279	21	88	104	213	18		71	89	715	
27/04/17 07:00-07:15		167	14	181	35	222	38	295	31	140	139	310	25		61	86	872	
27/04/17 07:15-07:30		180	12	192	34	243	48	325	46	108	120	274	23		78	101	892	
27/04/17 07:30-07:45		231	19	250	37	326	49	412	34	109	154	297	34		95	129	1088	
27/04/17 07:45-08:00		202	17	219	43	330	93	466	54	181	168	403	36		106	142	1230	
27/04/17 08:00-08:15		213	21	234	70	460	70	600	47	199	209	455	46		109	155	1444	
27/04/17 08:15-08:30		170	24	194	44	366	63	473	41	176	221	438	68		95	163	1268	
27/04/17 08:30-08:45		178	33	211	56	448	58	562	44	143	221	408	60		73	133	1314	
27/04/17 08:45-09:00		202	23	225	50	320	46	416	45	155	208	408	46		76	122	1171	
27/04/17 09:00-09:15		502	70	572	74	736	78	888	76	230	334	640	102		172	274	2374	
27/04/17 09:15-09:30		211	19	230	22	246	46	314	35	112	143	290	38		56	94	928	
27/04/17 09:30-09:45		213	27	240	27	271	47	345	33	117	127	277	27		58	85	947	
27/04/17 09:45-10:00		215	33	248	36	256	37	329	31	121	128	280	46		81	127	984	
27/04/17 10:00-10:15		251	40	291	35	268	36	339	35	108	135	278	33		87	120	1028	
27/04/17 10:15-10:30		213	31	244	29	225	43	297	38	109	118	265	30		72	102	908	
27/04/17 10:30-10:45		252	35	287	33	261	42	336	20	98	93	211	42		71	113	947	
27/04/17 10:45-11:00		212	36	248	34	190	37	261	40	131	117	288	39		86	125	922	
27/04/17 11:00-11:15		262	51	313	40	237	44	321	37	124	112	273	31		62	93	1000	
27/04/17 11:15-11:30		255	47	302	36	240	52	328	36	96	106	238	51		88	139	1007	
27/04/17 11:30-11:45		279	58	337	40	267	39	346	35	129	117	281	58		84	142	1106	
27/04/17 11:45-12:00		313	68	381	37	258	60	355	37	133	104	274	40		69	109	1119	
27/04/17 12:00-12:15		303	65	368	40	296	55	391	34	105	126	265	57		86	143	1167	
27/04/17 12:15-12:30		306	53	359	39	216	81	336	36	129	110	275	61		114	175	1145	
27/04/17 12:30-12:45		309	67	376	32	230	40	302	31	142	113	286	60		99	159	1123	
27/04/17 12:45-13:00		292	65	357	26	243	34	303	46	131	105	282	63		94	157	1099	
27/04/17 13:00-13:15		305	65	370	54	262	53	369	44	117	105	266	75		101	176	1181	
27/04/17 13:15-13:30		288	58	346	52	267	47	366	38	116	102	256	65		98	163	1131	
27/04/17 13:30-13:45		325	48	373	44	252	49	345	41	123	111	275	54		106	160	1153	
27/04/17 13:45-14:00		295	59	354	47	211	47	305	42	138	106	286	72		116	188	1133	
27/04/17 14:00-14:15		343	52	395	38	243	60	341	31	138	120	289	58		116	174	1199	
27/04/17 14:15-14:30		278	52	330	33	258	47	338	45	126	102	273	54		121	175	1116	
27/04/17 14:30-14:45		354	48	402	31	264	48	343	59	128	111	298	49		97	146	1189	
27/04/17 14:45-15:00		315	60	375	37	222	52	311	59	152	95	306	54		145	199	1191	
27/04/17 15:00-15:15		347	67	414	45	290	60	395	58	142	118	318	59		98	157	1284	
27/04/17 15:15-15:30		347	74	421	36	248	57	341	44	144	117	305	62		134	196	1263	
27/04/1																		



Turning Movement Volume Report

Report Date: 4/28/2017 8:05:28 AM
From 4/27/2017 to 4/27/2017

Intersection: 36

Time	NW				SE				NE				SW					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15	1	37	0	38	0	20	3	23	9	4	9	22	1	5	11	17	100	
27/04/17 00:15-00:30	1	29	0	30	3	15	3	21	15	2	2	19	2	4	1	7	77	
27/04/17 00:30-00:45	0	29	2	31	3	19	1	23	4	2	2	8	2	2	10	14	76	
27/04/17 00:45-01:00	0	17	0	17	5	6	5	16	4	1	1	6	0	0	10	10	49	
27/04/17 01:00-01:15	0	17	0	17	1	13	0	14	4	0	1	5	3	7	8	18	54	
27/04/17 01:15-01:30	0	16	2	18	7	8	1	16	2	0	1	3	1	4	2	7	44	
27/04/17 01:30-01:45	0	9	0	9	2	7	1	10	5	0	0	5	0	0	2	2	26	
27/04/17 01:45-02:00	1	4	1	6	1	8	2	11	0	1	1	2	1	0	1	2	21	
27/04/17 02:00-02:15	0	3	0	3	1	5	3	9	3	1	0	4	2	1	2	5	21	
27/04/17 02:15-02:30	0	7	0	7	0	6	3	9	2	2	0	4	0	1	2	3	23	
27/04/17 02:30-02:45	0	6	0	6	3	6	1	10	3	2	1	6	1	1	2	4	26	
27/04/17 02:45-03:00	0	8	4	12	3	3	0	6	3	3	1	7	0	0	0	0	25	
27/04/17 03:00-03:15	0	8	0	8	3	5	3	11	2	1	0	3	0	4	2	6	28	
27/04/17 03:15-03:30	1	1	2	4	0	8	1	9	3	1	0	4	0	2	0	2	19	
27/04/17 03:30-03:45	1	8	1	10	3	8	1	12	4	2	0	6	0	3	0	3	31	
27/04/17 03:45-04:00	2	4	0	6	2	10	4	16	0	0	0	0	0	2	2	4	26	
27/04/17 04:00-04:15	1	6	0	7	3	8	4	15	0	0	1	1	1	2	4	7	30	
27/04/17 04:15-04:30	2	5	0	7	0	11	4	15	5	2	0	7	0	1	8	9	38	
27/04/17 04:30-04:45	2	16	1	19	1	10	6	17	4	3	1	8	0	4	0	4	48	
27/04/17 04:45-05:00	1	17	0	18	5	23	9	37	1	3	2	6	0	1	5	6	67	
27/04/17 05:00-05:15	5	14	0	19	10	36	17	63	1	5	2	8	3	3	3	9	99	
27/04/17 05:15-05:30	1	25	0	26	4	37	16	57	4	2	1	7	1	5	2	8	98	
27/04/17 05:30-05:45	3	33	0	36	12	47	13	72	2	7	2	11	1	5	6	12	131	
27/04/17 05:45-06:00	2	42	5	49	9	78	9	96	4	6	1	11	2	3	10	15	171	
27/04/17 06:00-06:15	3	56	2	61	10	128	25	163	5	5	0	10	3	13	13	29	263	
27/04/17 06:15-06:30	3	56	2	61	21	111	27	159	11	8	2	21	2	13	20	35	276	
27/04/17 06:30-06:45	6	80	6	92	28	183	30	241	14	18	5	37	4	22	25	51	421	
27/04/17 06:45-07:00	11	100	5	116	34	219	64	317	8	21	6	35	10	21	45	76	544	
27/04/17 07:00-07:15	10	133	8	151	49	268	77	394	27	17	8	52	9	36	45	90	687	
27/04/17 07:15-07:30	11	130	9	150	34	240	82	356	19	20	11	50	19	32	46	97	653	
27/04/17 07:30-07:45	8	183	14	205	44	376	90	510	28	21	8	57	21	42	59	122	894	
27/04/17 07:45-08:00	13	157	12	182	62	361	98	521	25	39	18	82	34	60	43	137	922	
27/04/17 08:00-08:15	18	156	25	199	59	532	102	693	23	42	14	79	23	59	70	152	1123	
27/04/17 08:15-08:30	19	122	18	159	54	467	124	645	37	44	24	105	26	67	58	151	1060	
27/04/17 08:30-08:45	21	116	25	162	61	505	116	682	44	51	25	120	24	66	60	150	1114	
27/04/17 08:45-09:00	31	159	14	204	64	420	97	581	42	52	22	116	24	95	53	172	1073	
27/04/17 09:00-09:15	58	344	58	460	122	794	200	1116	124	112	54	290	68	148	118	334	2200	
27/04/17 09:15-09:30	29	145	18	192	51	279	85	415	62	63	24	149	19	71	32	122	878	
27/04/17 09:30-09:45	22	154	18	194	47	263	101	411	50	71	23	144	19	60	50	129	878	
27/04/17 09:45-10:00	23	168	17	208	42	268	104	414	57	55	32	144	27	56	53	136	902	
27/04/17 10:00-10:15	25	174	23	222	49	265	92	406	61	63	34	158	21	67	44	132	918	
27/04/17 10:15-10:30	23	138	21	182	60	214	87	361	79	60	34	173	16	67	41	124	840	
27/04/17 10:30-10:45	32	171	21	224	44	232	110	386	69	63	41	173	20	89	43	152	935	
27/04/17 10:45-11:00	27	138	24	189	47	202	89	338	83	56	34	173	29	85	59	173	873	
27/04/17 11:00-11:15	20	167	25	212	54	219	85	358	95	75	37	207	36	55	51	142	919	
27/04/17 11:15-11:30	34	166	26	226	51	244	93	388	103	70	50	223	30	76	65	171	1008	
27/04/17 11:30-11:45	27	219	12	258	43	271	106	420	68	73	41	182	26	84	49	159	1019	
27/04/17 11:45-12:00	29	240	31	300	48	260	85	393	109	87	37	233	43	80	68	191	1117	
27/04/17 12:00-12:15	38	227	33	298	50	300	106	456	91	77	55	223	31	65	61	157	1134	
27/04/17 12:15-12:30	42	230	20	292	47	229	98	374	110	69	46	225	35	102	39	176	1067	
27/04/17 12:30-12:45	34	204	25	263	55	237	82	374	108	76	42	226	27	94	65	186	1049	
27/04/17 12:45-13:00	42	224	39	305	64	239	97	400	103	88	49	240	36	105	58	199	1144	
27/04/17 13:00-13:15	33	216	32	281	37	293	110	440	95	78	43	216	33	83	53	169	1106	
27/04/17 13:15-13:30	31	226	31	288	49	272	96	417	90	84	45	219	38	72	42	152	1076	
27/04/17 13:30-13:45	41	234	29	304	52	269	96	417	88	77	49	214	28	87	50	165	1100	
27/04/17 13:45-14:00	34	210	31	275	53	216	97	366	110	95	50	255	32	86	50	168	1064	
27/04/17 14:00-14:15	41	249	39	329	52	285	89	426	88	78	37	203	29	64	51	144	1102	
27/04/17 14:15-14:30	26	215	25	266	52	240	97	389	96	92	45	233	23	95	52	170	1058	
27/04/17 14:30-14:45	25	250	37	312	66	291	73	430	91	85	37	213	27	82	51	160	1115	
27/04/17 14:45-15:00	28	246	28	302	54	223	82	359	94	106	50	250	33	98	60	191	1102	
27/04/17 15:00-15:15	22	263	37	322	56	297	108	461	92	88	36	216	32	79	38	149		



Turning Movement Volume Report

Report Date: 4/28/2017 8:01:31 AM
From 4/27/2017 to 4/27/2017

Intersection: 73

Time	N				S				E				W					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15	4	10	0	14	5	8	8	21	12	16	2	30	2	19	18	39	104	
27/04/17 00:15-00:30	8	9	0	17	5	2	7	14	7	16	7	30	4	21	9	34	95	
27/04/17 00:30-00:45	4	4	1	9	15	4	2	21	4	9	3	16	1	18	11	30	76	
27/04/17 00:45-01:00	3	3	0	6	4	5	5	14	6	7	5	18	3	8	6	17	55	
27/04/17 01:00-01:15	7	4	1	12	7	4	3	14	5	5	2	12	2	11	6	19	57	
27/04/17 01:15-01:30	2	8	0	10	5	1	4	10	1	6	0	7	3	8	4	15	42	
27/04/17 01:30-01:45	0	1	1	2	6	2	0	8	1	9	2	12	0	13	5	18	40	
27/04/17 01:45-02:00	2	4	0	6	2	7	1	10	3	4	0	7	0	9	6	15	38	
27/04/17 02:00-02:15	3	3	0	6	2	3	1	6	2	1	5	8	0	6	7	13	33	
27/04/17 02:15-02:30	4	2	0	6	0	2	3	5	0	2	0	2	0	7	4	11	24	
27/04/17 02:30-02:45	0	1	0	1	6	0	2	8	1	7	0	8	0	9	4	13	30	
27/04/17 02:45-03:00	1	3	0	4	3	2	1	6	1	5	2	8	0	3	3	6	24	
27/04/17 03:00-03:15	0	1	0	1	2	3	3	8	1	4	2	7	0	6	3	9	25	
27/04/17 03:15-03:30	3	5	0	8	1	1	1	3	3	4	0	7	2	5	2	9	27	
27/04/17 03:30-03:45	0	1	1	2	2	3	0	5	0	7	0	7	0	9	2	11	25	
27/04/17 03:45-04:00	3	4	0	7	6	0	0	6	6	4	1	11	0	3	5	8	32	
27/04/17 04:00-04:15	0	6	0	6	1	4	1	6	3	9	4	16	0	7	6	13	41	
27/04/17 04:15-04:30	0	2	1	3	1	7	0	8	2	2	1	5	1	6	9	16	32	
27/04/17 04:30-04:45	2	2	0	4	8	4	2	14	1	12	6	19	1	15	10	26	63	
27/04/17 04:45-05:00	1	6	0	7	15	5	3	23	3	15	7	25	1	15	13	29	84	
27/04/17 05:00-05:15	4	15	0	19	15	7	1	23	4	34	9	47	3	12	12	27	116	
27/04/17 05:15-05:30	1	8	0	9	22	7	1	30	2	30	5	37	3	19	25	47	123	
27/04/17 05:30-05:45	3	8	1	12	39	10	6	55	2	32	7	41	4	29	23	56	164	
27/04/17 05:45-06:00	7	11	0	18	45	19	4	68	7	43	21	71	6	28	47	81	238	
27/04/17 06:00-06:15	12	18	0	30	35	28	3	66	16	71	25	112	6	38	50	94	302	
27/04/17 06:15-06:30	3	22	2	27	66	34	7	107	7	86	34	127	8	51	46	105	366	
27/04/17 06:30-06:45	10	15	3	28	116	48	11	175	17	107	59	183	4	55	40	99	485	
27/04/17 06:45-07:00	16	24	4	44	104	47	12	163	20	163	73	256	10	59	61	130	593	
27/04/17 07:00-07:15	22	34	7	63	125	63	9	197	22	233	102	357	11	103	84	198	815	
27/04/17 07:15-07:30	23	40	3	66	109	67	21	197	26	218	93	337	5	122	117	244	844	
27/04/17 07:30-07:45	38	71	16	125	118	125	28	271	29	271	109	409	16	173	123	312	1117	
27/04/17 07:45-08:00	58	105	22	185	125	105	27	257	35	334	142	511	21	237	158	416	1369	
27/04/17 08:00-08:15	80	147	26	253	153	135	26	314	41	374	162	577	25	238	202	465	1609	
27/04/17 08:15-08:30	76	94	14	184	137	108	39	284	30	324	131	485	23	265	195	483	1436	
27/04/17 08:30-08:45	48	54	9	111	173	125	57	355	40	304	115	459	27	191	154	372	1297	
27/04/17 08:45-09:00	39	66	9	114	135	120	28	283	45	300	145	490	22	225	146	393	1280	
27/04/17 09:00-09:15	108	142	14	264	262	204	60	526	88	486	232	806	66	466	280	812	2408	
27/04/17 09:15-09:30	44	59	6	109	91	89	33	213	56	243	102	401	28	170	133	331	1054	
27/04/17 09:30-09:45	50	82	6	138	101	89	36	226	51	200	105	356	24	170	142	336	1056	
27/04/17 09:45-10:00	46	86	11	143	92	76	24	192	55	196	85	336	35	185	145	365	1036	
27/04/17 10:00-10:15	56	87	8	151	104	93	47	244	58	208	96	362	38	182	151	371	1128	
27/04/17 10:15-10:30	47	105	5	157	97	83	46	226	65	177	77	319	35	185	144	364	1066	
27/04/17 10:30-10:45	62	131	9	202	112	133	53	298	61	154	63	278	44	175	193	412	1190	
27/04/17 10:45-11:00	66	100	9	175	113	90	50	253	70	174	62	306	51	184	140	375	1109	
27/04/17 11:00-11:15	63	122	13	198	120	126	53	299	77	184	76	337	40	184	163	387	1221	
27/04/17 11:15-11:30	64	110	18	192	104	107	52	263	91	189	75	355	55	227	156	438	1248	
27/04/17 11:30-11:45	78	132	22	232	130	140	73	343	86	152	79	317	53	195	168	416	1308	
27/04/17 11:45-12:00	76	133	20	229	117	161	59	337	104	204	97	405	81	224	164	469	1440	
27/04/17 12:00-12:15	85	139	26	250	130	160	79	369	109	183	96	388	72	241	131	444	1451	
27/04/17 12:15-12:30	96	141	20	257	123	148	75	346	101	210	98	409	83	293	169	545	1557	
27/04/17 12:30-12:45	83	140	29	252	136	155	83	374	111	194	75	380	72	198	130	400	1406	
27/04/17 12:45-13:00	79	128	16	223	132	135	76	343	107	228	108	443	67	278	188	533	1542	
27/04/17 13:00-13:15	88	159	19	266	149	174	81	404	99	193	96	388	55	227	192	474	1532	
27/04/17 13:15-13:30	76	128	18	222	139	131	88	358	118	243	106	467	60	250	155	465	1512	
27/04/17 13:30-13:45	69	132	18	219	148	155	86	389	111	209	89	409	56	237	157	450	1467	
27/04/17 13:45-14:00	74	109	19	202	146	137	75	358	117	252	85	454	57	234	166	457	1471	
27/04/17 14:00-14:15	77	141	13	231	168	164	80	412	103	228	96	427	54	244	165	463	1533	
27/04/17 14:15-14:30	65	130	17	212	155	176	72	403	113	236	112	461	69	266	193	528	1604	
27/04/17 14:30-14:45	70	145	14	229	144	166	79	389	105	238	112	455	61	216	157	434	1507	
27/04/17 14:45-15:00	93	164	21	278	102	139	67	308	105	274	143	522	50	304	175	529	1637	



Turning Movement Volume Report

Report Date: 4/28/2017 8:06:16 AM
From 4/27/2017 to 4/27/2017

Intersection: 75

Time	N				S				E				W				Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
27/04/17 00:00-00:15	6	14	0	20	0	16	11	27	4	0	1	5	0	0	0	0	52
27/04/17 00:15-00:30	2	11	0	13	0	14	8	22	7	0	1	8	0	0	0	0	43
27/04/17 00:30-00:45	5	8	0	13	0	17	7	24	4	0	1	5	0	0	0	0	42
27/04/17 00:45-01:00	2	3	0	5	0	15	8	23	3	0	2	5	0	0	0	0	33
27/04/17 01:00-01:15	2	6	0	8	0	7	2	9	3	0	4	7	0	0	0	0	24
27/04/17 01:15-01:30	2	5	0	7	0	4	3	7	2	0	0	2	0	0	0	0	16
27/04/17 01:30-01:45	0	3	0	3	0	3	4	7	0	0	0	0	0	0	0	0	10
27/04/17 01:45-02:00	0	4	0	4	0	11	3	14	0	0	0	0	0	0	0	0	18
27/04/17 02:00-02:15	2	3	0	5	0	10	11	21	2	0	1	3	0	0	0	0	29
27/04/17 02:15-02:30	1	6	0	7	0	3	2	5	1	0	0	1	0	0	0	0	13
27/04/17 02:30-02:45	2	1	0	3	0	0	2	2	0	0	0	0	0	0	0	0	5
27/04/17 02:45-03:00	0	2	0	2	0	2	0	2	1	0	2	3	0	0	0	0	7
27/04/17 03:00-03:15	0	1	0	1	0	6	0	6	1	0	1	2	0	0	0	0	9
27/04/17 03:15-03:30	0	4	0	4	0	3	2	5	2	0	0	2	0	0	0	0	11
27/04/17 03:30-03:45	1	2	0	3	0	3	0	3	2	0	0	2	0	0	0	0	8
27/04/17 03:45-04:00	0	4	0	4	0	3	5	8	2	0	0	2	0	0	0	0	14
27/04/17 04:00-04:15	3	6	0	9	0	5	6	11	3	0	3	6	0	0	0	0	26
27/04/17 04:15-04:30	0	4	0	4	0	11	5	16	1	0	0	1	0	0	0	0	21
27/04/17 04:30-04:45	1	4	0	5	0	9	5	14	1	0	0	1	0	0	0	0	20
27/04/17 04:45-05:00	0	6	0	6	0	8	5	13	2	0	1	3	0	0	0	0	22
27/04/17 05:00-05:15	0	17	0	17	0	14	8	22	6	0	3	9	0	0	0	0	48
27/04/17 05:15-05:30	1	10	0	11	0	13	8	21	2	0	2	4	0	0	0	0	36
27/04/17 05:30-05:45	1	9	0	10	1	15	7	23	3	0	0	3	0	1	0	1	37
27/04/17 05:45-06:00	1	20	0	21	0	32	23	55	9	0	4	13	0	0	0	0	89
27/04/17 06:00-06:15	5	25	0	30	1	42	21	64	26	0	6	32	0	1	0	1	127
27/04/17 06:15-06:30	3	25	0	28	0	48	27	75	10	0	13	23	0	0	0	0	126
27/04/17 06:30-06:45	9	33	0	42	1	97	38	136	11	0	15	26	0	0	0	0	204
27/04/17 06:45-07:00	11	39	0	50	0	104	47	151	23	0	10	33	0	0	0	0	234
27/04/17 07:00-07:15	8	52	0	60	1	130	56	187	24	0	19	43	0	0	0	0	290
27/04/17 07:15-07:30	24	69	0	93	0	143	66	209	42	1	35	78	0	0	0	0	380
27/04/17 07:30-07:45	46	118	0	164	0	158	86	244	64	1	45	110	1	1	0	2	520
27/04/17 07:45-08:00	105	167	1	273	2	248	104	354	65	1	70	136	3	3	2	8	771
27/04/17 08:00-08:15	88	229	1	318	0	251	68	319	81	2	81	164	4	5	3	12	813
27/04/17 08:15-08:30	57	172	1	230	0	227	64	291	66	1	40	107	3	3	2	8	636
27/04/17 08:30-08:45	25	106	0	131	2	190	63	255	46	1	38	85	2	3	2	7	478
27/04/17 08:45-09:00	18	113	0	131	2	223	67	292	46	1	29	76	4	6	6	16	515
27/04/17 09:00-09:15	20	249	1	270	2	448	112	562	106	2	88	196	1	1	0	2	1030
27/04/17 09:15-09:30	20	117	0	137	2	172	59	233	48	1	26	75	2	2	1	5	450
27/04/17 09:30-09:45	26	123	0	149	1	159	47	207	40	1	32	73	3	4	3	10	439
27/04/17 09:45-10:00	31	126	1	158	2	132	80	214	43	1	32	76	3	3	1	7	455
27/04/17 10:00-10:15	29	150	0	179	3	158	66	227	54	1	33	88	3	4	3	10	504
27/04/17 10:15-10:30	39	151	1	191	2	144	49	195	48	1	38	87	2	3	2	7	480
27/04/17 10:30-10:45	24	165	1	190	3	166	48	217	55	1	33	89	0	1	1	2	498
27/04/17 10:45-11:00	21	170	1	192	2	149	50	201	65	1	35	101	0	1	1	2	496
27/04/17 11:00-11:15	31	153	0	184	3	161	57	221	62	1	27	90	4	4	7	15	510
27/04/17 11:15-11:30	47	188	1	236	1	134	68	203	44	1	29	74	4	5	7	16	529
27/04/17 11:30-11:45	40	203	1	244	4	189	73	266	69	1	43	113	4	4	5	13	636
27/04/17 11:45-12:00	67	214	1	282	2	248	72	322	72	1	43	116	2	2	1	5	725
27/04/17 12:00-12:15	38	238	1	277	1	194	75	270	56	1	39	96	4	4	3	11	654
27/04/17 12:15-12:30	52	220	1	273	0	182	90	272	65	1	43	109	3	3	4	10	664
27/04/17 12:30-12:45	51	176	1	228	0	193	67	260	54	1	34	89	1	2	1	4	581
27/04/17 12:45-13:00	40	224	1	265	1	207	97	305	72	1	45	118	1	1	0	2	690
27/04/17 13:00-13:15	43	220	1	264	1	203	98	302	77	2	28	107	3	3	2	8	681
27/04/17 13:15-13:30	46	200	1	247	2	202	94	298	50	1	29	80	0	1	1	2	627
27/04/17 13:30-13:45	30	185	1	216	3	210	89	302	57	1	42	100	3	4	4	11	629
27/04/17 13:45-14:00	45	196	1	242	3	227	81	311	70	1	45	116	2	2	2	6	675
27/04/17 14:00-14:15	44	190	1	235	2	218	83	303	60	1	37	98	2	3	4	9	645
27/04/17 14:15-14:30	34	182	1	217	0	248	90	338	59	1	34	94	2	2	1	5	654
27/04/17 14:30-14:45	52	202	1	255	3	212	106	321	58	1	37	96	0	1	0	1	673
27/04/17 14:45-15:00	45	237	1	283	0	232	129	361	66	1	50	117	4	4	4	12	773
27/04/17 15:00-15:15	48	269	1	318	1	295	112	408	75	2	54	131	2	3	2	7	864
27/04/17 15:15-15:30	77	250	1	328	1	276	94	371	57	1	70	128	5	6	2	13	840
27/04/17 15:30-15:45	99	280	1	380	2	262	89	353	68	1	48	117	6	7	4	17	867
27/04/17 15:45-16:00	87	308	1	396	0												



Turning Movement Volume Report

Report Date: 4/28/2017 8:06:56 AM
From 4/27/2017 to 4/27/2017

Intersection: 76

Time	NW				SE				NE				SW					
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Int Total	
27/04/17 00:00-00:15	6		15	21				0		10	4	14	6	9			15	50
27/04/17 00:15-00:30	4		6	10				0		9	4	13	5	10			15	38
27/04/17 00:30-00:45	0		4	4				0		7	4	11	11	10			21	36
27/04/17 00:45-01:00	1		3	4				0		4	0	4	5	13			18	26
27/04/17 01:00-01:15	2		5	7				0		6	1	7	5	5			10	24
27/04/17 01:15-01:30	3		4	7				0		4	2	6	3	2			5	18
27/04/17 01:30-01:45	2		2	4				0		1	0	1	2	0			2	7
27/04/17 01:45-02:00	0		3	3				0		1	1	2	2	11			13	18
27/04/17 02:00-02:15	2		2	4				0		4	3	7	3	6			9	20
27/04/17 02:15-02:30	1		6	7				0		3	1	4	1	4			5	16
27/04/17 02:30-02:45	0		1	1				0		2	1	3	0	1			1	5
27/04/17 02:45-03:00	2		2	4				0		1	0	1	3	0			3	8
27/04/17 03:00-03:15	1		1	2				0		2	2	4	3	4			7	13
27/04/17 03:15-03:30	0		1	1				0		3	1	4	0	2			2	7
27/04/17 03:30-03:45	2		2	4				0		2	1	3	0	4			4	11
27/04/17 03:45-04:00	2		3	5				0		2	1	3	1	1			2	10
27/04/17 04:00-04:15	1		5	6				0		7	0	7	6	5			11	24
27/04/17 04:15-04:30	0		1	1				0		2	2	4	1	7			8	13
27/04/17 04:30-04:45	2		5	7				0		2	2	4	3	5			8	19
27/04/17 04:45-05:00	1		3	4				0		3	2	5	2	5			7	16
27/04/17 05:00-05:15	4		6	10				0		11	5	16	8	11			19	45
27/04/17 05:15-05:30	6		6	12				0		5	5	10	6	7			13	35
27/04/17 05:30-05:45	3		6	9				0		5	3	8	5	10			15	32
27/04/17 05:45-06:00	2		13	15				0		10	6	16	12	21			33	64
27/04/17 06:00-06:15	5		16	21				0		13	9	22	27	22			49	92
27/04/17 06:15-06:30	4		16	20				0		17	9	26	29	25			54	100
27/04/17 06:30-06:45	6		27	33				0		26	9	35	42	51			93	161
27/04/17 06:45-07:00	10		28	38				0		31	35	66	54	69			123	227
27/04/17 07:00-07:15	13		52	65				0		36	40	76	72	61			133	274
27/04/17 07:15-07:30	25		67	92				0		57	39	96	68	71			139	327
27/04/17 07:30-07:45	51		109	160				0		119	51	170	94	67			161	491
27/04/17 07:45-08:00	54		138	192				0		139	64	203	109	125			234	629
27/04/17 08:00-08:15	78		149	227				0		175	80	255	166	107			273	755
27/04/17 08:15-08:30	40		88	128				0		91	94	185	183	130			313	626
27/04/17 08:30-08:45	32		86	118				0		78	101	179	125	100			225	522
27/04/17 08:45-09:00	38		90	128				0		62	65	127	139	123			262	517
27/04/17 09:00-09:15	84		212	296				0		118	144	262	290	242			532	1090
27/04/17 09:15-09:30	44		105	149				0		55	46	101	99	90			189	439
27/04/17 09:30-09:45	47		105	152				0		79	61	140	97	100			197	489
27/04/17 09:45-10:00	37		95	132				0		92	44	136	74	99			173	441
27/04/17 10:00-10:15	50		123	173				0		87	53	140	102	98			200	513
27/04/17 10:15-10:30	60		125	185				0		110	60	170	85	83			168	523
27/04/17 10:30-10:45	73		149	222				0		92	66	158	88	115			203	583
27/04/17 10:45-11:00	71		142	213				0		98	66	164	86	104			190	567
27/04/17 11:00-11:15	68		132	200				0		108	56	164	88	108			196	560
27/04/17 11:15-11:30	79		172	251				0		127	58	185	69	99			168	604
27/04/17 11:30-11:45	65		161	226				0		148	66	214	95	118			213	653
27/04/17 11:45-12:00	79		178	257				0		122	72	194	147	157			304	755
27/04/17 12:00-12:15	66		171	237				0		152	95	247	104	123			227	711
27/04/17 12:15-12:30	98		173	271				0		135	86	221	101	141			242	734
27/04/17 12:30-12:45	73		168	241				0		111	66	177	93	132			225	643
27/04/17 12:45-13:00	84		174	258				0		137	71	208	131	135			266	732
27/04/17 13:00-13:15	95		181	276				0		133	73	206	100	121			221	703
27/04/17 13:15-13:30	76		172	248				0		145	73	218	108	126			234	700
27/04/17 13:30-13:45	66		155	221				0		108	85	193	123	124			247	661
27/04/17 13:45-14:00	76		170	246				0		127	90	217	148	148			296	759
27/04/17 14:00-14:15	72		170	242				0		119	60	179	108	131			239	660
27/04/17 14:15-14:30	80		160	240				0		111	70	181	145	153			298	719
27/04/17 14:30-14:45	79		199	278				0		126	64	190	100	134			234	702
27/04/17 14:45-15:00	76		221	297				0		157	72	229	126	144			270	796
27/04/17 15:00-15:15	94		190	284				0		172	87	259	144	171			315	858
27/04/17 15:15-15:30	123		192	315				0		183	60	243	139	174			313	871
27/04/17 15:30-15:45	133		221	354				0		148	96	244	146	185			331	929
27/04/17 15:45-16:00	139		228	367				0		144	75	219	145	172			317	903
27/04/17 16:00-16:15	99		227	326				0		146	68	214	136	150			286	826
27/04/17 16:15-16:30	109		238	347				0		151	78	229	158	157			315	891
27/04/17 16:30-16:45	134		271	405				0		134	87	221	129	151				



Turning Movement Volume Report

Report Date: 4/28/2017 8:07:44 AM
From 4/27/2017 to 4/27/2017

Intersection: 34

Time	NW				SE				NE				SW				
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Int Total
27/04/17 00:00-00:15	5	6	2	13	2	5	1	8	5	8	1	14	1	14	0	15	50
27/04/17 00:15-00:30	4	5	0	9	2	5	2	9	0	8	0	8	3	9	2	14	40
27/04/17 00:30-00:45	5	2	1	8	2	8	2	12	3	4	0	7	0	7	1	8	35
27/04/17 00:45-01:00	5	2	1	8	0	3	2	5	1	3	0	4	0	6	0	6	23
27/04/17 01:00-01:15	3	6	0	9	0	2	2	4	2	4	0	6	1	11	1	13	32
27/04/17 01:15-01:30	0	3	0	3	0	2	2	4	3	3	1	7	0	12	1	13	27
27/04/17 01:30-01:45	0	0	2	2	1	2	1	4	0	2	0	2	1	7	2	10	18
27/04/17 01:45-02:00	0	0	0	0	0	1	0	1	2	2	0	4	0	3	0	3	8
27/04/17 02:00-02:15	1	0	0	1	1	3	1	5	1	1	0	2	0	4	2	6	14
27/04/17 02:15-02:30	2	2	0	4	1	1	1	3	1	3	0	4	0	4	4	8	19
27/04/17 02:30-02:45	1	1	0	2	0	0	1	1	2	0	0	2	1	1	1	3	8
27/04/17 02:45-03:00	0	3	1	4	0	3	0	3	1	3	1	5	0	0	0	0	12
27/04/17 03:00-03:15	0	0	0	0	1	3	2	6	1	1	0	2	0	5	1	6	14
27/04/17 03:15-03:30	1	0	0	1	0	1	0	1	0	2	0	2	0	2	1	3	7
27/04/17 03:30-03:45	1	2	0	3	1	0	1	2	2	6	1	9	0	3	1	4	18
27/04/17 03:45-04:00	1	1	1	3	0	2	0	2	2	1	0	3	0	2	2	4	12
27/04/17 04:00-04:15	1	2	0	3	3	3	3	9	2	4	1	7	0	2	0	2	21
27/04/17 04:15-04:30	0	1	0	1	1	0	2	3	0	1	0	1	0	3	0	3	8
27/04/17 04:30-04:45	0	1	0	1	1	3	1	5	3	6	0	9	1	4	1	6	21
27/04/17 04:45-05:00	1	3	1	5	2	3	0	5	3	7	1	11	1	5	0	6	27
27/04/17 05:00-05:15	2	6	4	12	2	10	0	12	4	15	2	21	1	6	1	8	53
27/04/17 05:15-05:30	0	5	2	7	3	2	3	8	1	9	1	11	1	6	3	10	36
27/04/17 05:30-05:45	2	3	3	8	3	2	0	5	3	9	1	13	2	7	2	11	37
27/04/17 05:45-06:00	1	7	1	9	4	8	4	16	6	8	2	16	2	5	2	9	50
27/04/17 06:00-06:15	2	8	11	21	6	21	7	34	6	22	4	32	4	6	3	13	100
27/04/17 06:15-06:30	1	4	8	13	3	22	16	41	10	23	4	37	7	22	6	35	126
27/04/17 06:30-06:45	3	13	7	23	5	32	10	47	19	38	6	63	7	20	4	31	164
27/04/17 06:45-07:00	10	23	10	43	14	55	16	85	10	47	8	65	13	16	4	33	226
27/04/17 07:00-07:15	9	30	12	51	15	71	25	111	18	61	8	87	12	29	7	48	297
27/04/17 07:15-07:30	13	36	12	61	18	52	26	96	23	58	9	90	9	30	8	47	294
27/04/17 07:30-07:45	9	59	11	79	10	93	39	142	60	79	12	151	12	57	10	79	451
27/04/17 07:45-08:00	15	76	21	112	23	98	54	175	45	75	10	130	19	59	15	93	510
27/04/17 08:00-08:15	15	85	16	116	27	139	65	231	64	93	15	172	20	70	11	101	620
27/04/17 08:15-08:30	13	50	20	83	24	167	62	253	33	94	13	140	17	66	15	98	574
27/04/17 08:30-08:45	7	46	30	83	19	145	57	221	39	84	11	134	27	82	13	122	560
27/04/17 08:45-09:00	16	48	31	95	20	88	77	185	44	105	13	162	15	106	23	144	586
27/04/17 09:00-09:15	26	96	86	208	66	218	148	432	124	209	27	360	52	204	34	290	1290
27/04/17 09:15-09:30	19	39	32	90	26	60	54	140	63	88	12	163	22	79	25	126	519
27/04/17 09:30-09:45	15	44	30	89	18	80	59	157	53	83	10	146	27	83	23	133	525
27/04/17 09:45-10:00	31	52	36	119	24	53	32	109	47	111	14	172	21	89	23	133	533
27/04/17 10:00-10:15	21	63	38	122	28	62	51	141	58	100	12	170	32	106	25	163	596
27/04/17 10:15-10:30	22	60	22	104	26	57	51	134	56	85	10	151	23	91	31	145	534
27/04/17 10:30-10:45	26	60	41	127	31	62	59	152	76	108	14	198	21	133	39	193	670
27/04/17 10:45-11:00	28	56	36	120	16	73	60	149	68	139	16	223	36	121	35	192	684
27/04/17 11:00-11:15	31	65	42	138	27	67	47	141	55	119	12	186	46	111	21	178	643
27/04/17 11:15-11:30	22	66	41	129	20	59	42	121	84	123	15	222	37	134	33	204	676
27/04/17 11:30-11:45	30	78	35	143	25	76	46	147	87	123	14	224	38	135	37	210	724
27/04/17 11:45-12:00	35	69	30	134	31	89	80	200	91	129	12	232	35	131	47	213	779
27/04/17 12:00-12:15	42	83	39	164	35	71	82	188	79	131	14	224	29	117	31	177	753
27/04/17 12:15-12:30	34	76	38	148	37	79	71	187	87	156	17	260	35	147	37	219	814
27/04/17 12:30-12:45	47	85	31	163	37	64	63	164	82	163	18	263	49	142	34	225	815
27/04/17 12:45-13:00	44	95	52	191	36	95	61	192	86	135	17	238	52	105	40	197	818
27/04/17 13:00-13:15	29	95	40	164	31	82	56	169	77	139	17	233	46	171	46	263	829
27/04/17 13:15-13:30	46	83	40	169	22	82	80	184	70	147	18	235	48	135	36	219	807
27/04/17 13:30-13:45	28	79	28	135	32	99	69	200	72	136	18	226	43	136	39	218	779
27/04/17 13:45-14:00	29	77	41	147	36	112	73	221	89	159	19	267	43	128	31	202	837
27/04/17 14:00-14:15	23	69	34	126	26	81	64	171	87	146	17	250	37	122	31	190	737
27/04/17 14:15-14:30	33	78	44	155	36	93	65	194	79	142	15	236	32	125	33	190	775
27/04/17 14:30-14:45	27	87	42	156	31	87	55	173	93	147	18	258	36	128	50	214	801
27/04/17 14:45-15:00	47	99	48	194	25	80	69	174	97	151	17	265	35	131	28	194	827
27/04/17 15:00-15:15	29	90	50	169	37	94	91	222	94	118	14	226	40	131	35	206	823
27/04/17 15:15-15:30	38	108	31	177	36	84	83	203	98	136	14	248	38	136	36		



Turning Movement Volume Report

Report Date: 4/28/2017 8:08:30 AM
From 4/27/2017 to 4/27/2017

Intersection: 77

Time	NW				SE				NE				SW					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15	0	0	0	0	3	0	1	4	2	11		13	0	12	1	13	30	
27/04/17 00:15-00:30	0	0	0	0	0	0	0	0	1	9		10	0	15	2	17	27	
27/04/17 00:30-00:45	0	0	0	0	8	0	1	9	0	1		1	1	13	1	15	25	
27/04/17 00:45-01:00	0	0	0	0	0	0	0	0	6		6	3	15	1	19	25		
27/04/17 01:00-01:15	0	0	0	0	4	0	1	5	0	5		5	0	6	1	7	17	
27/04/17 01:15-01:30	0	0	0	0	3	0	0	3	1	7		8	1	4	1	6	17	
27/04/17 01:30-01:45	0	0	0	0	3	0	0	3	1	5		6	0	6	1	7	16	
27/04/17 01:45-02:00	0	0	0	0	2	0	0	2	1	4		5	0	7	1	8	15	
27/04/17 02:00-02:15	0	0	0	0	0	0	0	0	1	7		8	1	6	1	8	16	
27/04/17 02:15-02:30	0	0	0	0	2	0	1	3	0	6		6	0	6	1	7	16	
27/04/17 02:30-02:45	0	0	0	0	0	0	0	0	0	4		4	0	3	0	3	7	
27/04/17 02:45-03:00	0	0	0	0	0	0	0	0	0	1		1	0	2	0	2	3	
27/04/17 03:00-03:15	0	0	0	0	1	0	0	1	1	3		4	0	5	1	6	11	
27/04/17 03:15-03:30	0	0	0	0	0	0	0	0	1	5		6	0	4	1	5	11	
27/04/17 03:30-03:45	0	0	0	0	0	0	0	0	0	2		2	0	6	1	7	9	
27/04/17 03:45-04:00	0	0	0	0	3	0	0	3	0	3		3	1	3	1	5	11	
27/04/17 04:00-04:15	0	0	0	0	2	0	0	2	1	2		3	0	5	1	6	11	
27/04/17 04:15-04:30	0	0	0	0	0	0	0	0	0	7		7	0	5	1	6	13	
27/04/17 04:30-04:45	0	0	0	0	1	0	0	1	0	7		7	0	6	1	7	15	
27/04/17 04:45-05:00	0	0	0	0	5	0	0	5	0	7		7	0	10	1	11	23	
27/04/17 05:00-05:15	0	0	0	0	4	0	1	5	0	10		10	1	10	2	13	28	
27/04/17 05:15-05:30	1	1	1	3	6	0	1	7	2	9		11	1	10	1	12	33	
27/04/17 05:30-05:45	1	1	1	3	5	0	0	5	3	6		9	0	12	2	14	31	
27/04/17 05:45-06:00	1	0	1	2	8	0	1	9	1	8		9	2	27	4	33	53	
27/04/17 06:00-06:15	3	1	3	7	11	0	1	12	1	14		15	0	27	5	32	66	
27/04/17 06:15-06:30	2	1	2	5	20	0	2	22	5	18		23	3	33	4	40	90	
27/04/17 06:30-06:45	4	2	4	10	34	1	3	38	10	24		34	4	49	8	61	143	
27/04/17 06:45-07:00	4	2	4	10	37	1	5	43	8	29		37	3	81	12	96	186	
27/04/17 07:00-07:15	4	2	4	10	48	1	6	55	5	38		43	3	65	9	77	185	
27/04/17 07:15-07:30	6	2	6	14	55	1	6	62	2	46		48	9	86	12	107	231	
27/04/17 07:30-07:45	5	2	5	12	81	2	9	92	3	91		94	8	70	11	89	287	
27/04/17 07:45-08:00	9	4	9	22	98	2	11	111	7	102		109	13	114	16	143	385	
27/04/17 08:00-08:15	13	5	12	30	77	2	9	88	5	161		166	7	106	16	129	413	
27/04/17 08:15-08:30	9	4	9	22	76	2	8	86	13	98		111	13	125	16	154	373	
27/04/17 08:30-08:45	11	4	11	26	67	2	8	77	9	113		122	6	95	14	115	340	
27/04/17 08:45-09:00	8	3	7	18	57	1	6	64	9	82		91	8	115	17	140	313	
27/04/17 09:00-09:15	13	5	13	31	128	3	15	146	22	178		200	12	221	29	262	639	
27/04/17 09:15-09:30	8	3	8	19	51	1	6	58	9	81		90	11	95	13	119	286	
27/04/17 09:30-09:45	8	3	7	18	62	1	7	70	3	98		101	4	118	18	140	329	
27/04/17 09:45-10:00	8	3	8	19	35	1	4	40	6	97		103	9	123	15	147	309	
27/04/17 10:00-10:15	8	3	8	19	52	1	7	60	11	112		123	9	107	14	130	332	
27/04/17 10:15-10:30	5	2	5	12	49	1	6	56	16	112		128	10	108	15	133	329	
27/04/17 10:30-10:45	10	4	10	24	53	1	6	60	12	124		136	7	130	16	153	373	
27/04/17 10:45-11:00	7	3	7	17	67	1	6	74	9	121		130	11	139	18	168	389	
27/04/17 11:00-11:15	7	3	7	17	44	1	5	50	18	136		154	10	168	22	200	421	
27/04/17 11:15-11:30	6	3	6	15	57	1	7	65	16	123		139	19	143	19	181	400	
27/04/17 11:30-11:45	10	4	9	23	75	2	9	86	12	155		167	17	143	17	177	453	
27/04/17 11:45-12:00	7	3	7	17	67	1	7	75	19	142		161	18	174	21	213	466	
27/04/17 12:00-12:15	13	5	13	31	77	2	8	87	18	162		180	10	144	20	174	472	
27/04/17 12:15-12:30	12	5	11	28	70	1	7	78	12	125		137	11	167	22	200	443	
27/04/17 12:30-12:45	10	4	9	23	45	1	5	51	18	129		147	15	155	22	192	413	
27/04/17 12:45-13:00	8	3	8	19	48	1	6	55	20	144		164	19	168	23	210	448	
27/04/17 13:00-13:15	9	4	9	22	51	1	6	58	16	151		167	18	154	22	194	441	
27/04/17 13:15-13:30	9	4	9	22	42	1	5	48	10	149		159	10	182	22	214	443	
27/04/17 13:30-13:45	8	3	8	19	58	1	5	64	16	137		153	8	158	21	187	423	
27/04/17 13:45-14:00	10	4	9	23	66	1	6	73	10	133		143	13	169	20	202	441	
27/04/17 14:00-14:15	7	3	7	17	44	1	4	49	6	128		134	10	177	24	211	411	
27/04/17 14:15-14:30	8	3	8	19	39	1	4	44	18	144		162	15	167	21	203	428	
27/04/17 14:30-14:45	7	3	7	17	49	1	6	56	20	132		152	3	197	27	227	452	
27/04/17 14:45-15:00	4	2	4	10	70	2	10	82	16	173		189	9	177	26	212	493	
27/04/17 15:00-15:15	8	3	7	18	77	1	7	85	17	158		175	9	203	27	239	517	
27/04/17 15:15-15:30	6	3	6	15	75	2	8	85	12	179		191	7	210	28	245	536	
27/04/17 15:30-15:45	8	3	8	19	68	2	8	78	14	179		193	6	206	26	238	528	
27/04/17 15:45-16:00	8	3	8	19	68	2	8	78	20	159		179	17	211	29	257	533	
27/04/17 16:00-16:15	7	3	7	17	58													



Turning Movement Volume Report

Report Date: 5/12/2017 5:21:06 PM
From 4/27/2017 to 4/27/2017

Intersection: 78

Time	NW				SE				NE				SW					Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total		
27/04/17 00:00-00:15	3	0	0	3	0	0	0	0	0	11	0	11	0	13	0	13	27	
27/04/17 00:15-00:30	0	0	0	0	4	0	2	6	1	7	0	8	1	12	0	13	27	
27/04/17 00:30-00:45	0	0	0	0	0	0	0	0	1	1	0	2	0	14	1	15	17	
27/04/17 00:45-01:00	3	0	0	3	0	0	0	0	2	6	0	8	0	16	1	17	28	
27/04/17 01:00-01:15	2	0	0	2	0	0	0	0	0	5	0	5	0	5	0	5	12	
27/04/17 01:15-01:30	1	0	0	1	1	0	2	3	3	8	0	11	0	5	0	5	20	
27/04/17 01:30-01:45	0	0	0	0	0	0	0	0	1	6	0	7	0	7	0	7	14	
27/04/17 01:45-02:00	0	0	0	0	1	0	1	2	1	5	0	6	0	9	0	9	17	
27/04/17 02:00-02:15	0	0	0	0	0	0	0	0	0	8	0	8	0	7	0	7	15	
27/04/17 02:15-02:30	1	0	0	1	0	0	0	0	0	5	0	5	0	6	0	6	12	
27/04/17 02:30-02:45	0	0	0	0	1	0	1	2	1	4	0	5	0	2	0	2	9	
27/04/17 02:45-03:00	0	0	0	0	0	0	0	0	2	1	0	3	0	4	0	4	7	
27/04/17 03:00-03:15	0	0	0	0	2	0	0	2	1	5	0	6	0	6	0	6	14	
27/04/17 03:15-03:30	0	0	0	0	1	0	0	1	1	5	0	6	0	3	0	3	10	
27/04/17 03:30-03:45	0	0	0	0	0	0	0	0	2	2	0	4	1	7	0	8	12	
27/04/17 03:45-04:00	0	0	0	0	0	0	0	0	1	3	0	4	0	4	0	4	8	
27/04/17 04:00-04:15	1	0	0	1	0	0	0	0	0	4	0	4	0	4	0	4	9	
27/04/17 04:15-04:30	1	0	0	1	0	0	0	0	1	9	0	10	0	6	0	6	17	
27/04/17 04:30-04:45	2	0	0	2	0	0	0	0	0	10	0	10	0	8	1	9	21	
27/04/17 04:45-05:00	2	0	0	2	4	0	0	4	2	5	0	7	0	11	0	11	24	
27/04/17 05:00-05:15	0	0	0	0	1	0	1	2	2	11	0	13	0	11	0	11	26	
27/04/17 05:15-05:30	3	0	0	3	1	0	0	1	0	12	0	12	0	12	1	13	29	
27/04/17 05:30-05:45	0	0	0	0	3	0	1	4	1	11	0	12	0	15	1	16	32	
27/04/17 05:45-06:00	0	0	0	0	2	0	2	4	3	10	0	13	0	30	2	32	49	
27/04/17 06:00-06:15	2	0	0	2	5	1	3	9	6	22	0	28	1	32	2	35	74	
27/04/17 06:15-06:30	1	0	0	1	9	1	6	16	0	23	0	23	1	39	2	42	82	
27/04/17 06:30-06:45	4	0	0	4	8	1	3	12	2	37	1	40	2	56	3	61	117	
27/04/17 06:45-07:00	8	1	1	10	4	0	2	6	2	37	1	40	1	73	4	78	134	
27/04/17 07:00-07:15	6	0	0	6	4	0	0	4	4	43	1	48	1	72	3	76	134	
27/04/17 07:15-07:30	2	0	0	2	6	1	8	15	4	56	1	61	4	88	5	97	175	
27/04/17 07:30-07:45	5	0	1	6	13	2	4	19	12	91	2	105	2	75	4	81	211	
27/04/17 07:45-08:00	3	0	1	4	13	2	7	22	13	115	2	130	1	111	6	118	274	
27/04/17 08:00-08:15	10	1	0	11	14	2	5	21	16	168	3	187	1	106	5	112	331	
27/04/17 08:15-08:30	9	1	4	14	21	3	10	34	12	100	2	114	2	135	7	144	306	
27/04/17 08:30-08:45	11	1	5	17	27	3	11	41	19	112	2	133	4	97	5	106	297	
27/04/17 08:45-09:00	19	1	0	20	18	2	10	30	25	90	2	117	5	103	5	113	280	
27/04/17 09:00-09:15	50	4	8	62	64	8	20	92	30	178	4	212	14	184	8	206	572	
27/04/17 09:15-09:30	16	1	4	21	26	3	15	44	25	86	1	112	7	93	5	105	282	
27/04/17 09:30-09:45	23	2	5	30	27	3	19	49	32	83	2	117	5	108	6	119	315	
27/04/17 09:45-10:00	23	2	6	31	27	3	16	46	28	89	2	119	8	94	4	106	302	
27/04/17 10:00-10:15	24	2	9	35	34	4	16	54	26	98	2	126	10	90	4	104	319	
27/04/17 10:15-10:30	27	2	16	45	36	4	23	63	32	86	1	119	5	90	5	100	327	
27/04/17 10:30-10:45	24	2	9	35	36	4	22	62	35	110	2	147	7	117	5	129	373	
27/04/17 10:45-11:00	23	2	11	36	26	3	17	46	31	97	2	130	11	116	5	132	344	
27/04/17 11:00-11:15	20	2	13	35	34	4	14	52	41	117	2	160	12	143	7	162	409	
27/04/17 11:15-11:30	33	3	7	43	40	5	21	66	36	111	2	149	7	104	6	117	375	
27/04/17 11:30-11:45	26	2	19	47	46	6	21	73	36	118	2	156	7	120	5	132	408	
27/04/17 11:45-12:00	34	3	15	52	44	5	27	76	37	132	2	171	10	151	7	168	467	
27/04/17 12:00-12:15	31	2	22	55	46	6	23	75	37	122	2	161	9	126	6	141	432	
27/04/17 12:15-12:30	31	2	9	42	45	6	22	73	40	109	2	151	12	137	7	156	422	
27/04/17 12:30-12:45	21	2	14	37	42	5	33	80	48	116	2	166	4	153	8	165	448	
27/04/17 12:45-13:00	33	3	9	45	44	5	37	86	31	119	2	152	3	128	6	137	420	
27/04/17 13:00-13:15	22	2	13	37	35	4	24	63	36	132	2	170	5	147	7	159	429	
27/04/17 13:15-13:30	31	2	12	45	44	5	36	85	25	126	2	153	4	152	7	163	446	
27/04/17 13:30-13:45	34	3	15	52	39	5	30	74	31	133	2	166	11	128	6	145	437	
27/04/17 13:45-14:00	28	2	12	42	42	5	29	76	37	100	2	139	11	154	7	172	429	
27/04/17 14:00-14:15	31	2	12	45	37	5	32	74	34	109	2	145	8	134	6	148	412	
27/04/17 14:15-14:30	32	2	17	51	40	5	22	67	31	103	2	136	9	151	7	167	421	
27/04/17 14:30-14:45	33	3	8	44	36	5	21	62	38	123	2	163	13	149	7	169	438	
27/04/17 14:45-15:00	36	3	9	48	48	6	31	85	29	145	3	177	5	153	8	166	476	
27/04/17 15:00-15:15	34	3	15	52	44	5	35	84	32	119	2	153	7	173	8	188	477	
27/04/17 15:15-15:30	28	2	6	36	38	5	29	72	28	158	3	189	9	169	8	186	483	
27/04/17 15:30-15:45	36	3	11	50	39	5	22	66	37	149	3	189	9	185	8	202	507	
27/04/17 15:45-16:00	32	2	10	44	37	5	32	74	35	145	3	1						



Turning Movement Volume Report

Report Date: 4/28/2017 8:10:03 AM
From 4/27/2017 to 4/27/2017

Intersection: 62

Time	N				S				E				W				Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
27/04/17 00:00-00:15	0	0	1	1	13	0	4	17	5	23	0	28	0	19	7	26	72
27/04/17 00:15-00:30	1	0	0	1	22	0	4	26	0	14	0	14	1	20	6	27	68
27/04/17 00:30-00:45	1	0	3	4	16	0	4	20	2	14	0	16	2	11	1	14	54
27/04/17 00:45-01:00	1	0	2	3	16	0	4	20	4	8	0	12	2	13	4	19	54
27/04/17 01:00-01:15	0	0	0	0	5	0	2	7	3	14	0	17	0	10	4	14	38
27/04/17 01:15-01:30	0	0	1	1	8	0	3	11	2	17	0	19	1	15	7	23	54
27/04/17 01:30-01:45	0	0	2	2	6	0	1	7	2	11	0	13	1	16	4	21	43
27/04/17 01:45-02:00	0	1	1	2	13	0	0	13	0	6	0	6	1	10	6	17	38
27/04/17 02:00-02:15	0	0	0	0	3	0	3	6	2	15	0	17	1	5	6	12	35
27/04/17 02:15-02:30	0	0	0	0	5	0	3	8	1	13	0	14	0	16	2	18	40
27/04/17 02:30-02:45	0	0	0	0	4	0	0	4	4	10	0	14	0	7	1	8	26
27/04/17 02:45-03:00	0	0	0	0	3	0	0	3	0	7	0	7	0	7	1	8	18
27/04/17 03:00-03:15	0	0	0	0	8	0	1	9	1	7	0	8	0	8	4	12	29
27/04/17 03:15-03:30	0	0	0	0	3	0	1	4	3	8	0	11	0	12	1	13	28
27/04/17 03:30-03:45	0	0	0	0	5	0	1	6	0	4	0	4	0	6	0	6	16
27/04/17 03:45-04:00	0	0	0	0	9	0	0	9	1	10	0	11	0	7	3	10	30
27/04/17 04:00-04:15	0	0	0	0	8	0	2	10	0	8	0	8	1	7	4	12	30
27/04/17 04:15-04:30	0	0	1	1	6	0	1	7	1	23	0	24	0	9	7	16	48
27/04/17 04:30-04:45	0	0	1	1	15	0	1	16	5	17	0	22	0	8	5	13	52
27/04/17 04:45-05:00	0	0	3	3	16	0	0	16	2	30	0	32	1	19	6	26	77
27/04/17 05:00-05:15	0	0	0	0	14	0	0	14	5	26	0	31	0	21	5	26	71
27/04/17 05:15-05:30	0	0	0	0	19	0	3	22	5	20	0	25	2	22	5	29	76
27/04/17 05:30-05:45	0	0	0	0	22	0	3	25	4	39	0	43	1	26	6	33	101
27/04/17 05:45-06:00	0	0	1	1	33	1	5	39	7	62	1	70	1	41	8	50	160
27/04/17 06:00-06:15	3	5	4	12	33	1	4	38	14	58	1	73	4	43	16	63	186
27/04/17 06:15-06:30	1	2	1	4	45	1	3	49	7	83	1	91	2	50	13	65	209
27/04/17 06:30-06:45	0	0	0	0	57	1	12	70	14	129	1	144	1	58	29	88	302
27/04/17 06:45-07:00	0	0	1	1	72	1	10	83	12	123	1	136	2	71	21	94	314
27/04/17 07:00-07:15	3	1	5	9	70	1	15	86	19	143	1	163	6	75	30	111	369
27/04/17 07:15-07:30	2	1	5	8	89	1	18	108	20	179	2	201	10	114	37	161	478
27/04/17 07:30-07:45	5	2	3	10	87	1	17	105	27	244	2	273	8	134	73	215	603
27/04/17 07:45-08:00	3	1	5	9	91	1	32	124	45	216	2	263	10	171	88	269	665
27/04/17 08:00-08:15	3	4	6	13	88	1	24	113	56	264	3	323	9	212	127	348	797
27/04/17 08:15-08:30	8	4	9	21	104	1	32	137	34	240	3	277	12	161	80	253	688
27/04/17 08:30-08:45	4	3	9	16	97	1	30	128	45	270	3	318	16	154	79	249	711
27/04/17 08:45-09:00	6	4	15	25	106	2	22	130	27	226	2	255	14	164	84	262	672
27/04/17 09:00-09:15	18	4	18	40	194	2	56	252	54	471	5	530	34	430	160	624	1446
27/04/17 09:15-09:30	10	9	7	26	106	1	21	128	35	208	2	245	15	178	74	267	666
27/04/17 09:30-09:45	10	5	7	22	123	2	30	155	28	170	2	200	16	152	83	251	628
27/04/17 09:45-10:00	8	3	9	20	100	1	21	122	23	189	2	214	15	169	91	275	631
27/04/17 10:00-10:15	18	12	7	37	106	1	23	130	28	177	2	207	13	175	97	285	659
27/04/17 10:15-10:30	10	5	14	29	98	1	34	133	37	161	2	200	9	164	85	258	620
27/04/17 10:30-10:45	3	8	13	24	103	1	40	144	41	203	2	246	19	151	90	260	674
27/04/17 10:45-11:00	7	4	14	25	129	1	27	157	36	176	2	214	16	159	80	255	651
27/04/17 11:00-11:15	12	5	13	30	130	2	45	177	36	158	2	196	19	204	124	347	750
27/04/17 11:15-11:30	6	13	19	38	118	2	30	150	32	190	2	224	15	191	97	303	715
27/04/17 11:30-11:45	5	14	13	32	141	2	36	179	48	177	2	227	18	188	111	317	755
27/04/17 11:45-12:00	7	6	9	22	141	2	38	181	42	205	2	249	9	192	112	313	765
27/04/17 12:00-12:15	10	10	22	42	141	2	48	191	53	209	2	264	22	206	108	336	833
27/04/17 12:15-12:30	9	9	18	36	127	1	40	168	43	197	2	242	16	196	84	296	742
27/04/17 12:30-12:45	5	11	21	37	146	2	47	195	40	166	2	208	17	235	117	369	809
27/04/17 12:45-13:00	11	15	22	48	137	2	48	187	44	184	2	230	24	204	94	322	787
27/04/17 13:00-13:15	10	8	21	39	155	2	45	202	38	196	2	236	25	232	106	363	840
27/04/17 13:15-13:30	10	11	14	35	150	2	54	206	41	197	2	240	15	201	107	323	804
27/04/17 13:30-13:45	13	4	16	33	147	2	54	203	38	192	2	232	20	196	110	326	794
27/04/17 13:45-14:00	10	10	16	36	136	2	42	180	49	183	2	234	21	205	93	319	769
27/04/17 14:00-14:15	7	9	14	30	159	2	42	203	34	192	2	228	12	207	97	316	777
27/04/17 14:15-14:30	6	8	18	32	149	2	45	196	40	196	2	238	13	220	90	323	789
27/04/17 14:30-14:45	6	9	15	30	147	2	53	202	51	214	2	267	17	228	104	349	848
27/04/17 14:45-15:00	9	9	18	36	161	2	42	205	53	201	2	256	15	248	102	365	862
27/04/17 15:00-15:15	5	7	18	30	163	2	67	232	45	223	2	270	10	246	109	365	897
27/04/17 15:15-15:30	8	7	15	30	166	2	54	222	54	252	2	308	14	220	134	368	928



Turning Movement Volume Report

Report Date: 4/28/2017 8:11:19 AM
From 4/27/2017 to 4/27/2017

Intersection: 135

Time	N				S				E				W				
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Int Total
27/04/17 00:00-00:15				0	30		4	34		19	4	23		21		21	78
27/04/17 00:15-00:30				0	26		4	30		21	3	24		24		24	78
27/04/17 00:30-00:45				0	21		3	24		16	3	19		12		12	55
27/04/17 00:45-01:00				0	17		3	20		11	3	14		12		12	46
27/04/17 01:00-01:15				0	27		5	32		10	1	11		10		10	53
27/04/17 01:15-01:30				0	18		4	22		12	2	14		19		19	55
27/04/17 01:30-01:45				0	14		4	18		8	2	10		19		19	47
27/04/17 01:45-02:00				0	14		1	15		9	1	10		14		14	39
27/04/17 02:00-02:15				0	9		1	10		5	2	7		11		11	28
27/04/17 02:15-02:30				0	9		5	14		4	1	5		18		18	37
27/04/17 02:30-02:45				0	7		0	7		6	0	6		10		10	23
27/04/17 02:45-03:00				0	8		3	11		6	1	7		7		7	25
27/04/17 03:00-03:15				0	8		1	9		5	1	6		10		10	25
27/04/17 03:15-03:30				0	19		0	19		3	1	4		14		14	37
27/04/17 03:30-03:45				0	13		3	16		2	0	2		6		6	24
27/04/17 03:45-04:00				0	6		5	11		5	1	6		6		6	23
27/04/17 04:00-04:15				0	11		1	12		10	1	11		10		10	33
27/04/17 04:15-04:30				0	13		5	18		12	1	13		10		10	41
27/04/17 04:30-04:45				0	14		7	21		8	2	10		9		9	40
27/04/17 04:45-05:00				0	35		6	41		23	3	26		25		25	92
27/04/17 05:00-05:15				0	45		9	54		19	2	21		25		25	100
27/04/17 05:15-05:30				0	31		7	38		11	3	14		30		30	82
27/04/17 05:30-05:45				0	55		4	59		27	4	31		38		38	128
27/04/17 05:45-06:00				0	73		10	83		45	7	52		44		44	179
27/04/17 06:00-06:15				0	104		13	117		46	6	52		55		55	224
27/04/17 06:15-06:30				0	130		10	140		61	11	72		58		58	270
27/04/17 06:30-06:45				0	153		24	177		84	16	100		74		74	351
27/04/17 06:45-07:00				0	119		22	141		103	17	120		79		79	340
27/04/17 07:00-07:15				0	143		18	161		114	21	135		101		101	397
27/04/17 07:15-07:30				0	165		30	195		146	23	169		149		149	513
27/04/17 07:30-07:45				0	197		33	230		212	38	250		187		187	667
27/04/17 07:45-08:00				0	194		31	225		196	30	226		250		250	701
27/04/17 08:00-08:15				0	192		55	247		223	34	257		283		283	787
27/04/17 08:15-08:30				0	187		42	229		225	37	262		226		226	717
27/04/17 08:30-08:45				0	207		31	238		246	34	280		227		227	745
27/04/17 08:45-09:00				0	216		44	260		223	40	263		239		239	762
27/04/17 09:00-09:15				0	432		104	536		425	65	490		550		550	1576
27/04/17 09:15-09:30				0	195		47	242		194	27	221		233		233	696
27/04/17 09:30-09:45				0	177		46	223		185	24	209		202		202	634
27/04/17 09:45-10:00				0	170		41	211		173	27	200		246		246	657
27/04/17 10:00-10:15				0	197		53	250		189	27	216		230		230	696
27/04/17 10:15-10:30				0	180		54	234		168	27	195		223		223	652
27/04/17 10:30-10:45				0	175		43	218		190	28	218		223		223	659
27/04/17 10:45-11:00				0	193		48	241		211	27	238		223		223	702
27/04/17 11:00-11:15				0	211		61	272		189	26	215		289		289	776
27/04/17 11:15-11:30				0	176		46	222		203	33	236		265		265	723
27/04/17 11:30-11:45				0	180		60	240		204	26	230		270		270	740
27/04/17 11:45-12:00				0	166		57	223		214	29	243		271		271	737
27/04/17 12:00-12:15				0	167		51	218		234	34	268		283		283	769
27/04/17 12:15-12:30				0	182		50	232		215	31	246		260		260	738
27/04/17 12:30-12:45				0	193		54	247		205	31	236		322		322	805
27/04/17 12:45-13:00				0	185		46	231		218	29	247		277		277	755
27/04/17 13:00-13:15				0	183		64	247		242	36	278		309		309	834
27/04/17 13:15-13:30				0	180		40	220		236	33	269		285		285	774
27/04/17 13:30-13:45				0	182		61	243		220	30	250		267		267	760
27/04/17 13:45-14:00				0	187		44	231		201	30	231		284		284	746
27/04/17 14:00-14:15				0	190		58	248		236	34	270		273		273	791
27/04/17 14:15-14:30				0	207		45	252		232	30	262		289		289	803
27/04/17 14:30-14:45				0	158		48	206		231	35	266		326		326	798
27/04/17 14:45-15:00				0	153		48	201		235	32	267		341		341	809
27/04/17 15:00-15:15				0	196		48	244		243	37	280		306		306	830
27/04/17 15:15-15:30				0	175		61	236		268	43	311		332		332	879
27/04/17 15:30-15:45				0	170		59	229		260	39	299		332		332	860
27/04/17 15:45-16:00				0	202		45	247		235	34	269		374		374	890
27/04/17 16:00-16:15				0	199		66	265		237	36	273		348		348	886
27/04/17 16:15-16:30				0	211		52	263		229	34	263		347		347	873
27/04/17 16:30-16:45				0	224		63	287		244	40	284		325		325	896
27/04/17 16:45-17:00				0	215		61	276		251	37	288		388		388	952
27/04/17 17:00-17:15				0	180		66	246		207	30	237		360		360	843
27/04/17 17:15-17:30				0	177												



Turning Movement Volume Report

Report Date: 4/28/2017 8:10:37 AM
From 4/27/2017 to 4/27/2017

Intersection: 148

Time	N				S				E				W				
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Int Total
27/04/17 00:00-00:15				0			11	11	3			3		46	3	49	63
27/04/17 00:15-00:30				0			10	10	5			5		58	3	61	76
27/04/17 00:30-00:45				0			2	2	1			1		43	3	46	49
27/04/17 00:45-01:00				0			5	5	2			2		38	5	43	50
27/04/17 01:00-01:15				0			1	1	1			1		31	4	35	37
27/04/17 01:15-01:30				0			5	5	1			1		30	1	31	37
27/04/17 01:30-01:45				0			5	5	1			1		30	3	33	39
27/04/17 01:45-02:00				0			7	7	1			1		30	4	34	42
27/04/17 02:00-02:15				0			4	4	0			0		24	1	25	29
27/04/17 02:15-02:30				0			4	4	0			0		29	6	35	39
27/04/17 02:30-02:45				0			5	5	1			1		26	2	28	34
27/04/17 02:45-03:00				0			2	2	1			1		23	2	25	28
27/04/17 03:00-03:15				0			5	5	2			2		20	0	20	27
27/04/17 03:15-03:30				0			4	4	0			0		20	4	24	28
27/04/17 03:30-03:45				0			1	1	0			0		18	3	21	22
27/04/17 03:45-04:00				0			4	4	0			0		22	2	24	28
27/04/17 04:00-04:15				0			3	3	6			6		22	2	24	33
27/04/17 04:15-04:30				0			5	5	1			1		29	4	33	39
27/04/17 04:30-04:45				0			6	6	3			3		23	4	27	36
27/04/17 04:45-05:00				0			13	13	3			3		43	6	49	65
27/04/17 05:00-05:15				0			15	15	3			3		42	6	48	66
27/04/17 05:15-05:30				0			10	10	1			1		66	2	68	79
27/04/17 05:30-05:45				0			17	17	6			6		65	6	71	94
27/04/17 05:45-06:00				0			17	17	8			8		103	10	113	138
27/04/17 06:00-06:15				0			30	30	12			12		99	8	107	149
27/04/17 06:15-06:30				0			19	19	9			9		161	15	176	204
27/04/17 06:30-06:45				0			30	30	13			13		172	20	192	235
27/04/17 06:45-07:00				0			29	29	14			14		185	31	216	259
27/04/17 07:00-07:15				0			44	44	17			17		197	19	216	277
27/04/17 07:15-07:30				0			63	63	26			26		274	21	295	384
27/04/17 07:30-07:45				0			83	83	34			34		292	37	329	446
27/04/17 07:45-08:00				0			100	100	21			21		329	44	373	494
27/04/17 08:00-08:15				0			107	107	44			44		332	37	369	520
27/04/17 08:15-08:30				0			90	90	30			30		325	23	348	468
27/04/17 08:30-08:45				0			96	96	38			38		280	42	322	456
27/04/17 08:45-09:00				0			78	78	32			32		359	44	403	513
27/04/17 09:00-09:15				0			190	190	90			90		724	92	816	1096
27/04/17 09:15-09:30				0			65	65	37			37		370	58	428	530
27/04/17 09:30-09:45				0			61	61	41			41		338	59	397	499
27/04/17 09:45-10:00				0			67	67	32			32		395	61	456	555
27/04/17 10:00-10:15				0			62	62	28			28		361	65	426	516
27/04/17 10:15-10:30				0			57	57	24			24		355	69	424	505
27/04/17 10:30-10:45				0			60	60	41			41		364	78	442	543
27/04/17 10:45-11:00				0			67	67	37			37		368	75	443	547
27/04/17 11:00-11:15				0			69	69	36			36		418	83	501	606
27/04/17 11:15-11:30				0			63	63	38			38		416	71	487	588
27/04/17 11:30-11:45				0			79	79	41			41		457	84	541	661
27/04/17 11:45-12:00				0			76	76	49			49		408	83	491	616
27/04/17 12:00-12:15				0			77	77	57			57		447	90	537	671
27/04/17 12:15-12:30				0			60	60	43			43		398	97	495	598
27/04/17 12:30-12:45				0			61	61	44			44		486	102	588	693
27/04/17 12:45-13:00				0			58	58	50			50		458	102	560	668
27/04/17 13:00-13:15				0			68	68	57			57		494	91	585	710
27/04/17 13:15-13:30				0			64	64	51			51		434	79	513	628
27/04/17 13:30-13:45				0			71	71	50			50		430	91	521	642
27/04/17 13:45-14:00				0			76	76	33			33		431	98	529	638
27/04/17 14:00-14:15				0			81	81	54			54		414	99	513	648
27/04/17 14:15-14:30				0			86	86	50			50		429	81	510	646
27/04/17 14:30-14:45				0			91	91	33			33		456	77	533	657
27/04/17 14:45-15:00				0			70	70	57			57		508	93	601	728
27/04/17 15:00-15:15				0			91	91	45			45		450	84	534	670
27/04/17 15:15-15:30				0			102	102	60			60		516	77	593	755
27/04/17 15:30-15:45				0			95	95	50			50		482	89	571	716
27/04/17 15:45-16:00				0			90	90	44			44		552	77	629	763
27/04/17 16:00-16:15				0			85	85	34			34		553	63	616	735
27/04/17 16:15-16:30				0			89	89	38			38		553	84	637	764
27/04/17 16:30-16:45				0			85	85	46			46		522	49	571	702
27/04/17 16:45-17:00				0			91	91	50			50		606	86	692	833
27/04/17 17:00-17:15				0			101	101	38			38		551	70	621	760
27/04/17 17:15-17:30				0			67	67	44			44		561	50	611	722
27/04/17 17:30-17:45				0			84	84	41			41		623	52	675	800
27/04/17 17:45-18:00				0			96	96	42			42		552	58	610	748
27/04/17 18:00-18:15				0			75	75									



Turning Movement Volume Report

Report Date: 4/28/2017 8:11:47 AM
From 4/27/2017 to 4/27/2017

Intersection: 33

Time	N				S				E				W				Int Total
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	
27/04/17 00:00-00:15	4	8	2	14	1	12	5	18	3	39	6	48	0	36	5	41	121
27/04/17 00:15-00:30	4	3	2	9	1	8	11	20	5	35	5	45	7	43	5	55	129
27/04/17 00:30-00:45	5	4	1	10	2	4	8	14	4	35	4	43	6	32	4	42	109
27/04/17 00:45-01:00	6	3	1	10	1	5	5	11	1	23	1	25	4	33	2	39	85
27/04/17 01:00-01:15	5	0	0	5	4	8	6	18	6	24	1	31	6	23	1	30	84
27/04/17 01:15-01:30	3	4	0	7	4	4	2	10	1	24	1	26	1	22	1	24	67
27/04/17 01:30-01:45	3	2	0	5	2	1	6	9	1	13	3	17	6	23	1	30	61
27/04/17 01:45-02:00	6	1	1	8	0	2	2	4	2	20	3	25	1	25	2	28	65
27/04/17 02:00-02:15	5	1	0	6	1	0	2	3	3	19	2	24	2	16	1	19	52
27/04/17 02:15-02:30	4	3	1	8	2	3	8	13	5	10	2	17	2	23	1	26	64
27/04/17 02:30-02:45	2	1	0	3	2	1	4	7	2	13	0	15	1	22	2	25	50
27/04/17 02:45-03:00	2	5	1	8	0	1	2	3	2	9	1	12	0	20	1	21	44
27/04/17 03:00-03:15	2	5	1	8	1	3	1	5	5	10	1	16	0	16	0	16	45
27/04/17 03:15-03:30	1	2	0	3	0	0	5	5	3	15	1	19	2	18	1	21	48
27/04/17 03:30-03:45	1	2	0	3	3	3	0	6	2	15	0	17	0	22	3	25	51
27/04/17 03:45-04:00	1	4	1	6	0	2	7	9	1	13	0	14	0	16	1	17	46
27/04/17 04:00-04:15	5	4	2	11	0	0	5	5	4	22	0	26	1	16	1	18	60
27/04/17 04:15-04:30	3	3	0	6	0	5	1	6	5	23	1	29	0	26	0	26	67
27/04/17 04:30-04:45	2	6	1	9	0	3	5	8	1	14	3	18	3	23	2	28	63
27/04/17 04:45-05:00	1	3	2	6	1	0	10	11	11	40	4	55	4	35	1	40	112
27/04/17 05:00-05:15	4	9	3	16	1	4	4	9	25	46	15	86	2	36	3	41	152
27/04/17 05:15-05:30	10	5	1	16	2	5	4	11	7	24	4	35	2	52	1	55	117
27/04/17 05:30-05:45	13	8	3	24	1	2	3	6	9	50	3	62	4	58	1	63	155
27/04/17 05:45-06:00	14	11	4	29	1	7	5	13	14	64	6	84	4	88	3	95	221
27/04/17 06:00-06:15	13	15	5	33	3	6	13	22	20	135	18	173	8	85	2	95	323
27/04/17 06:15-06:30	15	16	5	36	2	22	11	35	26	130	9	165	2	138	5	145	381
27/04/17 06:30-06:45	25	30	7	62	1	17	15	33	36	173	17	226	5	155	8	168	489
27/04/17 06:45-07:00	21	34	10	65	2	20	29	51	51	237	13	301	13	160	6	179	596
27/04/17 07:00-07:15	25	51	11	87	3	33	18	54	64	327	17	408	10	187	11	208	757
27/04/17 07:15-07:30	26	61	14	101	10	28	30	68	63	288	24	375	10	224	11	245	789
27/04/17 07:30-07:45	25	65	16	106	9	38	32	79	105	405	42	552	15	263	16	294	1031
27/04/17 07:45-08:00	47	89	23	159	19	43	37	99	87	409	49	545	23	279	20	322	1125
27/04/17 08:00-08:15	40	110	26	176	9	52	34	95	114	515	64	693	34	306	31	371	1335
27/04/17 08:15-08:30	47	97	27	171	13	54	41	108	103	447	43	593	27	238	24	289	1161
27/04/17 08:30-08:45	46	82	24	152	17	45	49	111	106	517	58	681	37	235	22	294	1238
27/04/17 08:45-09:00	74	92	26	192	13	69	38	120	98	426	78	602	28	276	24	328	1242
27/04/17 09:00-09:15	122	189	49	360	30	132	104	266	226	946	148	1320	78	586	70	734	2680
27/04/17 09:15-09:30	56	95	31	182	20	53	74	147	101	315	46	462	43	291	23	357	1148
27/04/17 09:30-09:45	41	77	24	142	16	54	63	133	98	403	30	531	52	299	31	382	1188
27/04/17 09:45-10:00	63	111	31	205	24	55	87	166	82	292	46	420	35	281	34	350	1141
27/04/17 10:00-10:15	56	92	28	176	16	61	69	146	93	395	47	535	34	299	32	365	1222
27/04/17 10:15-10:30	51	88	25	164	21	49	90	160	86	282	31	399	42	268	30	340	1063
27/04/17 10:30-10:45	65	98	28	191	24	63	73	160	94	334	43	471	52	310	34	396	1218
27/04/17 10:45-11:00	51	107	32	190	31	78	91	200	96	327	48	471	50	284	41	375	1236
27/04/17 11:00-11:15	74	94	29	197	25	62	101	188	107	423	55	585	58	320	43	421	1391
27/04/17 11:15-11:30	64	127	41	232	24	76	84	184	78	270	45	393	59	310	38	407	1216
27/04/17 11:30-11:45	65	118	35	218	25	65	87	177	98	318	45	461	61	386	46	493	1349
27/04/17 11:45-12:00	70	104	39	213	40	84	81	205	79	301	41	421	58	316	36	410	1249
27/04/17 12:00-12:15	73	112	35	220	30	73	102	205	90	346	48	484	59	374	52	485	1394
27/04/17 12:15-12:30	73	122	39	234	41	99	116	256	104	309	53	466	54	294	47	395	1351
27/04/17 12:30-12:45	76	111	36	223	33	74	113	220	94	351	47	492	62	405	38	505	1440
27/04/17 12:45-13:00	81	114	32	227	47	86	93	226	79	313	49	441	72	368	40	480	1374
27/04/17 13:00-13:15	77	106	32	215	34	84	100	218	103	361	51	515	66	404	33	503	1451
27/04/17 13:15-13:30	67	118	36	221	29	92	98	219	78	293	51	422	72	328	43	443	1305
27/04/17 13:30-13:45	58	100	33	191	42	75	85	202	108	373	42	523	73	392	49	514	1430
27/04/17 13:45-14:00	72	135	39	246	37	74	104	215	111	308	38	457	60	315	35	410	1328
27/04/17 14:00-14:15	67	103	31	201	31	74	85	190	100	368	37	505	75	365	44	484	1380
27/04/17 14:15-14:30	97	130	37	264	27	70	93	190	100	317	46	463	58	304	41	403	1320
27/04/17 14:30-14:45	66	97	25	188	32	76	101	209	96	389	50	535	66	373	43	482	1414
27/04/17 14:45-15:00	90	142	40	272	30	86	115	231	91	306	28	425	44	379	37	460	1388
27/04/17 15:00-1																	

Appendix B

*Analysis Worksheets for
Existing (2017) Conditions*

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Conditions
AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	761	263	249	585	193	229		
Future Volume (veh/h)	761	263	249	585	193	229		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	895	309	323	760	244	290		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.85	0.85	0.77	0.77	0.79	0.79		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1145	534	461	2356	391	846		
Arrive On Green	0.34	0.31	0.26	0.67	0.22	0.22		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	895	309	323	760	244	290		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	10.4	7.0	7.2	4.0	5.4	4.6		
Cycle Q Clear(g_c), s	10.4	7.0	7.2	4.0	5.4	4.6		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1145	534	461	2356	391	846		
V/C Ratio(X)	0.78	0.58	0.70	0.32	0.62	0.34		
Avail Cap(c_a), veh/h	1163	542	527	2505	567	1004		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.1	12.0	14.7	3.1	15.4	5.8		
Incr Delay (d2), s/veh	3.5	1.5	3.5	0.1	1.6	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.4	3.4	3.9	1.9	2.8	3.4		
LnGrp Delay(d),s/veh	16.5	13.5	18.2	3.2	17.1	6.0		
LnGrp LOS	B	B	B	A	B	A		
Approach Vol, veh/h	1204			1083	534			
Approach Delay, s/veh	15.7			7.7	11.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	16.8		12.6		31.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	9.2	12.4		7.4		6.0		
Green Ext Time (p_c), s	1.4	0.4		1.2		4.8		
Intersection Summary								
HCM 2010 Ctrl Delay			11.8					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Conditions
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↗
Traffic Volume (vph)	830	350	549	429	0	1121
Future Volume (vph)	830	350	549	429	0	1121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.90	0.90
Adj. Flow (vph)	954	402	590	461	0	1246
RTOR Reduction (vph)	0	288	0	0	0	412
Lane Group Flow (vph)	954	114	590	461	0	834
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	14.5	14.5	14.5	33.0		16.1
Effective Green, g (s)	16.5	16.5	15.5	35.0		17.1
Actuated g/C Ratio	0.28	0.28	0.27	0.60		0.29
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1444	449	915	2131		474
v/s Ratio Prot	c0.19		c0.17	0.13		
v/s Ratio Perm		0.07				c0.52
v/c Ratio	0.66	0.25	0.64	0.22		1.76
Uniform Delay, d1	18.3	16.1	18.9	5.3		20.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.1	0.3	1.6	0.1		350.2
Delay (s)	19.5	16.4	20.4	5.3		370.7
Level of Service	B	B	C	A		F
Approach Delay (s)	18.6			13.8	370.7	
Approach LOS	B			B	F	
Intersection Summary						
HCM 2000 Control Delay			137.3		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.05			
Actuated Cycle Length (s)			58.1		Sum of lost time (s)	10.0
Intersection Capacity Utilization			92.1%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Existing Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	194	1482	275	0	816	81	176	665	752	184	0	405
Future Volume (vph)	194	1482	275	0	816	81	176	665	752	184	0	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	240	1830	340	0	907	90	200	756	855	204	0	450
RTOR Reduction (vph)	0	0	127	0	0	0	0	0	0	0	0	50
Lane Group Flow (vph)	240	1830	213	0	907	90	200	756	855	204	0	400
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.2	59.3	59.3		44.1	105.6	12.1	23.6	105.6	10.7		37.4
Effective Green, g (s)	12.7	60.8	60.3		45.6	105.6	13.6	25.1	105.6	12.2		38.9
Actuated g/C Ratio	0.12	0.58	0.57		0.43	1.00	0.13	0.24	1.00	0.12		0.37
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	412	2037	903		2767	1583	227	841	1583	396		583
v/s Ratio Prot	0.07	c0.52			0.14		c0.11	c0.21		0.06		0.25
v/s Ratio Perm			0.13			0.06			c0.54			
v/c Ratio	0.58	0.90	0.24		0.33	0.06	0.88	0.90	0.54	0.52		0.69
Uniform Delay, d1	43.9	19.7	11.2		19.9	0.0	45.2	39.0	0.0	43.9		28.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.1	5.7	0.1		0.1	0.1	30.3	12.3	1.3	1.1		3.4
Delay (s)	46.0	25.4	11.4		19.9	0.1	75.5	51.4	1.3	45.1		31.5
Level of Service	D	C	B		B	A	E	D	A	D		C
Approach Delay (s)		25.5			18.1			30.4			35.8	
Approach LOS		C			B			C			D	
Intersection Summary												
HCM 2000 Control Delay			26.9									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			105.6							10.0		
Intersection Capacity Utilization			74.6%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	219	1736	414	58	618	69	113	146	64	104	228	230
Future Volume (vph)	219	1736	414	58	618	69	113	146	64	104	228	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.91	0.91	0.91	0.77	0.77	0.77	0.92	0.92	0.92
Adj. Flow (vph)	258	2042	487	64	679	76	147	190	83	113	248	250
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	258	2042	487	64	679	76	147	190	83	113	248	250
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.4	20.0	53.6	3.7	14.3	53.6	5.8	8.3	53.6	5.6	8.1	53.6
Effective Green, g (s)	10.4	22.5	53.6	4.7	16.8	53.6	6.8	10.8	53.6	6.6	10.6	53.6
Actuated g/C Ratio	0.19	0.42	1.00	0.09	0.31	1.00	0.13	0.20	1.00	0.12	0.20	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	666	2134	1583	301	2008	1583	633	713	1583	422	1005	1583
v/s Ratio Prot	0.08	c0.40		0.02	0.11		0.03	0.05		0.03	0.05	
v/s Ratio Perm			c0.31			0.05			0.05			0.16
v/c Ratio	0.39	0.96	0.31	0.21	0.34	0.05	0.23	0.27	0.05	0.27	0.25	0.16
Uniform Delay, d1	18.8	15.1	0.0	22.7	14.1	0.0	21.1	18.1	0.0	21.3	18.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	11.0	0.5	0.4	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.2
Delay (s)	19.2	26.1	0.5	23.1	14.2	0.1	21.2	18.3	0.1	21.7	18.3	0.2
Level of Service	B	C	A	C	B	A	C	B	A	C	B	A
Approach Delay (s)		21.0			13.6			15.7			11.5	
Approach LOS		C			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			53.6			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			57.9%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  				
Traffic Volume (veh/h)	135	1303	544	85	913	678	252	417	78	533	473	120
Future Volume (veh/h)	135	1303	544	85	913	678	252	417	78	533	473	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	157	1515	0	98	1049	0	341	564	0	592	526	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.74	0.74	0.74	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	1919	543	306	1803	507	652	1158	320	973	823	328
Arrive On Green	0.11	0.38	0.00	0.09	0.35	0.00	0.19	0.23	0.00	0.19	0.23	0.00
Sat Flow, veh/h	3304	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	157	1515	0	98	1049	0	341	564	0	592	526	0
Grp Sat Flow(s),veh/h/ln	1652	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	2.6	15.4	0.0	1.6	9.8	0.0	5.2	5.6	0.0	6.3	7.8	0.0
Cycle Q Clear(g_c), s	2.6	15.4	0.0	1.6	9.8	0.0	5.2	5.6	0.0	6.3	7.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	1919	543	306	1803	507	652	1158	320	973	823	328
V/C Ratio(X)	0.43	0.79	0.00	0.32	0.58	0.00	0.52	0.49	0.00	0.61	0.64	0.00
Avail Cap(c_a), veh/h	794	1921	544	827	1921	544	827	1615	462	1203	1124	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.1	16.1	0.0	24.9	15.3	0.0	21.2	19.5	0.0	21.4	20.1	0.0
Incr Delay (d2), s/veh	0.8	2.3	0.0	0.6	0.4	0.0	0.7	0.3	0.0	0.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.6	0.0	0.8	4.6	0.0	2.5	2.6	0.0	3.0	3.9	0.0
LnGrp Delay(d),s/veh	24.9	18.4	0.0	25.5	15.7	0.0	21.9	19.9	0.0	22.0	21.0	0.0
LnGrp LOS	C	B		C	B		C	B		C	C	
Approach Vol, veh/h		1672			1147			905			1118	
Approach Delay, s/veh		19.0			16.5			20.6			21.5	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	14.8	7.2	23.0	13.0	15.1	8.5	21.6				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	8.3	7.6	3.6	17.4	7.2	9.8	4.6	11.8				
Green Ext Time (p_c), s	1.0	2.7	0.2	1.4	1.9	1.2	0.3	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			19.3									
HCM 2010 LOS			B									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	5	236	11	12	7	296	686	3	2	884	322
Future Volume (vph)	276	5	236	11	12	7	296	686	3	2	884	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1688	1583		1819	1583	3433	3537		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1688	1583		1819	1583	3433	3537		1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.70	0.70	1.00	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	349	6	299	16	17	7	384	891	4	2	1040	379
RTOR Reduction (vph)	0	0	196	0	0	7	0	0	0	0	0	188
Lane Group Flow (vph)	178	177	103	0	33	0	384	895	0	2	1040	191
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	10.8	10.8	22.1		3.9	3.9	11.3	38.3		1.0	28.0	28.0
Effective Green, g (s)	11.8	11.8	24.1		4.9	4.9	12.3	40.8		2.0	30.5	30.5
Actuated g/C Ratio	0.17	0.17	0.34		0.07	0.07	0.18	0.58		0.03	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	283	284	612		127	110	603	2061		50	1541	689
v/s Ratio Prot	c0.11	0.10	0.03		c0.02		c0.11	0.25		0.00	c0.29	
v/s Ratio Perm			0.04			0.00						0.12
v/c Ratio	0.63	0.62	0.17		0.26	0.00	0.64	0.43		0.04	0.67	0.28
Uniform Delay, d1	27.1	27.0	16.0		30.8	30.3	26.8	8.2		33.1	15.8	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.3	4.2	0.1		1.1	0.0	2.2	0.1		0.3	1.2	0.2
Delay (s)	31.4	31.2	16.1		31.9	30.3	29.0	8.3		33.4	17.0	12.9
Level of Service	C	C	B		C	C	C	A		C	B	B
Approach Delay (s)		24.4			31.6			14.5			15.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.2									
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			70.0									
Intersection Capacity Utilization			57.3%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Conditions
AM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	233	484	524	289	552	429
Future Volume (vph)	233	484	524	289	552	429
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.92	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3258	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3258	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.78	0.78	0.80	0.80	0.78	0.78
Adj. Flow (vph)	299	621	655	361	708	550
RTOR Reduction (vph)	237	228	0	254	0	0
Lane Group Flow (vph)	373	82	655	107	708	550
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	10.0	10.0	11.5	11.5	12.9	28.4
Effective Green, g (s)	11.0	12.3	13.8	13.8	15.2	29.4
Actuated g/C Ratio	0.24	0.27	0.30	0.30	0.33	0.63
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	772	381	1052	470	1124	2242
v/s Ratio Prot	c0.11		c0.19		c0.21	0.16
v/s Ratio Perm		0.06		0.07		
v/c Ratio	0.48	0.22	0.62	0.23	0.63	0.25
Uniform Delay, d1	15.2	13.3	14.1	12.3	13.2	3.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	1.2	0.2	1.1	0.1
Delay (s)	15.7	13.6	15.2	12.5	14.3	3.7
Level of Service	B	B	B	B	B	A
Approach Delay (s)	15.0		14.3			9.7
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay			12.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			46.4		Sum of lost time (s)	6.4
Intersection Capacity Utilization			52.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	497	220	52	270	68	202	341	50	68	252	51
Future Volume (vph)	84	497	220	52	270	68	202	341	50	68	252	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3471		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3471		1832	3663	1639
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.84	0.84	0.84	0.79	0.79	0.79
Adj. Flow (vph)	98	578	256	57	293	74	240	406	60	86	319	65
RTOR Reduction (vph)	0	0	189	0	0	57	0	14	0	0	0	50
Lane Group Flow (vph)	98	578	67	57	293	17	240	452	0	86	319	15
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	6.8	13.0	13.0	4.3	10.5	10.5	13.2	18.9		4.9	10.6	10.6
Effective Green, g (s)	7.8	15.0	15.0	5.3	13.2	13.2	14.2	21.2		5.9	12.9	12.9
Actuated g/C Ratio	0.14	0.26	0.26	0.09	0.23	0.23	0.25	0.37		0.10	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	241	929	415	164	818	365	440	1288		189	827	370
v/s Ratio Prot	c0.06	c0.16		0.03	0.08		c0.14	c0.13		0.05	0.09	
v/s Ratio Perm			0.04			0.01						0.01
v/c Ratio	0.41	0.62	0.16	0.35	0.36	0.05	0.55	0.35		0.46	0.39	0.04
Uniform Delay, d1	22.5	18.6	16.2	24.3	18.4	17.1	18.6	13.0		24.1	18.7	17.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	1.3	0.2	1.3	0.3	0.1	1.4	0.2		1.7	0.3	0.0
Delay (s)	23.7	19.9	16.4	25.6	18.7	17.1	20.0	13.1		25.8	19.0	17.3
Level of Service	C	B	B	C	B	B	C	B		C	B	B
Approach Delay (s)		19.3			19.3			15.5			20.0	
Approach LOS		B			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			18.4									B
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			57.1							9.7		
Intersection Capacity Utilization			48.6%									A
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	332	8	37	36	15	35	28	452	0	41	415	59
Future Volume (vph)	332	8	37	36	15	35	28	452	0	41	415	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1654			1799	1583	1770	3539		1770	3473	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1654			1799	1583	1770	3539		1770	3473	
Peak-hour factor, PHF	0.85	0.85	0.85	0.72	0.72	0.72	0.72	0.72	0.72	0.84	0.84	0.84
Adj. Flow (vph)	391	9	44	50	21	49	39	628	0	49	494	70
RTOR Reduction (vph)	0	10	0	0	0	43	0	0	0	0	14	0
Lane Group Flow (vph)	223	211	0	0	71	6	39	628	0	49	550	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.9	11.9			6.2	6.2	2.6	17.8		4.1	19.3	
Effective Green, g (s)	12.9	12.9			7.2	7.2	3.6	19.8		5.1	21.3	
Actuated g/C Ratio	0.23	0.23			0.13	0.13	0.06	0.35		0.09	0.38	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	387	381			231	203	113	1251		161	1320	
v/s Ratio Prot	c0.13	0.13			c0.04		0.02	c0.18		c0.03	0.16	
v/s Ratio Perm						0.00						
v/c Ratio	0.58	0.55			0.31	0.03	0.35	0.50		0.30	0.42	
Uniform Delay, d1	19.1	19.0			22.1	21.3	25.1	14.2		23.8	12.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.7			0.8	0.1	1.8	0.3		1.1	0.2	
Delay (s)	21.2	20.8			22.9	21.4	26.9	14.5		24.9	13.0	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		21.0			22.3			15.3			13.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay		16.7			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		56.0			Sum of lost time (s)			11.0				
Intersection Capacity Utilization		43.9%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	61	9	26	27	2	6	53	474	9	6	427	22
Future Volume (vph)	61	9	26	27	2	6	53	474	9	6	427	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1785	1583		1780	1583	1770	3529		1770	3513	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1785	1583		1780	1583	1770	3529		1770	3513	
Peak-hour factor, PHF	0.71	0.71	0.71	0.70	0.70	0.70	0.72	0.72	0.72	0.79	0.79	0.79
Adj. Flow (vph)	86	13	37	39	3	9	74	658	12	8	541	28
RTOR Reduction (vph)	0	0	32	0	0	8	0	1	0	0	4	0
Lane Group Flow (vph)	0	99	5	0	42	1	74	670	0	8	565	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		6.7	6.7		3.7	3.7	4.3	25.4		1.0	22.1	
Effective Green, g (s)		7.7	7.7		4.7	4.7	5.3	27.4		2.0	24.1	
Actuated g/C Ratio		0.15	0.15		0.09	0.09	0.10	0.52		0.04	0.46	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		260	230		158	140	177	1831		67	1603	
v/s Ratio Prot		c0.06			c0.02		c0.04	c0.19		0.00	0.16	
v/s Ratio Perm			0.00			0.00						
v/c Ratio		0.38	0.02		0.27	0.01	0.42	0.37		0.12	0.35	
Uniform Delay, d1		20.4	19.3		22.4	21.9	22.3	7.5		24.5	9.3	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		0.9	0.0	1.6	0.1		0.8	0.1	
Delay (s)		21.3	19.4		23.3	21.9	23.9	7.7		25.3	9.4	
Level of Service		C	B		C	C	C	A		C	A	
Approach Delay (s)		20.8			23.1			9.3			9.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.9									
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			52.8									
Intersection Capacity Utilization			37.2%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	964	10	39	678	368	19	11	23	370	4	105
Future Volume (vph)	162	964	10	39	678	368	19	11	23	370	4	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.78	0.78	0.78	0.70	0.70	0.70	0.87	0.87	0.87
Adj. Flow (vph)	184	1095	11	50	869	472	27	16	33	425	5	121
RTOR Reduction (vph)	0	1	0	0	0	244	0	0	31	0	0	95
Lane Group Flow (vph)	184	1105	0	50	869	228	27	16	2	217	213	26
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	11.5	36.4		4.7	29.6	29.6	4.0	4.0	4.0	15.2	15.2	15.2
Effective Green, g (s)	12.5	37.4		5.7	30.6	30.6	5.0	5.0	5.0	16.2	16.2	16.2
Actuated g/C Ratio	0.16	0.49		0.07	0.40	0.40	0.07	0.07	0.07	0.21	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	1732		132	1419	634	115	122	103	356	358	336
v/s Ratio Prot	c0.10	c0.31		0.03	0.25		c0.02	0.01		c0.13	0.13	
v/s Ratio Perm						0.14			0.00			0.02
v/c Ratio	0.64	0.64		0.38	0.61	0.36	0.23	0.13	0.02	0.61	0.59	0.08
Uniform Delay, d1	29.8	14.4		33.6	18.1	16.0	33.8	33.6	33.4	27.2	27.1	24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.8		1.8	0.8	0.3	1.1	0.5	0.1	2.9	2.6	0.1
Delay (s)	34.3	15.2		35.4	18.9	16.3	34.9	34.1	33.4	30.1	29.7	24.2
Level of Service	C	B		D	B	B	C	C	C	C	C	C
Approach Delay (s)		17.9			18.6			34.1			28.7	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			20.4									C
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			76.3									
Intersection Capacity Utilization			57.3%									B
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	856	139	0	946	712	0	0	0	770	0	161
Future Volume (veh/h)	0	856	139	0	946	712	0	0	0	770	0	161
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	901	0	0	1126	0				819	0	171
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.84	0.84	0.84				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	1973	859	0	2008	859				1110	0	510
Arrive On Green	0.00	0.56	0.00	0.00	0.57	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	901	0	0	1126	0				819	0	171
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	6.0	0.0	0.0	8.1	0.0				8.5	0.0	3.3
Cycle Q Clear(g_c), s	0.0	6.0	0.0	0.0	8.1	0.0				8.5	0.0	3.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1973	859	0	2008	859				1110	0	510
V/C Ratio(X)	0.00	0.46	0.00	0.00	0.56	0.00				0.74	0.00	0.33
Avail Cap(c_a), veh/h	0	2799	1228	0	2834	1228				1171	0	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	0.0	0.0	5.5	0.0				12.0	0.0	10.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0				2.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	0.0	0.0	3.8	0.0				4.3	0.0	1.5
LnGrp Delay(d),s/veh	0.0	5.4	0.0	0.0	5.7	0.0				14.4	0.0	10.7
LnGrp LOS		A			A					B		B
Approach Vol, veh/h		901			1126						990	
Approach Delay, s/veh		5.4			5.7						13.8	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		24.7		15.3		24.7						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		8.0		10.5		10.1						
Green Ext Time (p_c), s		11.2		0.8		10.6						
Intersection Summary												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	129	960	0	0	1278	141	0	0	886	0	0	380
Future Volume (vph)	129	960	0	0	1278	141	0	0	886	0	0	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.73	0.73	0.73	0.95	0.95	0.95	0.90	0.90	0.90	0.89	0.89	0.89
Adj. Flow (vph)	177	1315	0	0	1345	148	0	0	984	0	0	427
RTOR Reduction (vph)	0	0	0	0	0	74	0	0	0	0	0	357
Lane Group Flow (vph)	177	1315	0	0	1345	74	0	0	984	0	0	70
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	8.0	34.3			23.3	23.3			50.6			6.3
Effective Green, g (s)	10.0	36.3			25.3	25.3			50.6			8.3
Actuated g/C Ratio	0.20	0.72			0.50	0.50			1.00			0.16
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	349	2538			2542	791			1611			457
v/s Ratio Prot	0.10	0.37			0.26							
v/s Ratio Perm						0.05			c0.61			0.03
v/c Ratio	0.51	0.52			0.53	0.09			0.61			0.15
Uniform Delay, d1	18.1	3.2			8.6	6.6			0.0			18.1
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.2	0.2			0.2	0.1			1.7			0.2
Delay (s)	19.3	3.4			8.8	6.7			1.7			18.3
Level of Service	B	A			A	A			A			B
Approach Delay (s)		5.3			8.6			1.7			18.3	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			6.9		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			50.6		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			44.7%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	409	1776	198	99	1086	91	159	361	92	50	187	144
Future Volume (veh/h)	409	1776	198	99	1086	91	159	361	92	50	187	144
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	476	2065	230	115	1263	106	183	415	106	57	212	164
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	621	2781	986	223	2194	683	299	640	162	153	659	572
Arrive On Green	0.18	0.55	0.54	0.06	0.43	0.43	0.09	0.23	0.22	0.04	0.19	0.18
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2799	708	3442	3539	1583
Grp Volume(v), veh/h	476	2065	230	115	1263	106	183	261	260	57	212	164
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1738	1721	1770	1583
Q Serve(g_s), s	12.0	28.3	5.8	2.9	17.1	3.7	4.7	12.2	12.4	1.5	4.7	6.7
Cycle Q Clear(g_c), s	12.0	28.3	5.8	2.9	17.1	3.7	4.7	12.2	12.4	1.5	4.7	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	621	2781	986	223	2194	683	299	405	397	153	659	572
V/C Ratio(X)	0.77	0.74	0.23	0.51	0.58	0.16	0.61	0.64	0.65	0.37	0.32	0.29
Avail Cap(c_a), veh/h	868	2781	986	566	2286	712	491	437	429	491	873	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	15.8	7.6	41.3	19.6	15.8	40.2	31.8	32.0	42.3	32.1	20.8
Incr Delay (d2), s/veh	2.7	1.1	0.1	1.8	0.3	0.1	2.0	2.9	3.2	1.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	13.5	2.6	1.5	8.0	1.6	2.3	6.3	6.3	0.7	2.3	3.0
LnGrp Delay(d),s/veh	38.3	16.9	7.7	43.1	19.9	15.9	42.2	34.8	35.2	43.8	32.4	21.0
LnGrp LOS	D	B	A	D	B	B	D	C	D	D	C	C
Approach Vol, veh/h	2771				1484				704			
Approach Delay, s/veh	19.8				21.5				36.9			
Approach LOS	B				C				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	51.9	10.9	19.5	19.4	41.4	7.1	23.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	4.9	30.3	6.7	8.7	14.0	19.1	3.5	14.4				
Green Ext Time (p_c), s	0.3	16.7	0.3	6.8	1.4	18.2	0.1	4.1				
Intersection Summary												
HCM 2010 Ctrl Delay	23.3											
HCM 2010 LOS	C											

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Conditions
School PM Peak

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	598	252	253	838	263	255		
Future Volume (veh/h)	598	252	253	838	263	255		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	643	271	305	1010	286	277		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.93	0.93	0.83	0.83	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1045	467	474	2245	435	818		
Arrive On Green	0.30	0.27	0.27	0.63	0.25	0.25		
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	643	271	305	1010	286	277		
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583		
Q Serve(g_s), s	6.5	6.1	6.3	6.1	6.0	4.3		
Cycle Q Clear(g_c), s	6.5	6.1	6.3	6.1	6.0	4.3		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1045	467	474	2245	435	818		
V/C Ratio(X)	0.62	0.58	0.64	0.45	0.66	0.34		
Avail Cap(c_a), veh/h	1276	571	554	2638	597	962		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.6	12.5	13.5	3.9	14.1	5.9		
Incr Delay (d2), s/veh	0.6	1.1	2.0	0.1	1.7	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.2	2.9	3.3	3.0	3.1	2.9		
LnGrp Delay(d),s/veh	13.2	13.6	15.5	4.0	15.8	6.1		
LnGrp LOS	B	B	B	A	B	A		
Approach Vol, veh/h	914			1315	563			
Approach Delay, s/veh	13.3			6.7	11.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.1	14.3		13.2		28.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	8.3	8.5		8.0		8.1		
Green Ext Time (p_c), s	2.1	1.8		1.2		6.1		
Intersection Summary								
HCM 2010 Ctrl Delay			9.7					
HCM 2010 LOS			A					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Conditions
School PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑		↑
Traffic Volume (vph)	698	354	640	695	0	780
Future Volume (vph)	698	354	640	695	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.98	0.98	0.94	0.94	0.90	0.90
Adj. Flow (vph)	712	361	681	739	0	867
RTOR Reduction (vph)	0	265	0	0	0	420
Lane Group Flow (vph)	712	96	681	739	0	447
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	13.4	13.4	15.3	32.7		16.1
Effective Green, g (s)	15.4	15.4	16.3	34.7		17.1
Actuated g/C Ratio	0.27	0.27	0.28	0.60		0.30
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1354	421	968	2124		476
v/s Ratio Prot	c0.14		c0.20	0.21		
v/s Ratio Perm		0.06				c0.28
v/c Ratio	0.53	0.23	0.70	0.35		0.94
Uniform Delay, d1	18.1	16.6	18.6	5.8		19.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	0.3	2.3	0.1		26.5
Delay (s)	18.5	16.8	20.9	5.9		46.3
Level of Service	B	B	C	A		D
Approach Delay (s)	17.9			13.1	46.3	
Approach LOS	B			B	D	
Intersection Summary						
HCM 2000 Control Delay			23.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			57.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Existing Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	176	1048	254	0	1497	256	199	618	463	270	0	511
Future Volume (vph)	176	1048	254	0	1497	256	199	618	463	270	0	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.97	0.97	0.97	0.90	0.90	0.90
Adj. Flow (vph)	187	1115	270	0	1645	281	205	637	477	300	0	568
RTOR Reduction (vph)	0	0	125	0	0	0	0	0	0	0	0	30
Lane Group Flow (vph)	187	1115	145	0	1645	281	205	637	477	300	0	538
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.5	49.5	49.5		34.0	94.1	12.2	21.1	94.1	11.5		35.9
Effective Green, g (s)	13.0	51.0	50.5		35.5	94.1	13.7	22.6	94.1	13.0		37.4
Actuated g/C Ratio	0.14	0.54	0.54		0.38	1.00	0.15	0.24	1.00	0.14		0.40
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	474	1918	849		2417	1583	257	849	1583	474		629
v/s Ratio Prot	0.05	0.32			c0.26		c0.12	0.18		0.09		c0.34
v/s Ratio Perm			0.09			0.18			c0.30			
v/c Ratio	0.39	0.58	0.17		0.68	0.18	0.80	0.75	0.30	0.63		0.86
Uniform Delay, d1	37.0	14.4	11.1		24.5	0.0	38.9	33.1	0.0	38.3		25.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.5	0.1		0.8	0.2	15.7	3.8	0.5	2.8		11.0
Delay (s)	37.5	14.9	11.2		25.4	0.2	54.5	36.9	0.5	41.1		36.9
Level of Service	D	B	B		C	A	D	D	A	D		D
Approach Delay (s)		16.9			21.7			26.5			38.3	
Approach LOS		B			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			24.0									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			94.1									Sum of lost time (s) 10.0
Intersection Capacity Utilization			74.4%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	234	1110	399	107	1178	106	381	335	161	133	367	204
Future Volume (vph)	234	1110	399	107	1178	106	381	335	161	133	367	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95	0.85	0.85	0.85
Adj. Flow (vph)	246	1168	420	116	1280	115	401	353	169	156	432	240
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	246	1168	420	116	1280	115	401	353	169	156	432	240
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.7	21.9	65.5	6.1	18.3	65.5	11.1	14.7	65.5	6.8	10.4	65.5
Effective Green, g (s)	10.7	24.4	65.5	7.1	20.8	65.5	12.1	17.2	65.5	7.8	12.9	65.5
Actuated g/C Ratio	0.16	0.37	1.00	0.11	0.32	1.00	0.18	0.26	1.00	0.12	0.20	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	560	1894	1583	372	2034	1583	921	929	1583	408	1001	1583
v/s Ratio Prot	c0.07	c0.23		0.03	0.20		0.08	c0.10		0.05	c0.08	
v/s Ratio Perm			0.27			0.07			0.11			0.15
v/c Ratio	0.44	0.62	0.27	0.31	0.63	0.07	0.44	0.38	0.11	0.38	0.43	0.15
Uniform Delay, d1	24.7	16.7	0.0	26.9	19.1	0.0	23.7	19.8	0.0	26.6	23.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.6	0.4	0.5	0.6	0.1	0.3	0.3	0.1	0.6	0.3	0.2
Delay (s)	25.2	17.3	0.4	27.4	19.7	0.1	24.0	20.0	0.1	27.2	23.4	0.2
Level of Service	C	B	A	C	B	A	C	C	A	C	C	A
Approach Delay (s)		14.5			18.8			18.1			17.4	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			65.5			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			52.5%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	454	1113	535	228	1105	718	422	681	74	546	607	316
Future Volume (veh/h)	454	1113	535	228	1105	718	422	681	74	546	607	316
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	468	1147	0	265	1285	0	454	732	0	581	646	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.97	0.97	0.97	0.86	0.86	0.86	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	637	1797	516	457	1531	433	641	1287	368	860	845	345
Arrive On Green	0.19	0.35	0.00	0.13	0.30	0.00	0.19	0.25	0.00	0.17	0.24	0.00
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	468	1147	0	265	1285	0	454	732	0	581	646	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.4	13.8	0.0	5.3	17.3	0.0	9.0	9.2	0.0	8.0	12.4	0.0
Cycle Q Clear(g_c), s	9.4	13.8	0.0	5.3	17.3	0.0	9.0	9.2	0.0	8.0	12.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	637	1797	516	457	1531	433	641	1287	368	860	845	345
V/C Ratio(X)	0.73	0.64	0.00	0.58	0.84	0.00	0.71	0.57	0.00	0.68	0.76	0.00
Avail Cap(c_a), veh/h	659	1797	516	659	1531	433	659	1287	368	958	896	368
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.1	19.7	0.0	29.8	23.9	0.0	27.9	23.8	0.0	28.4	25.9	0.0
Incr Delay (d2), s/veh	4.1	0.8	0.0	1.2	4.3	0.0	3.4	0.6	0.0	1.7	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	6.5	0.0	2.6	8.7	0.0	4.6	4.3	0.0	3.8	6.5	0.0
LnGrp Delay(d),s/veh	32.2	20.5	0.0	30.9	28.2	0.0	31.3	24.4	0.0	30.0	29.7	0.0
LnGrp LOS	C	C		C	C		C	C		C	C	
Approach Vol, veh/h		1615			1550			1186			1227	
Approach Delay, s/veh		23.9			28.7			27.0			29.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	20.0	11.7	26.8	15.6	18.9	15.5	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	10.0	11.2	7.3	15.8	11.0	14.4	11.4	19.3				
Green Ext Time (p_c), s	0.6	2.4	0.4	2.8	0.6	0.5	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			27.2									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	6	217	16	19	10	311	1107	4	4	1054	383
Future Volume (vph)	286	6	217	16	19	10	311	1107	4	4	1054	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1821	1583	3433	3537		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1821	1583	3433	3537		1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.70	0.70	0.70	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	298	6	226	23	27	14	346	1230	4	5	1198	435
RTOR Reduction (vph)	0	0	153	0	0	13	0	0	0	0	0	180
Lane Group Flow (vph)	152	152	73	0	50	1	346	1234	0	5	1198	255
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	10.3	10.3	21.2		4.5	4.5	10.9	40.1		1.1	30.3	30.3
Effective Green, g (s)	11.3	11.3	23.2		5.5	5.5	11.9	42.6		2.1	32.8	32.8
Actuated g/C Ratio	0.16	0.16	0.32		0.08	0.08	0.17	0.59		0.03	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	263	265	576		139	120	567	2092		51	1612	721
v/s Ratio Prot	c0.09	0.09	0.02		c0.03		c0.10	0.35		0.00	c0.34	
v/s Ratio Perm			0.03			0.00						0.16
v/c Ratio	0.58	0.57	0.13		0.36	0.01	0.61	0.59		0.10	0.74	0.35
Uniform Delay, d1	28.1	28.1	17.2		31.6	30.7	27.9	9.2		34.0	16.1	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	3.0	0.1		1.6	0.0	1.9	0.4		0.8	1.9	0.3
Delay (s)	31.2	31.1	17.3		33.2	30.8	29.8	9.7		34.9	18.0	13.0
Level of Service	C	C	B		C	C	C	A		C	B	B
Approach Delay (s)		25.3			32.6			14.1			16.7	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.1				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			72.0				Sum of lost time (s)			10.5		
Intersection Capacity Utilization			62.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Conditions
School PM Peak

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	489	831	647	318	574	702
Future Volume (vph)	489	831	647	318	574	702
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.93	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.97	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3278	1441	3539	1583	3433	3539
Flt Permitted	0.97	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3278	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.93	0.93	0.96	0.96
Adj. Flow (vph)	543	923	696	342	598	731
RTOR Reduction (vph)	297	331	0	243	0	0
Lane Group Flow (vph)	698	140	696	99	598	731
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	12.0	12.0	11.6	11.6	12.5	28.1
Effective Green, g (s)	13.0	14.3	13.9	13.9	14.8	29.1
Actuated g/C Ratio	0.27	0.30	0.29	0.29	0.31	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	885	428	1022	457	1056	2141
v/s Ratio Prot	c0.21		c0.20		c0.17	0.21
v/s Ratio Perm		0.10		0.06		
v/c Ratio	0.79	0.33	0.68	0.22	0.57	0.34
Uniform Delay, d1	16.3	13.2	15.1	13.0	14.0	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.4	1.9	0.2	0.7	0.1
Delay (s)	21.0	13.6	17.0	13.2	14.7	4.8
Level of Service	C	B	B	B	B	A
Approach Delay (s)	18.6		15.8			9.3
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay			14.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			48.1		Sum of lost time (s)	6.4
Intersection Capacity Utilization			66.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	381	503	56	157	555	163	156	414	158	111	389	349
Future Volume (vph)	381	503	56	157	555	163	156	414	158	111	389	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3393		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3393		1832	3663	1639
Peak-hour factor, PHF	0.93	0.93	0.93	0.83	0.83	0.83	0.94	0.94	0.94	0.96	0.96	0.96
Adj. Flow (vph)	410	541	60	189	669	196	166	440	168	116	405	364
RTOR Reduction (vph)	0	0	45	0	0	148	0	57	0	0	0	284
Lane Group Flow (vph)	410	541	15	189	669	48	166	551	0	116	405	80
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.1	14.4	14.4	10.7	13.0	13.0	11.3	15.3		7.7	11.7	11.7
Effective Green, g (s)	13.1	16.4	16.4	11.7	15.7	15.7	12.3	17.6		8.7	14.0	14.0
Actuated g/C Ratio	0.20	0.26	0.26	0.18	0.24	0.24	0.19	0.27		0.14	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	361	905	405	323	866	387	339	931		248	800	357
v/s Ratio Prot	c0.23	0.15		0.11	c0.19		c0.09	c0.16		0.06	0.11	
v/s Ratio Perm			0.01			0.03						0.05
v/c Ratio	1.14	0.60	0.04	0.59	0.77	0.12	0.49	0.59		0.47	0.51	0.22
Uniform Delay, d1	25.5	21.0	17.9	24.0	22.5	18.8	23.1	20.1		25.6	22.0	20.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	89.5	1.1	0.0	2.7	4.3	0.1	1.1	1.0		1.4	0.5	0.3
Delay (s)	115.0	22.0	18.0	26.7	26.9	19.0	24.2	21.2		27.0	22.5	20.9
Level of Service	F	C	B	C	C	B	C	C		C	C	C
Approach Delay (s)		59.5			25.4			21.8			22.4	
Approach LOS		E			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			33.2									C
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			64.1							9.7		
Intersection Capacity Utilization			72.4%									C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	288	7	31	30	12	29	63	675	0	39	830	110
Future Volume (vph)	288	7	31	30	12	29	63	675	0	39	830	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1655			1799	1583	1770	3539		1770	3477	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1655			1799	1583	1770	3539		1770	3477	
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	300	7	32	32	13	31	66	703	0	41	874	116
RTOR Reduction (vph)	0	10	0	0	0	28	0	0	0	0	11	0
Lane Group Flow (vph)	171	158	0	0	45	3	66	703	0	41	979	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.0	11.0			4.0	4.0	4.5	26.8		3.9	26.2	
Effective Green, g (s)	12.0	12.0			5.0	5.0	5.5	28.8		4.9	28.2	
Actuated g/C Ratio	0.19	0.19			0.08	0.08	0.09	0.47		0.08	0.46	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	326	321			145	128	157	1651		140	1589	
v/s Ratio Prot	c0.10	0.10			c0.03		c0.04	0.20		0.02	c0.28	
v/s Ratio Perm						0.00						
v/c Ratio	0.52	0.49			0.31	0.02	0.42	0.43		0.29	0.62	
Uniform Delay, d1	22.3	22.1			26.7	26.1	26.6	10.9		26.8	12.7	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.2			1.2	0.1	1.8	0.2		1.2	0.7	
Delay (s)	23.8	23.3			27.9	26.2	28.4	11.1		27.9	13.4	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		23.6			27.2			12.6			14.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.4									HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			61.7									Sum of lost time (s) 11.0
Intersection Capacity Utilization			55.7%									ICU Level of Service B
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	158	20	118	130	10	42	132	571	11	31	696	32
Future Volume (vph)	158	20	118	130	10	42	132	571	11	31	696	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1780	1583	1770	3529		1770	3516	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1780	1583	1770	3529		1770	3516	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	180	23	134	148	11	48	140	607	12	33	740	34
RTOR Reduction (vph)	0	0	108	0	0	41	0	2	0	0	5	0
Lane Group Flow (vph)	0	203	26	0	159	7	140	617	0	33	769	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		11.1	11.1		7.8	7.8	7.6	24.8		2.8	20.0	
Effective Green, g (s)		12.1	12.1		8.8	8.8	8.6	26.8		3.8	22.0	
Actuated g/C Ratio		0.19	0.19		0.14	0.14	0.14	0.43		0.06	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		345	306		250	222	243	1513		107	1237	
v/s Ratio Prot		c0.11			c0.09		c0.08	0.17		0.02	c0.22	
v/s Ratio Perm			0.02			0.00						
v/c Ratio		0.59	0.08		0.64	0.03	0.58	0.41		0.31	0.62	
Uniform Delay, d1		22.9	20.7		25.3	23.2	25.2	12.4		28.1	16.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.6	0.1		5.2	0.1	3.3	0.2		1.6	1.0	
Delay (s)		25.5	20.8		30.6	23.2	28.5	12.5		29.7	17.8	
Level of Service		C	C		C	C	C	B		C	B	
Approach Delay (s)		23.6			28.9			15.5			18.3	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			19.2									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			62.5									
Intersection Capacity Utilization			54.0%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	944	8	52	954	515	27	24	56	676	8	233
Future Volume (vph)	181	944	8	52	954	515	27	24	56	676	8	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3535		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3535		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	197	1026	9	55	1015	548	30	27	63	704	8	243
RTOR Reduction (vph)	0	1	0	0	0	259	0	0	58	0	0	180
Lane Group Flow (vph)	197	1034	0	55	1015	289	30	27	5	359	353	63
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.1	36.0		5.3	29.2	29.2	5.6	5.6	5.6	20.6	20.6	20.6
Effective Green, g (s)	13.1	37.0		6.3	30.2	30.2	6.6	6.6	6.6	21.6	21.6	21.6
Actuated g/C Ratio	0.16	0.44		0.08	0.36	0.36	0.08	0.08	0.08	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	277	1566		133	1279	572	139	147	125	434	436	409
v/s Ratio Prot	c0.11	0.29		0.03	c0.29		c0.02	0.01		c0.21	0.21	
v/s Ratio Perm						0.18			0.00			0.04
v/c Ratio	0.71	0.66		0.41	0.79	0.51	0.22	0.18	0.04	0.83	0.81	0.15
Uniform Delay, d1	33.4	18.3		36.8	23.9	20.8	36.0	35.9	35.5	29.2	29.0	23.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.3	1.1		2.1	3.5	0.7	0.8	0.6	0.1	12.2	10.6	0.2
Delay (s)	41.7	19.4		38.9	27.3	21.5	36.8	36.5	35.7	41.4	39.6	24.1
Level of Service	D	B		D	C	C	D	D	D	D	D	C
Approach Delay (s)		22.9			25.8			36.1			36.3	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			27.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			83.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	1006	153	0	1344	1034	0	0	0	743	0	213
Future Volume (veh/h)	0	1006	153	0	1344	1034	0	0	0	743	0	213
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1082	0	0	1493	0				766	0	220
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2141	937	0	2172	937				999	0	460
Arrive On Green	0.00	0.60	0.00	0.00	0.61	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1082	0	0	1493	0				766	0	220
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	8.0	0.0	0.0	12.9	0.0				9.3	0.0	5.2
Cycle Q Clear(g_c), s	0.0	8.0	0.0	0.0	12.9	0.0				9.3	0.0	5.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2141	937	0	2172	937				999	0	460
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.69	0.00				0.77	0.00	0.48
Avail Cap(c_a), veh/h	0	2442	1072	0	2473	1072				1022	0	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	0.0	0.0	5.9	0.0				14.8	0.0	13.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				3.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.0	6.2	0.0				4.8	0.0	2.4
LnGrp Delay(d),s/veh	0.0	5.3	0.0	0.0	6.6	0.0				18.3	0.0	14.2
LnGrp LOS		A			A					B		B
Approach Vol, veh/h		1082			1493						986	
Approach Delay, s/veh		5.3			6.6						17.4	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.1		15.7		30.1						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		10.0		11.3		14.9						
Green Ext Time (p_c), s		13.8		0.4		11.2						
Intersection Summary												
HCM 2010 Ctrl Delay			9.2									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	199	938	0	0	2000	327	0	0	507	0	0	378
Future Volume (vph)	199	938	0	0	2000	327	0	0	507	0	0	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	240	1130	0	0	2174	355	0	0	563	0	0	406
RTOR Reduction (vph)	0	0	0	0	0	149	0	0	0	0	0	357
Lane Group Flow (vph)	240	1130	0	0	2174	206	0	0	563	0	0	49
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	11.6	52.3			37.7	37.7			68.5			6.2
Effective Green, g (s)	13.6	54.3			39.7	39.7			68.5			8.2
Actuated g/C Ratio	0.20	0.79			0.58	0.58			1.00			0.12
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	351	2805			2947	917			1611			333
v/s Ratio Prot	c0.14	0.32			c0.43							
v/s Ratio Perm						0.13			c0.35			0.02
v/c Ratio	0.68	0.40			0.74	0.22			0.35			0.15
Uniform Delay, d1	25.5	2.2			10.6	7.0			0.0			27.0
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	5.4	0.1			1.0	0.1			0.6			0.2
Delay (s)	30.9	2.3			11.6	7.1			0.6			27.2
Level of Service	C	A			B	A			A			C
Approach Delay (s)		7.3			10.9			0.6			27.2	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			68.5			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			58.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	393	1495	169	254	1569	153	291	446	127	112	404	431
Future Volume (veh/h)	393	1495	169	254	1569	153	291	446	127	112	404	431
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	442	1680	190	262	1618	158	327	501	143	132	475	507
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.89	0.89	0.89	0.97	0.97	0.97	0.89	0.89	0.89	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	563	2327	901	366	2036	634	418	733	208	230	759	591
Arrive On Green	0.16	0.46	0.45	0.11	0.40	0.40	0.12	0.27	0.26	0.07	0.21	0.21
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2723	773	3442	3539	1583
Grp Volume(v), veh/h	442	1680	190	262	1618	158	327	325	319	132	475	507
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1726	1721	1770	1583
Q Serve(g_s), s	12.9	28.1	6.2	7.7	29.3	7.0	9.7	17.2	17.4	3.9	12.8	22.0
Cycle Q Clear(g_c), s	12.9	28.1	6.2	7.7	29.3	7.0	9.7	17.2	17.4	3.9	12.8	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	563	2327	901	366	2036	634	418	476	465	230	759	591
V/C Ratio(X)	0.79	0.72	0.21	0.72	0.79	0.25	0.78	0.68	0.69	0.58	0.63	0.86
Avail Cap(c_a), veh/h	755	2376	917	492	2036	634	427	476	465	427	759	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	23.0	11.0	45.3	27.6	20.9	44.7	34.3	34.5	47.5	37.4	30.3
Incr Delay (d2), s/veh	3.9	1.1	0.1	3.2	2.3	0.2	9.0	3.9	4.2	2.3	1.6	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	13.3	2.7	3.8	14.1	3.1	5.1	8.9	8.8	1.9	6.4	15.5
LnGrp Delay(d),s/veh	46.0	24.1	11.2	48.5	29.9	21.1	53.7	38.2	38.7	49.8	39.0	42.3
LnGrp LOS	D	C	B	D	C	C	D	D	D	D	D	D
Approach Vol, veh/h	2312				2038			971			1114	
Approach Delay, s/veh	27.2				31.6			43.6			41.8	
Approach LOS	C				C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	50.0	15.7	25.0	20.1	44.0	10.0	30.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	9.7	30.1	11.7	24.0	14.9	31.3	5.9	19.4				
Green Ext Time (p_c), s	0.4	15.9	0.1	0.0	1.2	7.6	0.2	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay	33.6											
HCM 2010 LOS	C											

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Conditions
PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	621	268	360	1308	272	202		
Future Volume (veh/h)	621	268	360	1308	272	202		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	661	285	383	1391	309	230		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.88	0.88		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1023	457	504	2267	438	813		
Arrive On Green	0.29	0.27	0.28	0.64	0.25	0.25		
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	661	285	383	1391	309	230		
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583		
Q Serve(g_s), s	7.3	6.9	8.8	10.4	7.1	3.7		
Cycle Q Clear(g_c), s	7.3	6.9	8.8	10.4	7.1	3.7		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1023	457	504	2267	438	813		
V/C Ratio(X)	0.65	0.62	0.76	0.61	0.70	0.28		
Avail Cap(c_a), veh/h	1194	534	519	2468	559	920		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.8	13.7	14.5	4.7	15.3	6.2		
Incr Delay (d2), s/veh	1.0	1.7	6.3	0.4	2.9	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.6	3.3	5.1	5.0	3.8	2.5		
LnGrp Delay(d),s/veh	14.8	15.4	20.8	5.1	18.1	6.3		
LnGrp LOS	B	B	C	A	B	A		
Approach Vol, veh/h	946			1774	539			
Approach Delay, s/veh	15.0			8.5	13.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.6	14.8		14.0		30.5		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	10.8	9.3		9.1		12.4		
Green Ext Time (p_c), s	1.0	1.6		0.9		8.1		
Intersection Summary								
HCM 2010 Ctrl Delay			11.2					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Conditions
PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↗
Traffic Volume (vph)	738	271	719	1089	0	741
Future Volume (vph)	738	271	719	1089	0	741
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.95	0.95	0.92	0.92	0.90	0.90
Adj. Flow (vph)	777	285	782	1184	0	823
RTOR Reduction (vph)	0	208	0	0	0	425
Lane Group Flow (vph)	777	77	782	1184	0	398
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	13.7	13.7	16.0	33.7		15.3
Effective Green, g (s)	15.7	15.7	17.0	35.7		16.3
Actuated g/C Ratio	0.27	0.27	0.29	0.62		0.28
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1376	428	1006	2178		452
v/s Ratio Prot	c0.15		c0.23	0.33		
v/s Ratio Perm		0.05				c0.25
v/c Ratio	0.56	0.18	0.78	0.54		0.88
Uniform Delay, d1	18.2	16.2	18.8	6.4		19.9
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.2	3.8	0.3		17.8
Delay (s)	18.7	16.4	22.6	6.7		37.8
Level of Service	B	B	C	A		D
Approach Delay (s)	18.1			13.0	37.8	
Approach LOS	B			B	D	
Intersection Summary						
HCM 2000 Control Delay			19.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			58.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			66.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Existing Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	 	 			  			 		 		
Traffic Volume (vph)	232	1008	239	0	1977	354	270	682	445	299	0	526
Future Volume (vph)	232	1008	239	0	1977	354	270	682	445	299	0	526
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	252	1096	260	0	2221	398	303	766	500	329	0	578
RTOR Reduction (vph)	0	0	112	0	0	0	0	0	0	0	0	31
Lane Group Flow (vph)	252	1096	148	0	2221	398	303	766	500	329	0	547
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.8	60.7	60.7		44.9	108.5	12.0	23.9	108.5	11.9		39.6
Effective Green, g (s)	13.3	62.2	61.7		46.4	108.5	13.5	25.4	108.5	13.4		41.1
Actuated g/C Ratio	0.12	0.57	0.57		0.43	1.00	0.12	0.23	1.00	0.12		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	420	2028	900		2740	1583	220	828	1583	423		599
v/s Ratio Prot	0.07	0.31			c0.35		c0.17	c0.22		0.10		c0.35
v/s Ratio Perm			0.09			0.25			c0.32			
v/c Ratio	0.60	0.54	0.16		0.81	0.25	1.38	0.93	0.32	0.78		0.91
Uniform Delay, d1	45.1	14.3	11.1		27.2	0.0	47.5	40.6	0.0	46.1		32.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.3	0.3	0.1		1.9	0.4	195.7	15.9	0.5	8.7		18.4
Delay (s)	47.4	14.6	11.2		29.1	0.4	243.2	56.5	0.5	54.8		50.4
Level of Service	D	B	B		C	A	F	E	A	D		D
Approach Delay (s)		19.2			24.7			74.7			52.0	
Approach LOS		B			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			38.8									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			108.5									Sum of lost time (s) 10.0
Intersection Capacity Utilization			86.2%									ICU Level of Service E
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	202	1145	345	120	1608	166	449	389	151	149	315	331
Future Volume (vph)	202	1145	345	120	1608	166	449	389	151	149	315	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	220	1245	375	143	1914	198	488	423	164	186	394	414
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	220	1245	375	143	1914	198	488	423	164	186	394	414
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.4	21.7	65.1	6.6	18.9	65.1	10.8	12.1	65.1	8.7	10.0	65.1
Effective Green, g (s)	10.4	24.2	65.1	7.6	21.4	65.1	11.8	14.6	65.1	9.7	12.5	65.1
Actuated g/C Ratio	0.16	0.37	1.00	0.12	0.33	1.00	0.18	0.22	1.00	0.15	0.19	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	548	1890	1583	400	2106	1583	904	793	1583	511	976	1583
v/s Ratio Prot	c0.06	0.24		0.04	c0.30		0.10	c0.12		0.05	c0.08	
v/s Ratio Perm			0.24			0.13			0.10			c0.26
v/c Ratio	0.40	0.66	0.24	0.36	0.91	0.13	0.54	0.53	0.10	0.36	0.40	0.26
Uniform Delay, d1	24.6	17.0	0.0	26.5	20.9	0.0	24.2	22.2	0.0	24.9	23.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.8	0.4	0.5	6.2	0.2	0.6	0.7	0.1	0.4	0.3	0.4
Delay (s)	25.0	17.9	0.4	27.0	27.1	0.2	24.8	22.9	0.1	25.4	23.3	0.4
Level of Service	C	B	A	C	C	A	C	C	A	C	C	A
Approach Delay (s)		15.1			24.8			20.3			14.2	
Approach LOS		B			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			65.1			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			57.4%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	423	1293	477	219	1433	812	516	941	72	560	561	355
Future Volume (veh/h)	423	1293	477	219	1433	812	516	941	72	560	561	355
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	441	1347	0	233	1524	0	567	1034	0	659	660	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.96	0.96	0.96	0.94	0.94	0.94	0.91	0.91	0.91	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	614	1803	518	423	1521	430	665	1279	366	914	852	349
Arrive On Green	0.18	0.35	0.00	0.12	0.30	0.00	0.19	0.25	0.00	0.18	0.24	0.00
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	441	1347	0	233	1524	0	567	1034	0	659	660	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	8.9	17.1	0.0	4.7	22.0	0.0	11.7	14.1	0.0	9.1	12.8	0.0
Cycle Q Clear(g_c), s	8.9	17.1	0.0	4.7	22.0	0.0	11.7	14.1	0.0	9.1	12.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	614	1803	518	423	1521	430	665	1279	366	914	852	349
V/C Ratio(X)	0.72	0.75	0.00	0.55	1.00	0.00	0.85	0.81	0.00	0.72	0.77	0.00
Avail Cap(c_a), veh/h	655	1803	518	655	1521	430	665	1279	366	952	890	366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.5	20.8	0.0	30.4	25.8	0.0	28.7	25.9	0.0	28.3	26.1	0.0
Incr Delay (d2), s/veh	3.5	1.8	0.0	1.1	23.6	0.0	10.4	4.0	0.0	2.6	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.3	0.0	2.3	13.5	0.0	6.5	7.0	0.0	4.4	6.7	0.0
LnGrp Delay(d),s/veh	32.0	22.6	0.0	31.5	49.4	0.0	39.0	29.9	0.0	30.9	30.2	0.0
LnGrp LOS	C	C		C	F		D	C		C	C	
Approach Vol, veh/h		1788			1757			1601			1319	
Approach Delay, s/veh		24.9			47.0			33.1			30.5	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	20.0	11.0	27.1	16.2	19.2	15.1	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	11.1	16.1	6.7	19.1	13.7	14.8	10.9	24.0				
Green Ext Time (p_c), s	0.3	0.0	0.4	0.0	0.0	0.4	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			34.1									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	8	213	11	13	8	228	1334	7	4	965	428
Future Volume (vph)	414	8	213	11	13	8	228	1334	7	4	965	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1820	1583	3433	3536		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1820	1583	3433	3536		1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Adj. Flow (vph)	440	9	227	14	16	10	245	1434	8	4	995	441
RTOR Reduction (vph)	0	0	149	0	0	9	0	0	0	0	0	228
Lane Group Flow (vph)	224	225	78	0	30	1	245	1442	0	4	995	213
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	11.8	11.8	21.8		3.8	3.8	10.0	36.7		1.0	27.7	27.7
Effective Green, g (s)	12.8	12.8	23.8		4.8	4.8	11.0	39.2		2.0	30.2	30.2
Actuated g/C Ratio	0.18	0.18	0.34		0.07	0.07	0.16	0.57		0.03	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	310	311	612		126	109	544	2000		51	1542	689
v/s Ratio Prot	c0.13	0.13	0.02		c0.02		c0.07	c0.41		0.00	0.28	
v/s Ratio Perm			0.03			0.00						0.13
v/c Ratio	0.72	0.72	0.13		0.24	0.01	0.45	0.72		0.08	0.65	0.31
Uniform Delay, d1	26.6	26.6	15.6		30.5	30.0	26.4	11.0		32.8	15.3	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.1	8.1	0.1		1.0	0.0	0.6	1.3		0.7	0.9	0.3
Delay (s)	34.6	34.7	15.7		31.5	30.1	27.0	12.3		33.4	16.3	13.0
Level of Service	C	C	B		C	C	C	B		C	B	B
Approach Delay (s)		28.3			31.1			14.5			15.3	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.4									
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			69.3									
Intersection Capacity Utilization			68.8%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Conditions
PM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	599	1180	635	303	542	714
Future Volume (vph)	599	1180	635	303	542	714
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.93	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3263	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3263	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.86	0.86	0.93	0.93	0.95	0.95
Adj. Flow (vph)	697	1372	683	326	571	752
RTOR Reduction (vph)	350	426	0	231	0	0
Lane Group Flow (vph)	1033	260	683	95	571	752
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	12.0	12.0	11.6	11.6	12.3	27.9
Effective Green, g (s)	13.0	14.3	13.9	13.9	14.6	28.9
Actuated g/C Ratio	0.27	0.30	0.29	0.29	0.30	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	885	430	1026	459	1046	2135
v/s Ratio Prot	c0.32		c0.19		c0.17	0.21
v/s Ratio Perm		0.18		0.06		
v/c Ratio	1.17	0.60	0.67	0.21	0.55	0.35
Uniform Delay, d1	17.4	14.4	15.0	12.8	13.9	4.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	87.6	2.4	1.6	0.2	0.6	0.1
Delay (s)	105.0	16.8	16.6	13.1	14.5	4.9
Level of Service	F	B	B	B	B	A
Approach Delay (s)	75.8		15.5			9.0
Approach LOS	E		B			A
Intersection Summary						
HCM 2000 Control Delay			41.9		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			47.9		Sum of lost time (s)	6.4
Intersection Capacity Utilization			72.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	504	596	64	151	571	182	237	696	149	107	395	314
Future Volume (vph)	504	596	64	151	571	182	237	696	149	107	395	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3446		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3446		1832	3663	1639
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	554	655	70	159	601	192	289	849	182	123	454	361
RTOR Reduction (vph)	0	0	55	0	0	153	0	23	0	0	0	273
Lane Group Flow (vph)	554	655	15	159	601	39	289	1008	0	123	454	88
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.3	14.1	14.1	10.5	12.3	12.3	17.2	24.7		8.1	15.6	15.6
Effective Green, g (s)	13.3	16.1	16.1	11.5	15.0	15.0	18.2	27.0		9.1	17.9	17.9
Actuated g/C Ratio	0.18	0.22	0.22	0.16	0.20	0.20	0.25	0.37		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	320	776	347	277	723	323	438	1267		227	893	399
v/s Ratio Prot	c0.31	c0.19		0.09	0.17		c0.16	c0.29		0.07	0.12	
v/s Ratio Perm			0.01			0.02						0.05
v/c Ratio	1.73	0.84	0.04	0.57	0.83	0.12	0.66	0.80		0.54	0.51	0.22
Uniform Delay, d1	30.1	27.4	22.6	28.7	28.0	23.8	24.8	20.7		30.2	24.0	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	341.9	8.3	0.1	2.9	8.1	0.2	3.6	3.5		2.6	0.5	0.3
Delay (s)	371.9	35.8	22.6	31.5	36.1	24.0	28.4	24.3		32.8	24.4	22.5
Level of Service	F	D	C	C	D	C	C	C		C	C	C
Approach Delay (s)		180.7			32.9			25.2			24.8	
Approach LOS		F			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			71.0				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			73.4				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			87.0%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	269	6	30	28	11	27	71	639	0	34	942	129
Future Volume (vph)	269	6	30	28	11	27	71	639	0	34	942	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1654			1799	1583	1770	3539		1770	3475	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1654			1799	1583	1770	3539		1770	3475	
Peak-hour factor, PHF	0.84	0.84	0.84	0.75	0.75	0.75	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	320	7	36	37	15	36	73	659	0	38	1058	145
RTOR Reduction (vph)	0	11	0	0	0	32	0	0	0	0	11	0
Lane Group Flow (vph)	182	170	0	0	52	4	73	659	0	38	1192	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.1	11.1			5.9	5.9	6.6	31.9		4.3	29.6	
Effective Green, g (s)	12.1	12.1			6.9	6.9	7.6	33.9		5.3	31.6	
Actuated g/C Ratio	0.17	0.17			0.10	0.10	0.11	0.49		0.08	0.46	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	289			179	157	194	1733		135	1586	
v/s Ratio Prot	c0.11	0.10			c0.03		c0.04	0.19		0.02	c0.34	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.59			0.29	0.02	0.38	0.38		0.28	0.75	
Uniform Delay, d1	26.4	26.3			28.9	28.1	28.6	11.1		30.2	15.6	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	3.1			0.9	0.1	1.2	0.1		1.1	2.1	
Delay (s)	30.5	29.3			29.8	28.2	29.8	11.2		31.3	17.6	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		29.9			29.1			13.1			18.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			18.7		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			69.2		Sum of lost time (s)					11.0		
Intersection Capacity Utilization			59.3%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	169	21	86	119	9	38	133	545	8	28	727	36
Future Volume (vph)	169	21	86	119	9	38	133	545	8	28	727	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1780	1583	1770	3531		1770	3514	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1780	1583	1770	3531		1770	3514	
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	199	25	101	135	10	43	145	592	9	32	836	41
RTOR Reduction (vph)	0	0	81	0	0	37	0	1	0	0	5	0
Lane Group Flow (vph)	0	224	20	0	145	6	145	600	0	32	872	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		11.3	11.3		7.7	7.7	7.7	25.2		2.8	20.3	
Effective Green, g (s)		12.3	12.3		8.7	8.7	8.7	27.2		3.8	22.3	
Actuated g/C Ratio		0.20	0.20		0.14	0.14	0.14	0.43		0.06	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		348	309		245	218	244	1524		106	1243	
v/s Ratio Prot		c0.13			c0.08		c0.08	0.17		0.02	c0.25	
v/s Ratio Perm			0.01			0.00						
v/c Ratio		0.64	0.06		0.59	0.03	0.59	0.39		0.30	0.70	
Uniform Delay, d1		23.3	20.7		25.5	23.5	25.5	12.3		28.3	17.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.0	0.1		3.8	0.1	3.9	0.2		1.6	1.8	
Delay (s)		27.4	20.7		29.3	23.5	29.3	12.4		29.9	19.3	
Level of Service		C	C		C	C	C	B		C	B	
Approach Delay (s)		25.3			28.0			15.7			19.7	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			19.9		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			63.0		Sum of lost time (s)					11.0		
Intersection Capacity Utilization			55.7%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	910	9	63	1202	439	44	48	70	648	8	249
Future Volume (vph)	184	910	9	63	1202	439	44	48	70	648	8	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.97	0.97	0.97	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	209	1034	10	65	1239	453	56	62	90	704	9	271
RTOR Reduction (vph)	0	1	0	0	0	178	0	0	82	0	0	201
Lane Group Flow (vph)	209	1043	0	65	1239	275	56	62	8	359	354	70
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.3	33.7		7.0	28.4	28.4	6.8	6.8	6.8	20.6	20.6	20.6
Effective Green, g (s)	13.3	34.7		8.0	29.4	29.4	7.8	7.8	7.8	21.6	21.6	21.6
Actuated g/C Ratio	0.16	0.41		0.10	0.35	0.35	0.09	0.09	0.09	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	279	1458		168	1237	553	164	172	146	431	433	406
v/s Ratio Prot	c0.12	0.30		0.04	c0.35		0.03	c0.03		c0.21	0.21	
v/s Ratio Perm						0.17			0.01			0.04
v/c Ratio	0.75	0.72		0.39	1.00	0.50	0.34	0.36	0.06	0.83	0.82	0.17
Uniform Delay, d1	33.8	20.6		35.7	27.3	21.5	35.7	35.8	34.8	29.5	29.4	24.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.5	1.7		1.5	26.0	0.7	1.2	1.3	0.2	12.9	11.4	0.2
Delay (s)	44.3	22.3		37.2	53.3	22.2	37.0	37.1	35.0	42.5	40.8	24.5
Level of Service	D	C		D	D	C	D	D	C	D	D	C
Approach Delay (s)		26.0			44.7			36.1			36.9	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			84.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			78.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	961	147	0	1408	1286	0	0	0	849	0	242
Future Volume (veh/h)	0	961	147	0	1408	1286	0	0	0	849	0	242
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1001	0	0	1547	0				894	0	255
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2138	936	0	2169	936				1007	0	463
Arrive On Green	0.00	0.60	0.00	0.00	0.61	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1001	0	0	1547	0				894	0	255
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	7.3	0.0	0.0	14.0	0.0				11.5	0.0	6.3
Cycle Q Clear(g_c), s	0.0	7.3	0.0	0.0	14.0	0.0				11.5	0.0	6.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2138	936	0	2169	936				1007	0	463
V/C Ratio(X)	0.00	0.47	0.00	0.00	0.71	0.00				0.89	0.00	0.55
Avail Cap(c_a), veh/h	0	2406	1056	0	2436	1056				1007	0	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	0.0	0.0	6.2	0.0				15.7	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.9	0.0				9.8	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.5	0.0	0.0	6.9	0.0				6.8	0.0	2.9
LnGrp Delay(d),s/veh	0.0	5.2	0.0	0.0	7.1	0.0				25.5	0.0	15.3
LnGrp LOS		A			A					C		B
Approach Vol, veh/h		1001			1547						1149	
Approach Delay, s/veh		5.2			7.1						23.2	
Approach LOS		A			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.5		16.0		30.5						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		9.3		13.5		16.0						
Green Ext Time (p_c), s		14.1		0.0		10.5						
Intersection Summary												
HCM 2010 Ctrl Delay				11.6								
HCM 2010 LOS				B								

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	173	1004	0	0	2341	258	0	0	1257	0	0	343
Future Volume (vph)	173	1004	0	0	2341	258	0	0	1257	0	0	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.87	0.87	0.87	0.94	0.94	0.94	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	199	1154	0	0	2490	274	0	0	1397	0	0	404
RTOR Reduction (vph)	0	0	0	0	0	107	0	0	0	0	0	356
Lane Group Flow (vph)	199	1154	0	0	2490	167	0	0	1397	0	0	48
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	11.1	53.1			39.0	39.0			69.3			6.2
Effective Green, g (s)	13.1	55.1			41.0	41.0			69.3			8.2
Actuated g/C Ratio	0.19	0.80			0.59	0.59			1.00			0.12
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	334	2813			3008	936			1611			329
v/s Ratio Prot	0.11	0.33			0.49							
v/s Ratio Perm						0.11			c0.87			0.02
v/c Ratio	0.60	0.41			0.83	0.18			0.87			0.15
Uniform Delay, d1	25.7	2.2			11.3	6.5			0.0			27.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	2.8	0.1			2.0	0.1			6.6			0.2
Delay (s)	28.5	2.3			13.3	6.6			6.6			27.6
Level of Service	C	A			B	A			A			C
Approach Delay (s)		6.1			12.7			6.6			27.6	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			69.3			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			63.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	1496	169	221	1610	141	349	461	129	131	432	584
Future Volume (veh/h)	380	1496	169	221	1610	141	349	461	129	131	432	584
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	400	1575	178	246	1789	157	406	536	150	141	465	628
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.86	0.86	0.86	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	523	2319	904	352	2065	643	430	742	207	240	765	575
Arrive On Green	0.15	0.46	0.45	0.10	0.41	0.41	0.12	0.27	0.27	0.07	0.22	0.21
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2735	762	3442	3539	1583
Grp Volume(v), veh/h	400	1575	178	246	1789	157	406	346	340	141	465	628
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1728	1721	1770	1583
Q Serve(g_s), s	11.6	25.4	5.7	7.2	33.6	6.8	12.2	18.4	18.6	4.1	12.3	22.0
Cycle Q Clear(g_c), s	11.6	25.4	5.7	7.2	33.6	6.8	12.2	18.4	18.6	4.1	12.3	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	523	2319	904	352	2065	643	430	480	469	240	765	575
V/C Ratio(X)	0.76	0.68	0.20	0.70	0.87	0.24	0.94	0.72	0.73	0.59	0.61	1.09
Avail Cap(c_a), veh/h	760	2394	928	496	2065	643	430	480	469	430	765	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.4	22.3	10.8	45.2	28.3	20.4	45.2	34.4	34.5	47.0	36.8	33.1
Incr Delay (d2), s/veh	2.8	0.8	0.1	2.5	4.2	0.2	29.7	5.2	5.5	2.3	1.4	65.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	12.0	2.5	3.5	16.4	3.0	7.6	9.7	9.6	2.0	6.2	26.9
LnGrp Delay(d),s/veh	45.2	23.1	10.9	47.7	32.5	20.6	74.9	39.6	40.0	49.2	38.2	98.1
LnGrp LOS	D	C	B	D	C	C	E	D	D	D	D	F
Approach Vol, veh/h	2153					2192		1092		1234		
Approach Delay, s/veh	26.2					33.3		52.9		69.9		
Approach LOS	C					C		D		E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	49.5	16.0	25.0	18.8	44.3	10.3	30.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	9.2	27.4	14.2	24.0	13.6	35.6	6.1	20.6				
Green Ext Time (p_c), s	0.4	18.1	0.0	0.0	1.2	3.4	0.2	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	41.0											
HCM 2010 LOS	D											

Appendix C

*Analysis Worksheets for
Existing (2017) plus Proposed Project Conditions*

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Plus Project Conditions
AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	761	266	253	585	195	232		
Future Volume (veh/h)	761	266	253	585	195	232		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	895	313	329	760	247	294		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.85	0.85	0.77	0.77	0.79	0.79		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1141	532	464	2355	393	846		
Arrive On Green	0.34	0.31	0.26	0.67	0.22	0.22		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	895	313	329	760	247	294		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	10.5	7.2	7.4	4.0	5.6	4.7		
Cycle Q Clear(g_c), s	10.5	7.2	7.4	4.0	5.6	4.7		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1141	532	464	2355	393	846		
V/C Ratio(X)	0.78	0.59	0.71	0.32	0.63	0.35		
Avail Cap(c_a), veh/h	1156	539	523	2489	563	998		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.2	12.1	14.8	3.1	15.5	5.9		
Incr Delay (d2), s/veh	3.6	1.6	3.8	0.1	1.7	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.4	3.5	4.1	1.9	2.9	3.5		
LnGrp Delay(d),s/veh	16.8	13.8	18.6	3.2	17.2	6.1		
LnGrp LOS	B	B	B	A	B	A		
Approach Vol, veh/h	1208			1089	541			
Approach Delay, s/veh	16.0			7.9	11.2			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.5	16.8		12.8		31.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	9.4	12.5		7.6		6.0		
Green Ext Time (p_c), s	1.3	0.3		1.2		4.9		
Intersection Summary								
HCM 2010 Ctrl Delay			12.0					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Plus Project Conditions
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↗
Traffic Volume (vph)	833	350	549	433	0	1121
Future Volume (vph)	833	350	549	433	0	1121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.87	0.87	0.93	0.93	0.90	0.90
Adj. Flow (vph)	957	402	590	466	0	1246
RTOR Reduction (vph)	0	288	0	0	0	412
Lane Group Flow (vph)	957	114	590	466	0	834
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	14.5	14.5	14.5	33.0		16.1
Effective Green, g (s)	16.5	16.5	15.5	35.0		17.1
Actuated g/C Ratio	0.28	0.28	0.27	0.60		0.29
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1444	449	915	2131		474
v/s Ratio Prot	c0.19		c0.17	0.13		
v/s Ratio Perm		0.07				c0.52
v/c Ratio	0.66	0.25	0.64	0.22		1.76
Uniform Delay, d1	18.3	16.1	18.9	5.3		20.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	0.3	1.6	0.1		350.2
Delay (s)	19.5	16.4	20.4	5.3		370.7
Level of Service	B	B	C	A		F
Approach Delay (s)	18.6			13.8	370.7	
Approach LOS	B			B	F	
Intersection Summary						
HCM 2000 Control Delay			137.0		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.05			
Actuated Cycle Length (s)			58.1		Sum of lost time (s)	10.0
Intersection Capacity Utilization			92.2%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

Existing Plus Project Conditions

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	195	1483	278	0	817	81	176	665	752	184	0	406
Future Volume (vph)	195	1483	278	0	817	81	176	665	752	184	0	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.90	0.90	0.90	0.88	0.88	0.88	0.90	0.90	0.90
Adj. Flow (vph)	241	1831	343	0	908	90	200	756	855	204	0	451
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	0	0	0	49
Lane Group Flow (vph)	241	1831	214	0	908	90	200	756	855	204	0	402
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.2	59.3	59.3		44.1	105.6	12.1	23.6	105.6	10.7		37.4
Effective Green, g (s)	12.7	60.8	60.3		45.6	105.6	13.6	25.1	105.6	12.2		38.9
Actuated g/C Ratio	0.12	0.58	0.57		0.43	1.00	0.13	0.24	1.00	0.12		0.37
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	412	2037	903		2767	1583	227	841	1583	396		583
v/s Ratio Prot	0.07	c0.52			0.14		c0.11	c0.21		0.06		0.25
v/s Ratio Perm			0.14			0.06			c0.54			
v/c Ratio	0.58	0.90	0.24		0.33	0.06	0.88	0.90	0.54	0.52		0.69
Uniform Delay, d1	44.0	19.7	11.2		19.9	0.0	45.2	39.0	0.0	43.9		28.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.1	5.7	0.1		0.1	0.1	30.3	12.3	1.3	1.1		3.4
Delay (s)	46.1	25.4	11.4		19.9	0.1	75.5	51.4	1.3	45.1		31.6
Level of Service	D	C	B		B	A	E	D	A	D		C
Approach Delay (s)		25.5			18.1			30.4			35.8	
Approach LOS		C			B			C			D	
Intersection Summary												
HCM 2000 Control Delay			26.9									
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			105.6									
Intersection Capacity Utilization			74.6%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Plus Project Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	220	1736	414	59	618	69	113	147	65	104	229	231
Future Volume (vph)	220	1736	414	59	618	69	113	147	65	104	229	231
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.91	0.91	0.91	0.77	0.77	0.77	0.92	0.92	0.92
Adj. Flow (vph)	259	2042	487	65	679	76	147	191	84	113	249	251
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	259	2042	487	65	679	76	147	191	84	113	249	251
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.4	20.0	53.6	3.7	14.3	53.6	5.8	8.3	53.6	5.6	8.1	53.6
Effective Green, g (s)	10.4	22.5	53.6	4.7	16.8	53.6	6.8	10.8	53.6	6.6	10.6	53.6
Actuated g/C Ratio	0.19	0.42	1.00	0.09	0.31	1.00	0.13	0.20	1.00	0.12	0.20	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	666	2134	1583	301	2008	1583	633	713	1583	422	1005	1583
v/s Ratio Prot	0.08	c0.40		0.02	0.11		0.03	0.05		0.03	0.05	
v/s Ratio Perm			c0.31			0.05			0.05			0.16
v/c Ratio	0.39	0.96	0.31	0.22	0.34	0.05	0.23	0.27	0.05	0.27	0.25	0.16
Uniform Delay, d1	18.8	15.1	0.0	22.7	14.1	0.0	21.1	18.1	0.0	21.3	18.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	11.0	0.5	0.4	0.1	0.1	0.2	0.2	0.1	0.3	0.1	0.2
Delay (s)	19.2	26.1	0.5	23.1	14.2	0.1	21.2	18.3	0.1	21.7	18.3	0.2
Level of Service	B	C	A	C	B	A	C	B	A	C	B	A
Approach Delay (s)		21.0			13.6			15.7			11.5	
Approach LOS		C			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			53.6			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			58.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	1303	547	85	913	678	254	417	78	533	473	120
Future Volume (veh/h)	135	1303	547	85	913	678	254	417	78	533	473	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	157	1515	0	98	1049	0	343	564	0	592	526	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.86	0.86	0.86	0.87	0.87	0.87	0.74	0.74	0.74	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	1918	543	306	1802	507	653	1160	320	973	823	328
Arrive On Green	0.11	0.38	0.00	0.09	0.35	0.00	0.19	0.23	0.00	0.19	0.23	0.00
Sat Flow, veh/h	3304	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	157	1515	0	98	1049	0	343	564	0	592	526	0
Grp Sat Flow(s),veh/h/ln	1652	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	2.6	15.4	0.0	1.6	9.8	0.0	5.2	5.6	0.0	6.3	7.8	0.0
Cycle Q Clear(g_c), s	2.6	15.4	0.0	1.6	9.8	0.0	5.2	5.6	0.0	6.3	7.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	1918	543	306	1802	507	653	1160	320	973	823	328
V/C Ratio(X)	0.43	0.79	0.00	0.32	0.58	0.00	0.52	0.49	0.00	0.61	0.64	0.00
Avail Cap(c_a), veh/h	794	1920	543	827	1920	543	827	1614	462	1202	1123	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.1	16.1	0.0	24.9	15.3	0.0	21.2	19.5	0.0	21.4	20.2	0.0
Incr Delay (d2), s/veh	0.8	2.3	0.0	0.6	0.4	0.0	0.7	0.3	0.0	0.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.6	0.0	0.8	4.6	0.0	2.5	2.6	0.0	3.0	3.9	0.0
LnGrp Delay(d),s/veh	24.9	18.4	0.0	25.5	15.7	0.0	21.9	19.8	0.0	22.1	21.0	0.0
LnGrp LOS	C	B		C	B		C	B		C	C	
Approach Vol, veh/h		1672			1147			907			1118	
Approach Delay, s/veh		19.0			16.5			20.6			21.6	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	14.8	7.2	23.0	13.1	15.1	8.5	21.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	8.3	7.6	3.6	17.4	7.2	9.8	4.6	11.8				
Green Ext Time (p_c), s	1.0	2.8	0.2	1.4	1.9	1.2	0.3	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			19.3									
HCM 2010 LOS			B									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	5	242	11	12	7	301	688	3	2	887	322
Future Volume (vph)	276	5	242	11	12	7	301	688	3	2	887	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1688	1583		1819	1583	3433	3537		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1688	1583		1819	1583	3433	3537		1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.70	0.70	1.00	0.77	0.77	0.77	0.85	0.85	0.85
Adj. Flow (vph)	349	6	306	16	17	7	391	894	4	2	1044	379
RTOR Reduction (vph)	0	0	201	0	0	7	0	0	0	0	0	187
Lane Group Flow (vph)	178	177	105	0	33	0	391	898	0	2	1044	192
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	10.8	10.8	22.1		3.9	3.9	11.3	38.4		1.0	28.1	28.1
Effective Green, g (s)	11.8	11.8	24.1		4.9	4.9	12.3	40.9		2.0	30.6	30.6
Actuated g/C Ratio	0.17	0.17	0.34		0.07	0.07	0.18	0.58		0.03	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	282	284	611		127	110	602	2063		50	1544	691
v/s Ratio Prot	c0.11	0.10	0.03		c0.02		c0.11	0.25		0.00	c0.29	
v/s Ratio Perm			0.04			0.00						0.12
v/c Ratio	0.63	0.62	0.17		0.26	0.00	0.65	0.44		0.04	0.68	0.28
Uniform Delay, d1	27.1	27.1	16.0		30.9	30.3	26.9	8.2		33.1	15.8	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.6	4.2	0.1		1.1	0.0	2.4	0.1		0.3	1.2	0.2
Delay (s)	31.7	31.3	16.2		32.0	30.3	29.3	8.3		33.4	17.0	12.9
Level of Service	C	C	B		C	C	C	A		C	B	B
Approach Delay (s)		24.4			31.7			14.7			15.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.3									B
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			70.1									
Intersection Capacity Utilization			57.5%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Plus Project Conditions
AM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	233	490	532	289	557	435
Future Volume (vph)	233	490	532	289	557	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.92	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3257	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3257	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.78	0.78	0.80	0.80	0.78	0.78
Adj. Flow (vph)	299	628	665	361	714	558
RTOR Reduction (vph)	240	231	0	253	0	0
Lane Group Flow (vph)	373	83	665	108	714	558
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	10.0	10.0	11.6	11.6	12.9	28.5
Effective Green, g (s)	11.0	12.3	13.9	13.9	15.2	29.5
Actuated g/C Ratio	0.24	0.26	0.30	0.30	0.33	0.63
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	770	381	1057	473	1122	2245
v/s Ratio Prot	c0.11		c0.19		c0.21	0.16
v/s Ratio Perm		0.06		0.07		
v/c Ratio	0.48	0.22	0.63	0.23	0.64	0.25
Uniform Delay, d1	15.3	13.3	14.1	12.3	13.3	3.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	1.2	0.2	1.2	0.1
Delay (s)	15.8	13.6	15.3	12.5	14.5	3.7
Level of Service	B	B	B	B	B	A
Approach Delay (s)	15.1		14.3			9.8
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay			12.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			46.5		Sum of lost time (s)	6.4
Intersection Capacity Utilization			52.4%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Existing Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	498	224	52	271	68	207	341	50	68	252	52
Future Volume (vph)	85	498	224	52	271	68	207	341	50	68	252	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3471		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3471		1832	3663	1639
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.84	0.84	0.84	0.79	0.79	0.79
Adj. Flow (vph)	99	579	260	57	295	74	246	406	60	86	319	66
RTOR Reduction (vph)	0	0	192	0	0	57	0	14	0	0	0	51
Lane Group Flow (vph)	99	579	68	57	295	17	246	452	0	86	319	15
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	6.8	13.0	13.0	4.3	10.5	10.5	13.5	19.1		4.9	10.5	10.5
Effective Green, g (s)	7.8	15.0	15.0	5.3	13.2	13.2	14.5	21.4		5.9	12.8	12.8
Actuated g/C Ratio	0.14	0.26	0.26	0.09	0.23	0.23	0.25	0.37		0.10	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	240	926	414	163	815	364	447	1296		188	818	366
v/s Ratio Prot	c0.06	c0.16		0.03	0.08		c0.14	c0.13		0.05	0.09	
v/s Ratio Perm			0.04			0.01						0.01
v/c Ratio	0.41	0.63	0.16	0.35	0.36	0.05	0.55	0.35		0.46	0.39	0.04
Uniform Delay, d1	22.7	18.7	16.3	24.4	18.5	17.2	18.6	12.9		24.2	18.9	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	1.3	0.2	1.3	0.3	0.1	1.5	0.2		1.8	0.3	0.0
Delay (s)	23.8	20.0	16.5	25.7	18.8	17.2	20.0	13.1		26.0	19.2	17.5
Level of Service	C	B	B	C	B	B	C	B		C	B	B
Approach Delay (s)		19.4			19.4			15.5			20.2	
Approach LOS		B			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			18.5				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			57.3				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			48.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Plus Project Conditions

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	332	8	37	36	15	35	28	460	0	41	421	59
Future Volume (vph)	332	8	37	36	15	35	28	460	0	41	421	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1654			1799	1583	1770	3539		1770	3474	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1654			1799	1583	1770	3539		1770	3474	
Peak-hour factor, PHF	0.85	0.85	0.85	0.72	0.72	0.72	0.72	0.72	0.72	0.84	0.84	0.84
Adj. Flow (vph)	391	9	44	50	21	49	39	639	0	49	501	70
RTOR Reduction (vph)	0	10	0	0	0	43	0	0	0	0	14	0
Lane Group Flow (vph)	223	211	0	0	71	6	39	639	0	49	557	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.9	11.9			6.2	6.2	2.6	17.9		4.1	19.4	
Effective Green, g (s)	12.9	12.9			7.2	7.2	3.6	19.9		5.1	21.4	
Actuated g/C Ratio	0.23	0.23			0.13	0.13	0.06	0.35		0.09	0.38	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	380			230	203	113	1255		160	1325	
v/s Ratio Prot	c0.13	0.13			c0.04		0.02	c0.18		c0.03	0.16	
v/s Ratio Perm						0.00						
v/c Ratio	0.58	0.56			0.31	0.03	0.35	0.51		0.31	0.42	
Uniform Delay, d1	19.2	19.1			22.2	21.4	25.1	14.3		23.8	12.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.8			0.8	0.1	1.8	0.3		1.1	0.2	
Delay (s)	21.3	20.8			23.0	21.5	27.0	14.6		24.9	13.0	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		21.1			22.3			15.3			13.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.7									HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			56.1									Sum of lost time (s) 11.0
Intersection Capacity Utilization			44.1%									ICU Level of Service A
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Plus Project Conditions

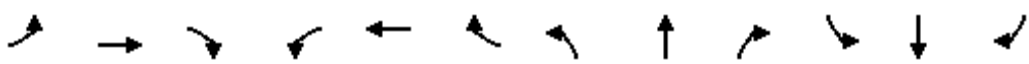
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	61	9	26	27	2	6	53	482	9	6	433	22
Future Volume (vph)	61	9	26	27	2	6	53	482	9	6	433	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1785	1583		1780	1583	1770	3529		1770	3513	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1785	1583		1780	1583	1770	3529		1770	3513	
Peak-hour factor, PHF	0.71	0.71	0.71	0.70	0.70	0.70	0.72	0.72	0.72	0.79	0.79	0.79
Adj. Flow (vph)	86	13	37	39	3	9	74	669	12	8	548	28
RTOR Reduction (vph)	0	0	32	0	0	8	0	1	0	0	4	0
Lane Group Flow (vph)	0	99	5	0	42	1	74	681	0	8	572	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		6.7	6.7		3.7	3.7	4.3	25.5		1.0	22.2	
Effective Green, g (s)		7.7	7.7		4.7	4.7	5.3	27.5		2.0	24.2	
Actuated g/C Ratio		0.15	0.15		0.09	0.09	0.10	0.52		0.04	0.46	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		259	230		158	140	177	1834		66	1607	
v/s Ratio Prot		c0.06			c0.02		c0.04	c0.19		0.00	0.16	
v/s Ratio Perm			0.00			0.00						
v/c Ratio		0.38	0.02		0.27	0.01	0.42	0.37		0.12	0.36	
Uniform Delay, d1		20.4	19.4		22.5	22.0	22.4	7.6		24.6	9.3	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		0.9	0.0	1.6	0.1		0.8	0.1	
Delay (s)		21.4	19.4		23.4	22.0	23.9	7.7		25.4	9.4	
Level of Service		C	B		C	C	C	A		C	A	
Approach Delay (s)		20.9			23.1			9.3			9.7	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.9									
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			52.9									
Intersection Capacity Utilization			37.5%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

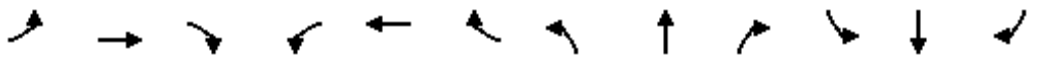
Existing Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	964	10	39	678	374	19	11	23	375	4	107
Future Volume (vph)	165	964	10	39	678	374	19	11	23	375	4	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.78	0.78	0.78	0.70	0.70	0.70	0.87	0.87	0.87
Adj. Flow (vph)	188	1095	11	50	869	479	27	16	33	431	5	123
RTOR Reduction (vph)	0	1	0	0	0	248	0	0	31	0	0	97
Lane Group Flow (vph)	188	1105	0	50	869	231	27	16	2	220	216	26
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	11.6	36.5		4.7	29.6	29.6	4.0	4.0	4.0	15.3	15.3	15.3
Effective Green, g (s)	12.6	37.5		5.7	30.6	30.6	5.0	5.0	5.0	16.3	16.3	16.3
Actuated g/C Ratio	0.16	0.49		0.07	0.40	0.40	0.07	0.07	0.07	0.21	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	291	1732		131	1415	633	115	121	103	358	359	337
v/s Ratio Prot	c0.11	c0.31		0.03	0.25		c0.02	0.01		c0.13	0.13	
v/s Ratio Perm						0.15			0.00			0.02
v/c Ratio	0.65	0.64		0.38	0.61	0.36	0.23	0.13	0.02	0.61	0.60	0.08
Uniform Delay, d1	29.9	14.5		33.7	18.3	16.1	33.9	33.7	33.5	27.3	27.2	24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	0.8		1.9	0.8	0.4	1.1	0.5	0.1	3.1	2.8	0.1
Delay (s)	34.7	15.2		35.6	19.1	16.5	35.0	34.2	33.5	30.4	30.0	24.2
Level of Service	C	B		D	B	B	C	C	C	C	C	C
Approach Delay (s)		18.1			18.8			34.2			28.9	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			20.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			76.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			57.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	856	144	0	952	715	0	0	0	770	0	161
Future Volume (veh/h)	0	856	144	0	952	715	0	0	0	770	0	161
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	901	0	0	1133	0				819	0	171
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.84	0.84	0.84				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	1976	860	0	2011	860				1108	0	510
Arrive On Green	0.00	0.56	0.00	0.00	0.57	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	901	0	0	1133	0				819	0	171
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	6.0	0.0	0.0	8.1	0.0				8.5	0.0	3.3
Cycle Q Clear(g_c), s	0.0	6.0	0.0	0.0	8.1	0.0				8.5	0.0	3.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1976	860	0	2011	860				1108	0	510
V/C Ratio(X)	0.00	0.46	0.00	0.00	0.56	0.00				0.74	0.00	0.34
Avail Cap(c_a), veh/h	0	2791	1225	0	2826	1225				1168	0	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.2	0.0	0.0	5.5	0.0				12.1	0.0	10.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0				2.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	0.0	0.0	3.8	0.0				4.4	0.0	1.5
LnGrp Delay(d),s/veh	0.0	5.4	0.0	0.0	5.7	0.0				14.5	0.0	10.7
LnGrp LOS		A			A					B		B
Approach Vol, veh/h		901			1133						990	
Approach Delay, s/veh		5.4			5.7						13.8	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		24.8		15.3		24.8						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		8.0		10.5		10.1						
Green Ext Time (p_c), s		11.2		0.8		10.6						
Intersection Summary												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	129	960	0	0	1281	141	0	0	890	0	0	380
Future Volume (vph)	129	960	0	0	1281	141	0	0	890	0	0	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.73	0.73	0.73	0.95	0.95	0.95	0.90	0.90	0.90	0.89	0.89	0.89
Adj. Flow (vph)	177	1315	0	0	1348	148	0	0	989	0	0	427
RTOR Reduction (vph)	0	0	0	0	0	74	0	0	0	0	0	356
Lane Group Flow (vph)	177	1315	0	0	1348	74	0	0	989	0	0	71
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	8.0	34.4			23.4	23.4			50.8			6.4
Effective Green, g (s)	10.0	36.4			25.4	25.4			50.8			8.4
Actuated g/C Ratio	0.20	0.72			0.50	0.50			1.00			0.17
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	348	2535			2542	791			1611			460
v/s Ratio Prot	0.10	0.37			0.27							
v/s Ratio Perm						0.05			c0.61			0.03
v/c Ratio	0.51	0.52			0.53	0.09			0.61			0.15
Uniform Delay, d1	18.2	3.2			8.6	6.7			0.0			18.2
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.2	0.2			0.2	0.1			1.8			0.2
Delay (s)	19.4	3.4			8.9	6.7			1.8			18.3
Level of Service	B	A			A	A			A			B
Approach Delay (s)		5.3			8.6			1.8			18.3	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			6.9		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			50.8		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			44.7%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	413	1776	198	99	1086	92	159	361	92	51	187	147
Future Volume (veh/h)	413	1776	198	99	1086	92	159	361	92	51	187	147
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	480	2065	230	115	1263	107	183	415	106	58	212	167
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.87	0.87	0.87	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	624	2779	985	223	2186	681	299	641	162	154	662	574
Arrive On Green	0.18	0.55	0.54	0.06	0.43	0.43	0.09	0.23	0.22	0.04	0.19	0.18
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2799	708	3442	3539	1583
Grp Volume(v), veh/h	480	2065	230	115	1263	107	183	261	260	58	212	167
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1738	1721	1770	1583
Q Serve(g_s), s	12.1	28.3	5.9	3.0	17.2	3.8	4.7	12.2	12.4	1.5	4.7	6.9
Cycle Q Clear(g_c), s	12.1	28.3	5.9	3.0	17.2	3.8	4.7	12.2	12.4	1.5	4.7	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	624	2779	985	223	2186	681	299	405	398	154	662	574
V/C Ratio(X)	0.77	0.74	0.23	0.52	0.58	0.16	0.61	0.64	0.65	0.38	0.32	0.29
Avail Cap(c_a), veh/h	866	2779	985	565	2282	711	490	436	428	490	872	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	15.8	7.6	41.3	19.7	15.9	40.2	31.8	32.0	42.4	32.1	20.7
Incr Delay (d2), s/veh	2.8	1.1	0.1	1.8	0.3	0.1	2.0	2.9	3.2	1.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	13.5	2.6	1.5	8.0	1.7	2.3	6.3	6.3	0.7	2.3	3.0
LnGrp Delay(d),s/veh	38.4	16.9	7.7	43.2	20.1	16.0	42.3	34.8	35.2	43.9	32.4	21.0
LnGrp LOS	D	B	A	D	C	B	D	C	D	D	C	C
Approach Vol, veh/h	2775			1485			704			437		
Approach Delay, s/veh	19.9			21.6			36.9			29.6		
Approach LOS	B			C			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	51.9	10.9	19.6	19.6	41.3	7.1	23.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	5.0	30.3	6.7	8.9	14.1	19.2	3.5	14.4				
Green Ext Time (p_c), s	0.3	16.6	0.3	6.7	1.4	18.1	0.1	4.1				
Intersection Summary												
HCM 2010 Ctrl Delay	23.3											
HCM 2010 LOS	C											

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Plus Project Conditions
School PM Peak

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	598	254	256	838	265	258		
Future Volume (veh/h)	598	254	256	838	265	258		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	643	273	308	1010	288	280		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.93	0.93	0.83	0.83	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1043	467	475	2245	437	818		
Arrive On Green	0.29	0.27	0.27	0.63	0.25	0.25		
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	643	273	308	1010	288	280		
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583		
Q Serve(g_s), s	6.5	6.1	6.4	6.1	6.1	4.3		
Cycle Q Clear(g_c), s	6.5	6.1	6.4	6.1	6.1	4.3		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1043	467	475	2245	437	818		
V/C Ratio(X)	0.62	0.59	0.65	0.45	0.66	0.34		
Avail Cap(c_a), veh/h	1271	569	552	2628	595	959		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.7	12.6	13.5	3.9	14.2	5.9		
Incr Delay (d2), s/veh	0.6	1.2	2.1	0.1	1.7	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.2	2.9	3.4	3.0	3.2	3.0		
LnGrp Delay(d),s/veh	13.3	13.7	15.7	4.1	15.9	6.2		
LnGrp LOS	B	B	B	A	B	A		
Approach Vol, veh/h	916			1318	568			
Approach Delay, s/veh	13.4			6.8	11.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.2	14.3		13.3		28.5		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	8.4	8.5		8.1		8.1		
Green Ext Time (p_c), s	2.0	1.8		1.2		6.1		
Intersection Summary								
HCM 2010 Ctrl Delay			9.8					
HCM 2010 LOS			A					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Plus Project Conditions
School PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↗
Traffic Volume (vph)	701	354	640	698	0	780
Future Volume (vph)	701	354	640	698	0	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.98	0.98	0.94	0.94	0.90	0.90
Adj. Flow (vph)	715	361	681	743	0	867
RTOR Reduction (vph)	0	265	0	0	0	420
Lane Group Flow (vph)	715	96	681	743	0	447
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	13.4	13.4	15.3	32.7		16.1
Effective Green, g (s)	15.4	15.4	16.3	34.7		17.1
Actuated g/C Ratio	0.27	0.27	0.28	0.60		0.30
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1354	421	968	2124		476
v/s Ratio Prot	c0.14		c0.20	0.21		
v/s Ratio Perm		0.06				c0.28
v/c Ratio	0.53	0.23	0.70	0.35		0.94
Uniform Delay, d1	18.1	16.6	18.6	5.8		19.8
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	0.3	2.3	0.1		26.5
Delay (s)	18.5	16.8	20.9	5.9		46.3
Level of Service	B	B	C	A		D
Approach Delay (s)	17.9			13.1	46.3	
Approach LOS	B			B	D	
Intersection Summary						
HCM 2000 Control Delay			23.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74			
Actuated Cycle Length (s)			57.8		Sum of lost time (s)	10.0
Intersection Capacity Utilization			68.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Existing Plus Project Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	177	1049	256	0	1498	256	199	618	463	270	0	512
Future Volume (vph)	177	1049	256	0	1498	256	199	618	463	270	0	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.97	0.97	0.97	0.90	0.90	0.90
Adj. Flow (vph)	188	1116	272	0	1646	281	205	637	477	300	0	569
RTOR Reduction (vph)	0	0	126	0	0	0	0	0	0	0	0	30
Lane Group Flow (vph)	188	1116	146	0	1646	281	205	637	477	300	0	539
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.5	49.5	49.5		34.0	94.1	12.2	21.1	94.1	11.5		35.9
Effective Green, g (s)	13.0	51.0	50.5		35.5	94.1	13.7	22.6	94.1	13.0		37.4
Actuated g/C Ratio	0.14	0.54	0.54		0.38	1.00	0.15	0.24	1.00	0.14		0.40
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	474	1918	849		2417	1583	257	849	1583	474		629
v/s Ratio Prot	0.05	0.32			c0.26		c0.12	0.18		0.09		c0.34
v/s Ratio Perm			0.09			0.18			c0.30			
v/c Ratio	0.40	0.58	0.17		0.68	0.18	0.80	0.75	0.30	0.63		0.86
Uniform Delay, d1	37.0	14.4	11.1		24.6	0.0	38.9	33.1	0.0	38.3		25.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.5	0.1		0.8	0.2	15.7	3.8	0.5	2.8		11.1
Delay (s)	37.5	14.9	11.2		25.4	0.2	54.5	36.9	0.5	41.1		37.0
Level of Service	D	B	B		C	A	D	D	A	D		D
Approach Delay (s)		16.9			21.7			26.5			38.4	
Approach LOS		B			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			24.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			94.1			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			74.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Plus Project Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	235	1110	399	108	1178	106	381	336	162	133	368	205
Future Volume (vph)	235	1110	399	108	1178	106	381	336	162	133	368	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95	0.85	0.85	0.85
Adj. Flow (vph)	247	1168	420	117	1280	115	401	354	171	156	433	241
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	247	1168	420	117	1280	115	401	354	171	156	433	241
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.7	21.9	65.6	6.2	18.4	65.6	11.1	14.7	65.6	6.8	10.4	65.6
Effective Green, g (s)	10.7	24.4	65.6	7.2	20.9	65.6	12.1	17.2	65.6	7.8	12.9	65.6
Actuated g/C Ratio	0.16	0.37	1.00	0.11	0.32	1.00	0.18	0.26	1.00	0.12	0.20	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	559	1891	1583	376	2041	1583	920	927	1583	408	999	1583
v/s Ratio Prot	c0.07	c0.23		0.03	0.20		0.08	c0.10		0.05	c0.09	
v/s Ratio Perm			0.27			0.07			0.11			0.15
v/c Ratio	0.44	0.62	0.27	0.31	0.63	0.07	0.44	0.38	0.11	0.38	0.43	0.15
Uniform Delay, d1	24.8	16.8	0.0	26.9	19.0	0.0	23.7	19.8	0.0	26.7	23.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.6	0.4	0.5	0.6	0.1	0.3	0.3	0.1	0.6	0.3	0.2
Delay (s)	25.3	17.4	0.4	27.4	19.6	0.1	24.1	20.1	0.1	27.3	23.4	0.2
Level of Service	C	B	A	C	B	A	C	C	A	C	C	A
Approach Delay (s)		14.6			18.8			18.1			17.4	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			65.6			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			52.5%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	454	1113	537	228	1105	718	424	681	74	546	607	316
Future Volume (veh/h)	454	1113	537	228	1105	718	424	681	74	546	607	316
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	468	1147	0	265	1285	0	456	732	0	581	646	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.97	0.97	0.97	0.86	0.86	0.86	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	637	1797	516	457	1530	433	642	1288	368	860	845	345
Arrive On Green	0.19	0.35	0.00	0.13	0.30	0.00	0.19	0.25	0.00	0.17	0.24	0.00
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	468	1147	0	265	1285	0	456	732	0	581	646	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.4	13.8	0.0	5.3	17.3	0.0	9.1	9.2	0.0	8.0	12.4	0.0
Cycle Q Clear(g_c), s	9.4	13.8	0.0	5.3	17.3	0.0	9.1	9.2	0.0	8.0	12.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	637	1797	516	457	1530	433	642	1288	368	860	845	345
V/C Ratio(X)	0.73	0.64	0.00	0.58	0.84	0.00	0.71	0.57	0.00	0.68	0.76	0.00
Avail Cap(c_a), veh/h	659	1797	516	659	1530	433	659	1288	368	958	896	368
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.1	19.7	0.0	29.8	23.9	0.0	27.9	23.8	0.0	28.4	25.9	0.0
Incr Delay (d2), s/veh	4.1	0.8	0.0	1.2	4.3	0.0	3.5	0.6	0.0	1.7	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	6.5	0.0	2.6	8.7	0.0	4.6	4.3	0.0	3.8	6.5	0.0
LnGrp Delay(d),s/veh	32.2	20.5	0.0	31.0	28.2	0.0	31.4	24.4	0.0	30.0	29.7	0.0
LnGrp LOS	C	C		C	C		C	C		C	C	
Approach Vol, veh/h		1615			1550			1188			1227	
Approach Delay, s/veh		23.9			28.7			27.1			29.8	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	20.0	11.7	26.8	15.6	18.9	15.5	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	10.0	11.2	7.3	15.8	11.1	14.4	11.4	19.3				
Green Ext Time (p_c), s	0.6	2.4	0.4	2.8	0.5	0.5	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			27.2									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	6	221	16	19	10	316	1109	4	4	1056	383
Future Volume (vph)	286	6	221	16	19	10	316	1109	4	4	1056	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1821	1583	3433	3537		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1821	1583	3433	3537		1770	3539	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.70	0.70	0.70	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	298	6	230	23	27	14	351	1232	4	5	1200	435
RTOR Reduction (vph)	0	0	156	0	0	13	0	0	0	0	0	180
Lane Group Flow (vph)	152	152	74	0	50	1	351	1236	0	5	1200	255
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	10.3	10.3	21.3		4.5	4.5	11.0	40.1		1.1	30.2	30.2
Effective Green, g (s)	11.3	11.3	23.3		5.5	5.5	12.0	42.6		2.1	32.7	32.7
Actuated g/C Ratio	0.16	0.16	0.32		0.08	0.08	0.17	0.59		0.03	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	263	265	578		139	120	572	2092		51	1607	718
v/s Ratio Prot	c0.09	0.09	0.02		c0.03		c0.10	0.35		0.00	c0.34	
v/s Ratio Perm			0.03			0.00						0.16
v/c Ratio	0.58	0.57	0.13		0.36	0.01	0.61	0.59		0.10	0.75	0.35
Uniform Delay, d1	28.1	28.1	17.2		31.6	30.7	27.8	9.2		34.0	16.2	12.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	3.0	0.1		1.6	0.0	2.0	0.5		0.8	1.9	0.3
Delay (s)	31.2	31.1	17.3		33.2	30.8	29.8	9.7		34.9	18.2	13.1
Level of Service	C	C	B		C	C	C	A		C	B	B
Approach Delay (s)		25.2			32.6			14.1			16.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.2				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			72.0				Sum of lost time (s)			10.5		
Intersection Capacity Utilization			63.0%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Plus Project Conditions
School PM Peak

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	489	834	651	318	578	707
Future Volume (vph)	489	834	651	318	578	707
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.93	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.97	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3278	1441	3539	1583	3433	3539
Flt Permitted	0.97	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3278	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.90	0.90	0.93	0.93	0.96	0.96
Adj. Flow (vph)	543	927	700	342	602	736
RTOR Reduction (vph)	299	333	0	243	0	0
Lane Group Flow (vph)	698	140	700	99	602	736
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	12.0	12.0	11.7	11.7	12.5	28.2
Effective Green, g (s)	13.0	14.3	14.0	14.0	14.8	29.2
Actuated g/C Ratio	0.27	0.30	0.29	0.29	0.31	0.61
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	884	427	1027	459	1054	2143
v/s Ratio Prot	c0.21		c0.20		c0.18	0.21
v/s Ratio Perm		0.10		0.06		
v/c Ratio	0.79	0.33	0.68	0.22	0.57	0.34
Uniform Delay, d1	16.3	13.2	15.1	12.9	14.0	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	0.5	1.9	0.2	0.8	0.1
Delay (s)	21.1	13.7	17.0	13.2	14.8	4.8
Level of Service	C	B	B	B	B	A
Approach Delay (s)	18.7		15.8			9.3
Approach LOS	B		B			A
Intersection Summary						
HCM 2000 Control Delay			14.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			48.2		Sum of lost time (s)	6.4
Intersection Capacity Utilization			67.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Existing Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	382	504	59	157	556	163	159	414	158	111	389	350
Future Volume (vph)	382	504	59	157	556	163	159	414	158	111	389	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3393		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3393		1832	3663	1639
Peak-hour factor, PHF	0.93	0.93	0.93	0.83	0.83	0.83	0.94	0.94	0.94	0.96	0.96	0.96
Adj. Flow (vph)	411	542	63	189	670	196	169	440	168	116	405	365
RTOR Reduction (vph)	0	0	47	0	0	148	0	56	0	0	0	285
Lane Group Flow (vph)	411	542	16	189	670	48	169	552	0	116	405	80
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.1	14.4	14.4	10.7	13.0	13.0	11.4	15.4		7.7	11.7	11.7
Effective Green, g (s)	13.1	16.4	16.4	11.7	15.7	15.7	12.4	17.7		8.7	14.0	14.0
Actuated g/C Ratio	0.20	0.26	0.26	0.18	0.24	0.24	0.19	0.28		0.14	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	361	904	404	322	865	387	341	935		248	798	357
v/s Ratio Prot	c0.23	0.15		0.11	c0.19		c0.10	c0.16		0.06	0.11	
v/s Ratio Perm			0.01			0.03						0.05
v/c Ratio	1.14	0.60	0.04	0.59	0.77	0.12	0.50	0.59		0.47	0.51	0.22
Uniform Delay, d1	25.6	21.0	18.0	24.0	22.6	18.9	23.1	20.1		25.6	22.1	20.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	90.5	1.1	0.0	2.7	4.4	0.1	1.1	1.0		1.4	0.5	0.3
Delay (s)	116.1	22.1	18.0	26.8	27.0	19.0	24.2	21.1		27.0	22.6	20.9
Level of Service	F	C	B	C	C	B	C	C		C	C	C
Approach Delay (s)		59.9			25.5			21.8			22.5	
Approach LOS		E			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			33.3									C
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			64.2							9.7		
Intersection Capacity Utilization			72.5%									C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	288	7	31	30	12	29	63	679	0	39	835	110
Future Volume (vph)	288	7	31	30	12	29	63	679	0	39	835	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1655			1799	1583	1770	3539		1770	3477	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1655			1799	1583	1770	3539		1770	3477	
Peak-hour factor, PHF	0.96	0.96	0.96	0.93	0.93	0.93	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	300	7	32	32	13	31	66	707	0	41	879	116
RTOR Reduction (vph)	0	10	0	0	0	28	0	0	0	0	11	0
Lane Group Flow (vph)	171	158	0	0	45	3	66	707	0	41	984	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.0	11.0			4.0	4.0	4.5	26.9		3.9	26.3	
Effective Green, g (s)	12.0	12.0			5.0	5.0	5.5	28.9		4.9	28.3	
Actuated g/C Ratio	0.19	0.19			0.08	0.08	0.09	0.47		0.08	0.46	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	326	321			145	128	157	1654		140	1592	
v/s Ratio Prot	c0.10	0.10			c0.03		c0.04	0.20		0.02	c0.28	
v/s Ratio Perm						0.00						
v/c Ratio	0.52	0.49			0.31	0.02	0.42	0.43		0.29	0.62	
Uniform Delay, d1	22.3	22.2			26.8	26.1	26.6	10.9		26.8	12.7	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	1.2			1.2	0.1	1.8	0.2		1.2	0.7	
Delay (s)	23.9	23.4			28.0	26.2	28.5	11.1		28.0	13.4	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		23.6			27.3			12.6			14.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			15.4									
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			61.8									
Intersection Capacity Utilization			55.8%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	158	20	118	130	10	42	132	575	11	31	701	32
Future Volume (vph)	158	20	118	130	10	42	132	575	11	31	701	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1780	1583	1770	3529		1770	3516	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1780	1583	1770	3529		1770	3516	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	180	23	134	148	11	48	140	612	12	33	746	34
RTOR Reduction (vph)	0	0	108	0	0	41	0	2	0	0	4	0
Lane Group Flow (vph)	0	203	26	0	159	7	140	622	0	33	776	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		11.1	11.1		7.8	7.8	7.6	24.8		2.8	20.0	
Effective Green, g (s)		12.1	12.1		8.8	8.8	8.6	26.8		3.8	22.0	
Actuated g/C Ratio		0.19	0.19		0.14	0.14	0.14	0.43		0.06	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		345	306		250	222	243	1513		107	1237	
v/s Ratio Prot		c0.11			c0.09		c0.08	0.18		0.02	c0.22	
v/s Ratio Perm			0.02			0.00						
v/c Ratio		0.59	0.08		0.64	0.03	0.58	0.41		0.31	0.63	
Uniform Delay, d1		22.9	20.7		25.3	23.2	25.2	12.4		28.1	16.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.6	0.1		5.2	0.1	3.3	0.2		1.6	1.0	
Delay (s)		25.5	20.8		30.6	23.2	28.5	12.6		29.7	17.8	
Level of Service		C	C		C	C	C	B		C	B	
Approach Delay (s)		23.6			28.9			15.5			18.3	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			19.2									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			62.5									
Intersection Capacity Utilization			54.2%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Existing Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	944	8	52	954	518	27	24	56	681	8	235
Future Volume (vph)	183	944	8	52	954	518	27	24	56	681	8	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3535		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3535		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	199	1026	9	55	1015	551	30	27	63	709	8	245
RTOR Reduction (vph)	0	1	0	0	0	260	0	0	58	0	0	182
Lane Group Flow (vph)	199	1034	0	55	1015	291	30	27	5	362	355	63
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.1	36.0		5.3	29.2	29.2	5.6	5.6	5.6	20.6	20.6	20.6
Effective Green, g (s)	13.1	37.0		6.3	30.2	30.2	6.6	6.6	6.6	21.6	21.6	21.6
Actuated g/C Ratio	0.16	0.44		0.08	0.36	0.36	0.08	0.08	0.08	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	277	1566		133	1279	572	139	147	125	434	436	409
v/s Ratio Prot	c0.11	0.29		0.03	c0.29		c0.02	0.01		c0.22	0.21	
v/s Ratio Perm						0.18			0.00			0.04
v/c Ratio	0.72	0.66		0.41	0.79	0.51	0.22	0.18	0.04	0.83	0.81	0.15
Uniform Delay, d1	33.4	18.3		36.8	23.9	20.9	36.0	35.9	35.5	29.3	29.1	23.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.6	1.1		2.1	3.5	0.7	0.8	0.6	0.1	12.9	11.1	0.2
Delay (s)	42.0	19.4		38.9	27.3	21.6	36.8	36.5	35.7	42.2	40.2	24.1
Level of Service	D	B		D	C	C	D	D	D	D	D	C
Approach Delay (s)		23.0			25.8			36.1			36.8	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			27.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			83.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↖↖		↗
Traffic Volume (veh/h)	0	1006	157	0	1347	1037	0	0	0	743	0	213
Future Volume (veh/h)	0	1006	157	0	1347	1037	0	0	0	743	0	213
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1082	0	0	1497	0				766	0	220
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90				0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2142	938	0	2173	938				998	0	459
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1082	0	0	1497	0				766	0	220
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	8.0	0.0	0.0	13.0	0.0				9.3	0.0	5.3
Cycle Q Clear(g_c), s	0.0	8.0	0.0	0.0	13.0	0.0				9.3	0.0	5.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2142	938	0	2173	938				998	0	459
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.69	0.00				0.77	0.00	0.48
Avail Cap(c_a), veh/h	0	2440	1071	0	2470	1071				1021	0	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	0.0	0.0	5.9	0.0				14.9	0.0	13.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0				3.5	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.8	0.0	0.0	6.2	0.0				4.8	0.0	2.4
LnGrp Delay(d),s/veh	0.0	5.3	0.0	0.0	6.6	0.0				18.4	0.0	14.2
LnGrp LOS		A			A					B		B
Approach Vol, veh/h		1082			1497						986	
Approach Delay, s/veh		5.3			6.6						17.4	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.1		15.7		30.1						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		10.0		11.3		15.0						
Green Ext Time (p_c), s		13.9		0.4		11.2						
Intersection Summary												
HCM 2010 Ctrl Delay			9.2									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	199	938	0	0	2003	327	0	0	509	0	0	378
Future Volume (vph)	199	938	0	0	2003	327	0	0	509	0	0	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.83	0.83	0.83	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	240	1130	0	0	2177	355	0	0	566	0	0	406
RTOR Reduction (vph)	0	0	0	0	0	149	0	0	0	0	0	357
Lane Group Flow (vph)	240	1130	0	0	2177	206	0	0	566	0	0	49
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	11.6	52.3			37.7	37.7			68.5			6.2
Effective Green, g (s)	13.6	54.3			39.7	39.7			68.5			8.2
Actuated g/C Ratio	0.20	0.79			0.58	0.58			1.00			0.12
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	351	2805			2947	917			1611			333
v/s Ratio Prot	c0.14	0.32			c0.43							
v/s Ratio Perm						0.13			c0.35			0.02
v/c Ratio	0.68	0.40			0.74	0.22			0.35			0.15
Uniform Delay, d1	25.5	2.2			10.6	7.0			0.0			27.0
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	5.4	0.1			1.0	0.1			0.6			0.2
Delay (s)	30.9	2.3			11.6	7.1			0.6			27.2
Level of Service	C	A			B	A			A			C
Approach Delay (s)		7.3			11.0			0.6			27.2	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			10.1		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			68.5		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			58.6%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	395	1495	169	254	1569	154	291	446	127	113	404	434
Future Volume (veh/h)	395	1495	169	254	1569	154	291	446	127	113	404	434
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	444	1680	190	262	1618	159	327	501	143	133	475	511
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.89	0.89	0.89	0.97	0.97	0.97	0.89	0.89	0.89	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	565	2327	902	366	2034	633	418	732	208	231	759	592
Arrive On Green	0.16	0.46	0.45	0.11	0.40	0.40	0.12	0.27	0.26	0.07	0.21	0.21
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2723	773	3442	3539	1583
Grp Volume(v), veh/h	444	1680	190	262	1618	159	327	325	319	133	475	511
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1726	1721	1770	1583
Q Serve(g_s), s	13.0	28.1	6.2	7.7	29.4	7.0	9.7	17.2	17.4	3.9	12.8	22.0
Cycle Q Clear(g_c), s	13.0	28.1	6.2	7.7	29.4	7.0	9.7	17.2	17.4	3.9	12.8	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	565	2327	902	366	2034	633	418	476	464	231	759	592
V/C Ratio(X)	0.79	0.72	0.21	0.72	0.80	0.25	0.78	0.68	0.69	0.58	0.63	0.86
Avail Cap(c_a), veh/h	755	2375	917	492	2034	633	427	476	464	427	759	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	23.0	11.0	45.3	27.7	21.0	44.7	34.3	34.5	47.5	37.4	30.4
Incr Delay (d2), s/veh	4.0	1.1	0.1	3.2	2.3	0.2	9.0	4.0	4.2	2.3	1.6	12.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	13.3	2.7	3.8	14.1	3.1	5.1	8.9	8.9	1.9	6.4	15.6
LnGrp Delay(d),s/veh	46.1	24.1	11.2	48.5	30.0	21.2	53.8	38.3	38.8	49.8	39.0	42.9
LnGrp LOS	D	C	B	D	C	C	D	D	D	D	D	D
Approach Vol, veh/h	2314				2039				971			
Approach Delay, s/veh	27.3				31.7				43.7			
Approach LOS	C				C				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	50.0	15.7	25.0	20.2	44.0	10.0	30.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	9.7	30.1	11.7	24.0	15.0	31.4	5.9	19.4				
Green Ext Time (p_c), s	0.4	15.9	0.1	0.0	1.2	7.6	0.2	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay	33.7											
HCM 2010 LOS	C											

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Existing Plus Project Conditions
PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	621	269	361	1308	273	203		
Future Volume (veh/h)	621	269	361	1308	273	203		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	661	286	384	1391	310	231		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.88	0.88		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1022	457	504	2266	439	814		
Arrive On Green	0.29	0.27	0.28	0.64	0.25	0.25		
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	661	286	384	1391	310	231		
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583		
Q Serve(g_s), s	7.3	7.0	8.8	10.4	7.1	3.7		
Cycle Q Clear(g_c), s	7.3	7.0	8.8	10.4	7.1	3.7		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1022	457	504	2266	439	814		
V/C Ratio(X)	0.65	0.63	0.76	0.61	0.71	0.28		
Avail Cap(c_a), veh/h	1193	534	518	2465	558	920		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.8	13.7	14.6	4.7	15.3	6.2		
Incr Delay (d2), s/veh	1.0	1.8	6.4	0.4	2.9	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.6	3.3	5.2	5.0	3.8	2.5		
LnGrp Delay(d),s/veh	14.8	15.5	21.0	5.1	18.2	6.3		
LnGrp LOS	B	B	C	A	B	A		
Approach Vol, veh/h	947			1775	541			
Approach Delay, s/veh	15.0			8.6	13.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.6	14.9		14.0		30.5		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	12.0	13.0		13.0		29.0		
Max Q Clear Time (g_c+I1), s	10.8	9.3		9.1		12.4		
Green Ext Time (p_c), s	0.9	1.6		0.9		8.1		
Intersection Summary								
HCM 2010 Ctrl Delay			11.2					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Existing Plus Project Conditions
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑		↑
Traffic Volume (vph)	739	271	719	1090	0	741
Future Volume (vph)	739	271	719	1090	0	741
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.95	0.95	0.92	0.92	0.90	0.90
Adj. Flow (vph)	778	285	782	1185	0	823
RTOR Reduction (vph)	0	208	0	0	0	425
Lane Group Flow (vph)	778	77	782	1185	0	398
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	13.7	13.7	16.1	33.8		15.3
Effective Green, g (s)	15.7	15.7	17.1	35.8		16.3
Actuated g/C Ratio	0.27	0.27	0.29	0.62		0.28
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1374	427	1010	2180		451
v/s Ratio Prot	c0.15		c0.23	0.33		
v/s Ratio Perm		0.05				c0.25
v/c Ratio	0.57	0.18	0.77	0.54		0.88
Uniform Delay, d1	18.3	16.3	18.7	6.4		20.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	0.2	3.8	0.3		18.0
Delay (s)	18.8	16.5	22.5	6.7		38.0
Level of Service	B	B	C	A		D
Approach Delay (s)	18.2			13.0	38.0	
Approach LOS	B			B	D	
Intersection Summary						
HCM 2000 Control Delay			19.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			58.1		Sum of lost time (s)	10.0
Intersection Capacity Utilization			66.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

Existing Plus Project Conditions

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	233	1009	240	0	1978	354	270	682	445	299	0	527
Future Volume (vph)	233	1009	240	0	1978	354	270	682	445	299	0	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	253	1097	261	0	2222	398	303	766	500	329	0	579
RTOR Reduction (vph)	0	0	113	0	0	0	0	0	0	0	0	31
Lane Group Flow (vph)	253	1097	148	0	2222	398	303	766	500	329	0	548
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.8	60.7	60.7		44.9	108.5	12.0	23.9	108.5	11.9		39.6
Effective Green, g (s)	13.3	62.2	61.7		46.4	108.5	13.5	25.4	108.5	13.4		41.1
Actuated g/C Ratio	0.12	0.57	0.57		0.43	1.00	0.12	0.23	1.00	0.12		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	420	2028	900		2740	1583	220	828	1583	423		599
v/s Ratio Prot	0.07	0.31			c0.35		c0.17	c0.22		0.10		c0.35
v/s Ratio Perm			0.09			0.25			c0.32			
v/c Ratio	0.60	0.54	0.16		0.81	0.25	1.38	0.93	0.32	0.78		0.91
Uniform Delay, d1	45.1	14.3	11.1		27.2	0.0	47.5	40.6	0.0	46.1		32.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	2.4	0.3	0.1		1.9	0.4	195.7	15.9	0.5	8.7		18.6
Delay (s)	47.5	14.6	11.2		29.1	0.4	243.2	56.5	0.5	54.8		50.6
Level of Service	D	B	B		C	A	F	E	A	D		D
Approach Delay (s)		19.2			24.8			74.7			52.2	
Approach LOS		B			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			38.8									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			108.5									Sum of lost time (s) 10.0
Intersection Capacity Utilization			86.3%									ICU Level of Service E
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Existing Plus Project Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	203	1145	345	121	1608	166	449	390	152	149	316	332
Future Volume (vph)	203	1145	345	121	1608	166	449	390	152	149	316	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	3539	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.84	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	221	1245	375	144	1914	198	488	424	165	186	395	415
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	221	1245	375	144	1914	198	488	424	165	186	395	415
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.4	21.7	65.2	6.7	19.0	65.2	10.8	12.1	65.2	8.7	10.0	65.2
Effective Green, g (s)	10.4	24.2	65.2	7.7	21.5	65.2	11.8	14.6	65.2	9.7	12.5	65.2
Actuated g/C Ratio	0.16	0.37	1.00	0.12	0.33	1.00	0.18	0.22	1.00	0.15	0.19	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	547	1887	1583	405	2113	1583	903	792	1583	510	974	1583
v/s Ratio Prot	c0.06	0.24		0.04	c0.30		0.10	c0.12		0.05	c0.08	
v/s Ratio Perm			0.24			0.13			0.10			c0.26
v/c Ratio	0.40	0.66	0.24	0.36	0.91	0.13	0.54	0.54	0.10	0.36	0.41	0.26
Uniform Delay, d1	24.6	17.1	0.0	26.5	20.9	0.0	24.2	22.3	0.0	25.0	23.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.8	0.4	0.5	6.0	0.2	0.7	0.7	0.1	0.4	0.3	0.4
Delay (s)	25.1	17.9	0.4	27.0	26.9	0.2	24.9	23.0	0.1	25.4	23.4	0.4
Level of Service	C	B	A	C	C	A	C	C	A	C	C	A
Approach Delay (s)		15.2			24.6			20.4			14.2	
Approach LOS		B			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			65.2			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			57.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	423	1293	478	219	1433	812	517	941	72	560	561	355
Future Volume (veh/h)	423	1293	478	219	1433	812	517	941	72	560	561	355
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	441	1347	0	233	1524	0	568	1034	0	659	660	0
Adj No. of Lanes	2	3	1	2	3	1	2	3	1	3	2	1
Peak Hour Factor	0.96	0.96	0.96	0.94	0.94	0.94	0.91	0.91	0.91	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	614	1803	518	423	1521	430	665	1279	366	914	852	349
Arrive On Green	0.18	0.35	0.00	0.12	0.30	0.00	0.19	0.25	0.00	0.18	0.24	0.00
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	441	1347	0	233	1524	0	568	1034	0	659	660	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	8.9	17.1	0.0	4.7	22.0	0.0	11.7	14.1	0.0	9.1	12.8	0.0
Cycle Q Clear(g_c), s	8.9	17.1	0.0	4.7	22.0	0.0	11.7	14.1	0.0	9.1	12.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	614	1803	518	423	1521	430	665	1279	366	914	852	349
V/C Ratio(X)	0.72	0.75	0.00	0.55	1.00	0.00	0.85	0.81	0.00	0.72	0.77	0.00
Avail Cap(c_a), veh/h	655	1803	518	655	1521	430	665	1279	366	952	890	366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.5	20.8	0.0	30.4	25.8	0.0	28.7	25.9	0.0	28.3	26.1	0.0
Incr Delay (d2), s/veh	3.5	1.8	0.0	1.1	23.6	0.0	10.5	4.0	0.0	2.6	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.3	0.0	2.3	13.5	0.0	6.5	7.0	0.0	4.4	6.7	0.0
LnGrp Delay(d),s/veh	32.0	22.6	0.0	31.5	49.4	0.0	39.1	29.9	0.0	30.9	30.2	0.0
LnGrp LOS	C	C		C	F		D	C		C	C	
Approach Vol, veh/h		1788			1757			1602			1319	
Approach Delay, s/veh		24.9			47.0			33.1			30.5	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.4	20.0	11.0	27.1	16.2	19.2	15.1	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	16.0	12.0	19.0	12.0	16.0	12.0	19.0				
Max Q Clear Time (g_c+I1), s	11.1	16.1	6.7	19.1	13.7	14.8	10.9	24.0				
Green Ext Time (p_c), s	0.3	0.0	0.4	0.0	0.0	0.4	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			34.1									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Existing Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	414	8	215	11	13	8	230	1335	7	4	966	428
Future Volume (vph)	414	8	215	11	13	8	230	1335	7	4	966	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1820	1583	3433	3536		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1820	1583	3433	3536		1770	3539	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Adj. Flow (vph)	440	9	229	14	16	10	247	1435	8	4	996	441
RTOR Reduction (vph)	0	0	150	0	0	9	0	0	0	0	0	228
Lane Group Flow (vph)	224	225	79	0	30	1	247	1443	0	4	996	213
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	11.8	11.8	21.8		3.8	3.8	10.0	36.8		1.0	27.8	27.8
Effective Green, g (s)	12.8	12.8	23.8		4.8	4.8	11.0	39.3		2.0	30.3	30.3
Actuated g/C Ratio	0.18	0.18	0.34		0.07	0.07	0.16	0.57		0.03	0.44	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	310	311	611		125	109	544	2002		51	1545	691
v/s Ratio Prot	c0.13	0.13	0.02		c0.02		c0.07	c0.41		0.00	0.28	
v/s Ratio Perm			0.03			0.00						0.13
v/c Ratio	0.72	0.72	0.13		0.24	0.01	0.45	0.72		0.08	0.64	0.31
Uniform Delay, d1	26.6	26.6	15.7		30.6	30.1	26.5	11.0		32.8	15.3	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.1	8.1	0.1		1.0	0.0	0.6	1.3		0.7	0.9	0.3
Delay (s)	34.7	34.7	15.8		31.6	30.1	27.1	12.3		33.5	16.3	13.0
Level of Service	C	C	B		C	C	C	B		C	B	B
Approach Delay (s)		28.3			31.2			14.5			15.3	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			17.4									
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			69.4									
Intersection Capacity Utilization			68.8%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Existing Plus Project Conditions
PM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	599	1181	637	303	544	716
Future Volume (vph)	599	1181	637	303	544	716
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.93	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3263	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3263	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.86	0.86	0.93	0.93	0.95	0.95
Adj. Flow (vph)	697	1373	685	326	573	754
RTOR Reduction (vph)	350	426	0	231	0	0
Lane Group Flow (vph)	1034	260	685	95	573	754
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	12.0	12.0	11.6	11.6	12.3	27.9
Effective Green, g (s)	13.0	14.3	13.9	13.9	14.6	28.9
Actuated g/C Ratio	0.27	0.30	0.29	0.29	0.30	0.60
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	885	430	1026	459	1046	2135
v/s Ratio Prot	c0.32		c0.19		c0.17	0.21
v/s Ratio Perm		0.18		0.06		
v/c Ratio	1.17	0.60	0.67	0.21	0.55	0.35
Uniform Delay, d1	17.4	14.4	15.0	12.8	13.9	4.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	87.7	2.4	1.7	0.2	0.6	0.1
Delay (s)	105.2	16.8	16.6	13.1	14.5	4.9
Level of Service	F	B	B	B	B	A
Approach Delay (s)	75.9		15.5			9.0
Approach LOS	E		B			A
Intersection Summary						
HCM 2000 Control Delay			41.9		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			47.9		Sum of lost time (s)	6.4
Intersection Capacity Utilization			73.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	505	597	65	151	572	182	238	696	149	107	395	315
Future Volume (vph)	505	597	65	151	572	182	238	696	149	107	395	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7		3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3446		1832	3663	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3446		1832	3663	1639
Peak-hour factor, PHF	0.91	0.91	0.91	0.95	0.95	0.95	0.82	0.82	0.82	0.87	0.87	0.87
Adj. Flow (vph)	555	656	71	159	602	192	290	849	182	123	454	362
RTOR Reduction (vph)	0	0	55	0	0	153	0	23	0	0	0	274
Lane Group Flow (vph)	555	656	16	159	602	39	290	1008	0	123	454	88
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	12.2	14.1	14.1	10.5	12.4	12.4	17.3	24.8		8.1	15.6	15.6
Effective Green, g (s)	13.2	16.1	16.1	11.5	15.1	15.1	18.3	27.1		9.1	17.9	17.9
Actuated g/C Ratio	0.18	0.22	0.22	0.16	0.21	0.21	0.25	0.37		0.12	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	317	775	346	276	727	325	440	1270		226	892	399
v/s Ratio Prot	c0.31	c0.19		0.09	0.17		c0.16	c0.29		0.07	0.12	
v/s Ratio Perm			0.01			0.02						0.05
v/c Ratio	1.75	0.85	0.04	0.58	0.83	0.12	0.66	0.79		0.54	0.51	0.22
Uniform Delay, d1	30.1	27.5	22.6	28.7	28.0	23.8	24.8	20.7		30.3	24.0	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	350.6	8.5	0.1	2.9	7.7	0.2	3.6	3.5		2.7	0.5	0.3
Delay (s)	380.8	36.0	22.7	31.6	35.7	24.0	28.4	24.2		32.9	24.5	22.5
Level of Service	F	D	C	C	D	C	C	C		C	C	C
Approach Delay (s)		184.5			32.6			25.1			24.8	
Approach LOS		F			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			72.1									
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			73.5									
Intersection Capacity Utilization			87.0%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Existing Plus Project Conditions

PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	269	6	30	28	11	27	71	641	0	34	944	129
Future Volume (vph)	269	6	30	28	11	27	71	641	0	34	944	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1654			1799	1583	1770	3539		1770	3475	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1654			1799	1583	1770	3539		1770	3475	
Peak-hour factor, PHF	0.84	0.84	0.84	0.75	0.75	0.75	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	320	7	36	37	15	36	73	661	0	38	1061	145
RTOR Reduction (vph)	0	11	0	0	0	32	0	0	0	0	11	0
Lane Group Flow (vph)	182	170	0	0	52	4	73	661	0	38	1195	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	11.1	11.1			5.9	5.9	6.6	32.0		4.3	29.7	
Effective Green, g (s)	12.1	12.1			6.9	6.9	7.6	34.0		5.3	31.7	
Actuated g/C Ratio	0.17	0.17			0.10	0.10	0.11	0.49		0.08	0.46	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	288			179	157	194	1736		135	1589	
v/s Ratio Prot	c0.11	0.10			c0.03		c0.04	0.19		0.02	c0.34	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.59			0.29	0.02	0.38	0.38		0.28	0.75	
Uniform Delay, d1	26.5	26.3			28.9	28.2	28.6	11.1		30.2	15.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	3.2			0.9	0.1	1.2	0.1		1.1	2.1	
Delay (s)	30.5	29.6			29.8	28.2	29.9	11.2		31.3	17.6	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		30.0			29.2			13.1			18.0	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			18.7									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			69.3									
Intersection Capacity Utilization			59.3%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Existing Plus Project Conditions

PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	169	21	86	119	9	38	133	547	8	28	729	36
Future Volume (vph)	169	21	86	119	9	38	133	547	8	28	729	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1780	1583	1770	3531		1770	3514	
Flt Permitted		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1780	1583	1770	3531		1770	3514	
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	199	25	101	135	10	43	145	595	9	32	838	41
RTOR Reduction (vph)	0	0	81	0	0	37	0	1	0	0	5	0
Lane Group Flow (vph)	0	224	20	0	145	6	145	603	0	32	874	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		11.3	11.3		7.7	7.7	7.8	25.5		2.8	20.5	
Effective Green, g (s)		12.3	12.3		8.7	8.7	8.8	27.5		3.8	22.5	
Actuated g/C Ratio		0.19	0.19		0.14	0.14	0.14	0.43		0.06	0.36	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		346	307		244	217	246	1534		106	1249	
v/s Ratio Prot		c0.13			c0.08		c0.08	0.17		0.02	c0.25	
v/s Ratio Perm			0.01			0.00						
v/c Ratio		0.65	0.06		0.59	0.03	0.59	0.39		0.30	0.70	
Uniform Delay, d1		23.5	20.8		25.6	23.6	25.6	12.2		28.5	17.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.1	0.1		3.9	0.1	3.6	0.2		1.6	1.8	
Delay (s)		27.6	20.9		29.5	23.7	29.1	12.4		30.1	19.3	
Level of Service		C	C		C	C	C	B		C	B	
Approach Delay (s)		25.5			28.2			15.6			19.7	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			19.9									
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			63.3									
Intersection Capacity Utilization			55.8%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Existing Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	910	9	63	1202	440	44	48	70	653	8	251
Future Volume (vph)	185	910	9	63	1202	440	44	48	70	653	8	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3534		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.97	0.97	0.97	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	210	1034	10	65	1239	454	56	62	90	710	9	273
RTOR Reduction (vph)	0	1	0	0	0	179	0	0	82	0	0	203
Lane Group Flow (vph)	210	1043	0	65	1239	275	56	62	8	362	357	70
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.3	33.7		7.0	28.4	28.4	6.8	6.8	6.8	20.7	20.7	20.7
Effective Green, g (s)	13.3	34.7		8.0	29.4	29.4	7.8	7.8	7.8	21.7	21.7	21.7
Actuated g/C Ratio	0.16	0.41		0.10	0.35	0.35	0.09	0.09	0.09	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	279	1456		168	1235	552	163	172	146	433	434	407
v/s Ratio Prot	c0.12	0.30		0.04	c0.35		0.03	c0.03		c0.22	0.21	
v/s Ratio Perm						0.17			0.01			0.04
v/c Ratio	0.75	0.72		0.39	1.00	0.50	0.34	0.36	0.06	0.84	0.82	0.17
Uniform Delay, d1	33.9	20.6		35.8	27.4	21.6	35.8	35.9	34.8	29.6	29.4	24.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	1.7		1.5	26.4	0.7	1.3	1.3	0.2	13.1	11.9	0.2
Delay (s)	44.8	22.4		37.3	53.8	22.3	37.1	37.2	35.0	42.7	41.4	24.5
Level of Service	D	C		D	D	C	D	D	D	D	D	C
Approach Delay (s)		26.1			45.0			36.2			37.2	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			37.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			84.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			78.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↗↗		↗
Traffic Volume (veh/h)	0	961	149	0	1409	1289	0	0	0	849	0	242
Future Volume (veh/h)	0	961	149	0	1409	1289	0	0	0	849	0	242
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1001	0	0	1548	0				894	0	255
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2139	936	0	2169	936				1007	0	463
Arrive On Green	0.00	0.60	0.00	0.00	0.61	0.00				0.29	0.00	0.29
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1001	0	0	1548	0				894	0	255
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	7.3	0.0	0.0	14.0	0.0				11.5	0.0	6.3
Cycle Q Clear(g_c), s	0.0	7.3	0.0	0.0	14.0	0.0				11.5	0.0	6.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2139	936	0	2169	936				1007	0	463
V/C Ratio(X)	0.00	0.47	0.00	0.00	0.71	0.00				0.89	0.00	0.55
Avail Cap(c_a), veh/h	0	2405	1056	0	2436	1056				1007	0	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.1	0.0	0.0	6.2	0.0				15.7	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.9	0.0				9.8	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.5	0.0	0.0	6.9	0.0				6.8	0.0	2.9
LnGrp Delay(d),s/veh	0.0	5.2	0.0	0.0	7.1	0.0				25.5	0.0	15.3
LnGrp LOS		A			A					C		B
Approach Vol, veh/h		1001			1548						1149	
Approach Delay, s/veh		5.2			7.1						23.2	
Approach LOS		A			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.5		16.0		30.5						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		30.0		12.0		30.0						
Max Q Clear Time (g_c+I1), s		9.3		13.5		16.0						
Green Ext Time (p_c), s		14.1		0.0		10.5						
Intersection Summary												
HCM 2010 Ctrl Delay	11.6											
HCM 2010 LOS	B											

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Existing Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							 
Traffic Volume (vph)	173	1004	0	0	2342	258	0	0	1258	0	0	343
Future Volume (vph)	173	1004	0	0	2342	258	0	0	1258	0	0	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.95			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	3539			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	3539			5085	1583			1611			2787
Peak-hour factor, PHF	0.87	0.87	0.87	0.94	0.94	0.94	0.90	0.90	0.90	0.85	0.85	0.85
Adj. Flow (vph)	199	1154	0	0	2491	274	0	0	1398	0	0	404
RTOR Reduction (vph)	0	0	0	0	0	107	0	0	0	0	0	356
Lane Group Flow (vph)	199	1154	0	0	2491	167	0	0	1398	0	0	48
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	11.1	53.1			39.0	39.0			69.3			6.2
Effective Green, g (s)	13.1	55.1			41.0	41.0			69.3			8.2
Actuated g/C Ratio	0.19	0.80			0.59	0.59			1.00			0.12
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	334	2813			3008	936			1611			329
v/s Ratio Prot	0.11	0.33			0.49							
v/s Ratio Perm						0.11			c0.87			0.02
v/c Ratio	0.60	0.41			0.83	0.18			0.87			0.15
Uniform Delay, d1	25.7	2.2			11.3	6.5			0.0			27.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	2.8	0.1			2.0	0.1			6.6			0.2
Delay (s)	28.5	2.3			13.3	6.6			6.6			27.6
Level of Service	C	A			B	A			A			C
Approach Delay (s)		6.1			12.7			6.6			27.6	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			10.8		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			69.3		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			63.9%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Existing Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	381	1496	169	221	1610	142	349	461	129	132	432	587
Future Volume (veh/h)	381	1496	169	221	1610	142	349	461	129	132	432	587
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	401	1575	178	246	1789	158	406	536	150	142	465	631
Adj No. of Lanes	2	3	1	2	3	1	2	2	0	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.86	0.86	0.86	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	524	2319	905	352	2064	643	430	741	207	241	765	576
Arrive On Green	0.15	0.46	0.45	0.10	0.41	0.41	0.12	0.27	0.27	0.07	0.22	0.21
Sat Flow, veh/h	3442	5085	1583	3442	5085	1583	3442	2735	762	3442	3539	1583
Grp Volume(v), veh/h	401	1575	178	246	1789	158	406	346	340	142	465	631
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1695	1583	1721	1770	1728	1721	1770	1583
Q Serve(g_s), s	11.6	25.4	5.7	7.2	33.6	6.9	12.2	18.4	18.6	4.2	12.3	22.0
Cycle Q Clear(g_c), s	11.6	25.4	5.7	7.2	33.6	6.9	12.2	18.4	18.6	4.2	12.3	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	524	2319	905	352	2064	643	430	479	468	241	765	576
V/C Ratio(X)	0.77	0.68	0.20	0.70	0.87	0.25	0.94	0.72	0.73	0.59	0.61	1.10
Avail Cap(c_a), veh/h	760	2393	928	496	2064	643	430	479	468	430	765	576
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	22.3	10.8	45.2	28.3	20.4	45.2	34.4	34.6	47.0	36.8	33.1
Incr Delay (d2), s/veh	2.8	0.8	0.1	2.5	4.2	0.2	29.8	5.3	5.6	2.3	1.4	66.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	12.0	2.5	3.5	16.4	3.0	7.6	9.7	9.6	2.1	6.2	27.1
LnGrp Delay(d),s/veh	45.2	23.1	10.9	47.7	32.5	20.6	75.0	39.7	40.1	49.2	38.2	99.6
LnGrp LOS	D	C	B	D	C	C	E	D	D	D	D	F
Approach Vol, veh/h	2154		2193				1092			1238		
Approach Delay, s/veh	26.2		33.4				52.9			70.8		
Approach LOS	C		C				D			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	49.5	16.0	25.0	18.9	44.3	10.3	30.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	47.0	12.0	21.0	22.0	39.0	12.0	21.0				
Max Q Clear Time (g_c+I1), s	9.2	27.4	14.2	24.0	13.6	35.6	6.2	20.6				
Green Ext Time (p_c), s	0.4	18.1	0.0	0.0	1.2	3.4	0.2	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	41.2											
HCM 2010 LOS	D											

Appendix D

*Analysis Worksheets for
CIP Cumulative (2035) Conditions*

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Conditions
AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	952	291	368	857	139	276		
Future Volume (veh/h)	952	291	368	857	139	276		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	1035	316	400	932	151	300		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1326	618	504	2585	314	868		
Arrive On Green	0.39	0.37	0.28	0.73	0.18	0.18		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	1035	316	400	932	151	300		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	14.4	8.2	11.2	5.2	4.1	5.7		
Cycle Q Clear(g_c), s	14.4	8.2	11.2	5.2	4.1	5.7		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1326	618	504	2585	314	868		
V/C Ratio(X)	0.78	0.51	0.79	0.36	0.48	0.35		
Avail Cap(c_a), veh/h	1453	677	528	2764	429	971		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.4	12.5	17.8	2.7	19.9	6.8		
Incr Delay (d2), s/veh	2.6	0.7	7.8	0.1	1.1	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.1	3.7	6.5	2.5	2.1	4.4		
LnGrp Delay(d),s/veh	17.0	13.1	25.6	2.7	21.1	7.0		
LnGrp LOS	B	B	C	A	C	A		
Approach Vol, veh/h	1351			1332	451			
Approach Delay, s/veh	16.1			9.6	11.7			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.3	23.0		12.5		41.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.0	21.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	13.2	16.4		7.7		7.2		
Green Ext Time (p_c), s	1.1	2.6		0.8		6.8		
Intersection Summary								
HCM 2010 Ctrl Delay			12.7					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Conditions
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑		↑
Traffic Volume (vph)	959	282	592	1253	0	1139
Future Volume (vph)	959	282	592	1253	0	1139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1042	307	643	1362	0	1238
RTOR Reduction (vph)	0	235	0	0	0	328
Lane Group Flow (vph)	1042	72	643	1362	0	910
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	12.0	12.0	12.0	28.0		23.0
Effective Green, g (s)	14.0	14.0	13.0	30.0		24.0
Actuated g/C Ratio	0.23	0.23	0.22	0.50		0.40
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1186	369	743	1769		644
v/s Ratio Prot	c0.20		0.19	c0.38		
v/s Ratio Perm		0.05				c0.57
v/c Ratio	0.88	0.19	0.87	0.77		1.41
Uniform Delay, d1	22.2	18.5	22.7	12.2		18.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	7.6	0.3	10.3	2.1		195.3
Delay (s)	29.8	18.7	33.0	14.3		213.3
Level of Service	C	B	C	B		F
Approach Delay (s)	27.3			20.3	213.3	
Approach LOS	C			C	F	
Intersection Summary						
HCM 2000 Control Delay			74.4		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.16			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			95.7%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Conditions

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	200	1664	231	0	716	1115	156	375	708	92	0	361
Future Volume (vph)	200	1664	231	0	716	1115	156	375	708	92	0	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	1809	251	0	778	1212	170	408	770	100	0	392
RTOR Reduction (vph)	0	0	116	0	0	0	0	0	0	0	0	87
Lane Group Flow (vph)	217	1809	135	0	778	1212	170	408	770	100	0	305
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	9.9	38.2	38.2		24.3	72.8	10.7	16.5	72.8	6.1		25.8
Effective Green, g (s)	11.4	39.7	39.2		25.8	72.8	12.2	18.0	72.8	7.6		27.3
Actuated g/C Ratio	0.16	0.55	0.54		0.35	1.00	0.17	0.25	1.00	0.10		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	537	1929	852		2270	1583	296	875	1583	358		593
v/s Ratio Prot	0.06	c0.51			0.12		0.10	0.12		0.03		0.19
v/s Ratio Perm			0.09			c0.77			0.49			
v/c Ratio	0.40	0.94	0.16		0.34	0.77	0.57	0.47	0.49	0.28		0.51
Uniform Delay, d1	27.6	15.4	8.5		17.3	0.0	27.9	23.3	0.0	30.1		17.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	9.4	0.1		0.1	3.6	2.7	0.4	1.1	0.4		0.8
Delay (s)	28.1	24.8	8.6		17.4	3.6	30.6	23.7	1.1	30.5		18.4
Level of Service	C	C	A		B	A	C	C	A	C		B
Approach Delay (s)		23.3			9.0			11.6			20.8	
Approach LOS		C			A			B			C	
Intersection Summary												
HCM 2000 Control Delay			15.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			72.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			69.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	189	1958	324	70	1763	32	163	266	144	181	299	157
Future Volume (vph)	189	1958	324	70	1763	32	163	266	144	181	299	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	205	2128	352	76	1916	35	177	289	157	197	325	171
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	205	2128	352	76	1916	35	177	289	157	197	325	171
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.5	31.9	72.2	5.6	28.0	72.2	9.0	9.4	72.2	9.3	9.7	72.2
Effective Green, g (s)	10.5	34.4	72.2	6.6	30.5	72.2	10.0	11.9	72.2	10.3	12.2	72.2
Actuated g/C Ratio	0.15	0.48	1.00	0.09	0.42	1.00	0.14	0.16	1.00	0.14	0.17	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	499	2422	1583	313	2706	1583	691	838	1583	489	859	1583
v/s Ratio Prot	c0.06	c0.42		0.02	0.30		0.04	c0.06		c0.06	0.06	
v/s Ratio Perm			c0.22			0.02			0.10			0.11
v/c Ratio	0.41	0.88	0.22	0.24	0.71	0.02	0.26	0.34	0.10	0.40	0.38	0.11
Uniform Delay, d1	28.0	17.0	0.0	30.5	17.2	0.0	27.8	26.7	0.0	28.2	26.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	4.0	0.3	0.4	0.9	0.0	0.2	0.2	0.1	0.5	0.3	0.1
Delay (s)	28.6	21.0	0.3	30.9	18.0	0.0	28.0	26.9	0.1	28.7	26.9	0.1
Level of Service	C	C	A	C	B	A	C	C	A	C	C	A
Approach Delay (s)		18.9			18.2			20.5			20.8	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			72.2			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			64.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	1473	799	83	1566	392	904	538	51	940	803	285
Future Volume (veh/h)	304	1473	799	83	1566	392	904	538	51	940	803	285
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	330	1601	0	90	1702	0	983	585	0	1022	873	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	472	2152	496	229	1662	375	970	1356	396	1289	858	357
Arrive On Green	0.14	0.34	0.00	0.07	0.26	0.00	0.28	0.27	0.00	0.26	0.24	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	330	1601	0	90	1702	0	983	585	0	1022	873	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	8.4	19.6	0.0	2.2	23.0	0.0	25.0	8.5	0.0	16.9	21.5	0.0
Cycle Q Clear(g_c), s	8.4	19.6	0.0	2.2	23.0	0.0	25.0	8.5	0.0	16.9	21.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	472	2152	496	229	1662	375	970	1356	396	1289	858	357
V/C Ratio(X)	0.70	0.74	0.00	0.39	1.02	0.00	1.01	0.43	0.00	0.79	1.02	0.00
Avail Cap(c_a), veh/h	522	2152	496	543	1662	375	970	1356	396	1411	858	357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	26.1	0.0	39.7	32.8	0.0	31.8	26.9	0.0	30.7	33.6	0.0
Incr Delay (d2), s/veh	3.7	1.4	0.0	1.1	28.4	0.0	32.1	0.2	0.0	2.9	35.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	8.9	0.0	1.1	13.3	0.0	16.1	4.0	0.0	8.1	14.6	0.0
LnGrp Delay(d),s/veh	39.8	27.5	0.0	40.8	61.2	0.0	64.0	27.2	0.0	33.6	68.7	0.0
LnGrp LOS	D	C		D	F		F	C		C	F	
Approach Vol, veh/h		1931			1792			1568			1895	
Approach Delay, s/veh		29.6			60.2			50.2			49.8	
Approach LOS		C			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	25.2	7.9	30.8	27.0	23.0	14.7	24.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	23.0	19.0	12.0	20.0	23.0	19.0	12.0	20.0				
Max Q Clear Time (g_c+I1), s	18.9	10.5	4.2	21.6	27.0	23.5	10.4	25.0				
Green Ext Time (p_c), s	2.0	4.8	0.1	0.0	0.0	0.0	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			47.1									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	0	384	3	0	18	113	1190	8	7	1398	329
Future Volume (vph)	313	0	384	3	0	18	113	1190	8	7	1398	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	1583		1770	1583	3433	3536		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1681	1583		1770	1583	3433	3536		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	0	417	3	0	20	123	1293	9	8	1520	358
RTOR Reduction (vph)	0	0	190	0	0	19	0	0	0	0	0	97
Lane Group Flow (vph)	170	170	227	0	3	1	123	1302	0	8	1520	261
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	11.0	11.0	19.4		2.1	2.1	8.4	47.2		1.2	40.0	40.0
Effective Green, g (s)	12.0	12.0	21.4		3.1	3.1	9.4	49.7		2.2	42.5	42.5
Actuated g/C Ratio	0.15	0.15	0.28		0.04	0.04	0.12	0.64		0.03	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	260	260	498		70	63	416	2267		50	1940	868
v/s Ratio Prot	c0.10	0.10	c0.06		c0.00		0.04	0.37		0.00	c0.43	
v/s Ratio Perm			0.09			0.00						0.16
v/c Ratio	0.65	0.65	0.46		0.04	0.01	0.30	0.57		0.16	0.78	0.30
Uniform Delay, d1	30.8	30.8	23.2		35.8	35.7	31.0	7.9		36.7	13.9	9.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.8	5.8	0.7		0.3	0.1	0.4	0.4		1.5	2.1	0.2
Delay (s)	36.6	36.6	23.9		36.0	35.8	31.4	8.2		38.3	16.0	9.7
Level of Service	D	D	C		D	D	C	A		D	B	A
Approach Delay (s)		29.6			35.8			10.2			14.9	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.1									
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			77.5									
Intersection Capacity Utilization			75.8%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Conditions
AM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	137	452	880	459	893	804
Future Volume (vph)	137	452	880	459	893	804
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.91	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3215	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3215	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	491	957	499	971	874
RTOR Reduction (vph)	202	196	0	306	0	0
Lane Group Flow (vph)	193	49	957	193	971	874
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	8.8	8.8	17.0	17.0	17.6	38.6
Effective Green, g (s)	9.8	11.1	19.3	19.3	19.9	39.6
Actuated g/C Ratio	0.18	0.20	0.35	0.35	0.36	0.71
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	568	288	1232	551	1233	2529
v/s Ratio Prot	c0.06		c0.27		c0.28	0.25
v/s Ratio Perm		0.03		0.12		
v/c Ratio	0.34	0.17	0.78	0.35	0.79	0.35
Uniform Delay, d1	20.0	18.3	16.1	13.4	15.9	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3	3.1	0.4	3.4	0.1
Delay (s)	20.3	18.6	19.3	13.8	19.3	3.1
Level of Service	C	B	B	B	B	A
Approach Delay (s)	19.7		17.4			11.6
Approach LOS	B		B			B
Intersection Summary						
HCM 2000 Control Delay			15.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			55.4		Sum of lost time (s)	6.4
Intersection Capacity Utilization			68.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  		 	  	
Traffic Volume (vph)	233	731	286	65	183	77	375	427	34	80	334	55
Future Volume (vph)	233	731	286	65	183	77	375	427	34	80	334	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	253	795	311	71	199	84	408	464	37	87	363	60
RTOR Reduction (vph)	0	0	214	0	0	66	0	0	25	0	0	50
Lane Group Flow (vph)	253	795	97	71	199	18	408	464	12	87	363	10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	12.3	18.4	18.4	5.1	11.2	11.2	17.5	20.6	20.6	5.6	8.7	8.7
Effective Green, g (s)	13.3	20.4	20.4	6.1	13.9	13.9	18.5	22.9	21.6	6.6	11.0	11.0
Actuated g/C Ratio	0.20	0.31	0.31	0.09	0.21	0.21	0.28	0.35	0.33	0.10	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	358	1098	491	164	748	334	498	1772	520	356	881	274
v/s Ratio Prot	c0.14	c0.22		0.04	0.06		c0.23	0.09		0.02	c0.07	
v/s Ratio Perm			0.06			0.01			0.01			0.01
v/c Ratio	0.71	0.72	0.20	0.43	0.27	0.05	0.82	0.26	0.02	0.24	0.41	0.04
Uniform Delay, d1	24.4	20.1	16.6	28.2	21.6	20.7	22.0	15.3	14.9	27.3	24.5	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.2	2.4	0.2	1.8	0.2	0.1	10.1	0.1	0.0	0.4	0.3	0.1
Delay (s)	30.6	22.5	16.8	30.0	21.8	20.7	32.2	15.4	14.9	27.6	24.8	23.0
Level of Service	C	C	B	C	C	C	C	B	B	C	C	C
Approach Delay (s)		22.7			23.2			22.9			25.0	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.2				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			65.7				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			64.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	329	12	18	36	20	45	12	1074	0	38	753	109
Future Volume (vph)	329	12	18	36	20	45	12	1074	0	38	753	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1673			1805	1583	1770	3539		1770	3472	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1673			1805	1583	1770	3539		1770	3472	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	13	20	39	22	49	13	1167	0	41	818	118
RTOR Reduction (vph)	0	6	0	0	0	43	0	0	0	0	12	0
Lane Group Flow (vph)	197	188	0	0	61	6	13	1167	0	41	924	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	10.8	10.8			6.2	6.2	1.2	26.0		2.8	27.6	
Effective Green, g (s)	11.8	11.8			7.2	7.2	2.2	28.0		3.8	29.6	
Actuated g/C Ratio	0.19	0.19			0.12	0.12	0.04	0.45		0.06	0.48	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	320	319			210	184	63	1603		108	1662	
v/s Ratio Prot	c0.12	0.11			c0.03		0.01	c0.33		c0.02	0.27	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.59			0.29	0.03	0.21	0.73		0.38	0.56	
Uniform Delay, d1	22.9	22.8			25.0	24.2	29.0	13.8		27.9	11.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	2.9			0.8	0.1	1.6	1.7		2.2	0.4	
Delay (s)	26.4	25.7			25.7	24.3	30.6	15.5		30.1	11.8	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		26.1			25.1			15.6			12.6	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.5									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			61.8									
Intersection Capacity Utilization			54.9%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Cumulative Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	76	10	27	25	1	7	41	1084	26	8	778	27
Future Volume (vph)	76	10	27	25	1	7	41	1084	26	8	778	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1777	1583	1770	3527		1770	3522	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1777	1583	1770	3527		1770	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	11	29	27	1	8	45	1178	28	9	846	29
RTOR Reduction (vph)	0	0	25	0	0	8	0	1	0	0	2	0
Lane Group Flow (vph)	0	94	4	0	28	0	45	1205	0	9	873	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		7.0	7.0		2.4	2.4	2.8	33.5		1.1	31.8	
Effective Green, g (s)		8.0	8.0		3.4	3.4	3.8	35.5		2.1	33.8	
Actuated g/C Ratio		0.13	0.13		0.06	0.06	0.06	0.59		0.04	0.56	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		237	211		100	89	112	2086		61	1984	
v/s Ratio Prot		c0.05			c0.02		c0.03	c0.34		0.01	0.25	
v/s Ratio Perm			0.00			0.00						
v/c Ratio		0.40	0.02		0.28	0.01	0.40	0.58		0.15	0.44	
Uniform Delay, d1		23.8	22.6		27.1	26.7	27.0	7.6		28.1	7.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		1.5	0.0	2.4	0.4		1.1	0.2	
Delay (s)		24.9	22.6		28.7	26.7	29.4	8.0		29.2	7.8	
Level of Service		C	C		C	C	C	A		C	A	
Approach Delay (s)		24.4			28.2			8.8			8.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay		9.6			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		60.0			Sum of lost time (s)			11.0				
Intersection Capacity Utilization		52.1%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	1344	16	70	658	916	16	8	29	645	11	204
Future Volume (vph)	223	1344	16	70	658	916	16	8	29	645	11	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	1461	17	76	715	996	17	9	32	701	12	222
RTOR Reduction (vph)	0	1	0	0	0	453	0	0	30	0	0	174
Lane Group Flow (vph)	242	1477	0	76	715	543	17	9	2	358	355	48
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.1	38.6		7.5	34.0	34.0	4.0	4.0	4.0	17.1	17.1	17.1
Effective Green, g (s)	13.1	39.6		8.5	35.0	35.0	5.0	5.0	5.0	18.1	18.1	18.1
Actuated g/C Ratio	0.16	0.48		0.10	0.42	0.42	0.06	0.06	0.06	0.22	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	278	1681		180	1488	665	106	111	95	365	367	344
v/s Ratio Prot	c0.14	c0.42		0.04	0.20		c0.01	0.00		c0.21	0.21	
v/s Ratio Perm						0.34			0.00			0.03
v/c Ratio	0.87	0.88		0.42	0.48	0.82	0.16	0.08	0.02	0.98	0.97	0.14
Uniform Delay, d1	34.2	19.6		35.0	17.5	21.3	37.1	36.9	36.8	32.4	32.3	26.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.3	5.6		1.6	0.2	7.7	0.7	0.3	0.1	41.8	37.9	0.2
Delay (s)	58.5	25.2		36.6	17.7	28.9	37.8	37.2	36.9	74.2	70.2	26.5
Level of Service	E	C		D	B	C	D	D	D	E	E	C
Approach Delay (s)		29.9			24.8			37.2			61.3	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			34.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			83.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			82.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	1013	315	0	1476	1048	0	0	0	842	0	157
Future Volume (veh/h)	0	1013	315	0	1476	1048	0	0	0	842	0	157
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1101	0	0	1604	0				915	0	171
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2159	950	0	2183	950				1067	0	491
Arrive On Green	0.00	0.61	0.00	0.00	1.00	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1101	0	0	1604	0				915	0	171
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	10.6	0.0	0.0	0.0	0.0				15.0	0.0	5.0
Cycle Q Clear(g_c), s	0.0	10.6	0.0	0.0	0.0	0.0				15.0	0.0	5.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2159	950	0	2183	950				1067	0	491
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.73	0.00				0.86	0.00	0.35
Avail Cap(c_a), veh/h	0	2159	950	0	2183	950				1067	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	0.48	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.6	0.0	0.0	0.0	0.0				19.5	0.0	16.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	1.1	0.0				7.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.3	0.0	0.0	0.3	0.0				8.2	0.0	2.2
LnGrp Delay(d),s/veh	0.0	7.5	0.0	0.0	1.1	0.0				26.6	0.0	16.4
LnGrp LOS		A			A					C		B
Approach Vol, veh/h		1101			1604						1086	
Approach Delay, s/veh		7.5			1.1						25.0	
Approach LOS		A			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		39.0		21.0		39.0						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		35.0		17.0		35.0						
Max Q Clear Time (g_c+I1), s		12.6		17.0		2.0						
Green Ext Time (p_c), s		15.8		0.0		20.4						
Intersection Summary												
HCM 2010 Ctrl Delay			9.8									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							 
Traffic Volume (vph)	205	1042	0	0	1543	271	0	0	1385	0	0	981
Future Volume (vph)	205	1042	0	0	1543	271	0	0	1385	0	0	981
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	1133	0	0	1677	295	0	0	1505	0	0	1066
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	0	0	0	573
Lane Group Flow (vph)	223	1133	0	0	1677	122	0	0	1505	0	0	493
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	10.9	36.7			22.8	22.8			60.0			13.3
Effective Green, g (s)	12.9	38.7			24.8	24.8			60.0			15.3
Actuated g/C Ratio	0.22	0.65			0.41	0.41			1.00			0.26
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	380	4133			2101	654			1611			710
v/s Ratio Prot	0.13	0.18			0.33							
v/s Ratio Perm						0.08			c0.93			0.18
v/c Ratio	0.59	0.27			0.80	0.19			0.93			0.69
Uniform Delay, d1	21.2	4.6			15.4	11.2			0.0			20.2
Progression Factor	1.15	1.13			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.7	0.0			3.3	0.6			11.4			3.0
Delay (s)	26.1	5.2			18.7	11.8			11.4			23.2
Level of Service	C	A			B	B			B			C
Approach Delay (s)		8.7			17.7			11.4			23.2	
Approach LOS		A			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			15.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			60.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			70.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Cumulative Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	386	1826	216	109	1336	65	316	562	74	55	169	162
Future Volume (veh/h)	386	1826	216	109	1336	65	316	562	74	55	169	162
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	420	1985	235	118	1452	71	343	611	80	60	184	176
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	575	2556	1001	242	2558	125	492	844	367	175	745	486
Arrive On Green	0.17	0.50	0.49	0.07	0.41	0.41	0.14	0.24	0.23	0.05	0.15	0.14
Sat Flow, veh/h	3442	5085	1583	3442	6306	308	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	420	1985	235	118	1106	417	343	611	80	60	184	176
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1808	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	8.8	24.3	4.9	2.5	13.6	13.6	7.2	12.1	3.1	1.3	2.4	6.6
Cycle Q Clear(g_c), s	8.8	24.3	4.9	2.5	13.6	13.6	7.2	12.1	3.1	1.3	2.4	6.6
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	575	2556	1001	242	1950	734	492	844	367	175	745	486
V/C Ratio(X)	0.73	0.78	0.23	0.49	0.57	0.57	0.70	0.72	0.22	0.34	0.25	0.36
Avail Cap(c_a), veh/h	767	2556	1001	587	2080	783	677	844	367	587	967	555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	15.5	6.0	34.1	17.5	17.5	31.1	26.7	23.7	35.0	28.8	20.6
Incr Delay (d2), s/veh	2.4	1.6	0.1	1.5	0.3	0.9	1.9	3.1	0.3	1.2	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	11.6	2.1	1.2	6.0	6.9	3.6	6.3	1.4	0.6	1.2	2.9
LnGrp Delay(d),s/veh	32.5	17.0	6.2	35.7	17.8	18.4	33.0	29.8	24.0	36.1	29.0	21.0
LnGrp LOS	C	B	A	D	B	B	C	C	C	D	C	C
Approach Vol, veh/h	2640		1641				1034			420		
Approach Delay, s/veh	18.5		19.2				30.4			26.7		
Approach LOS	B		B				C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	40.3	13.9	13.7	15.7	32.9	6.9	20.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	35.0	14.0	13.0	16.0	31.0	12.0	15.0				
Max Q Clear Time (g_c+I1), s	4.5	26.3	9.2	8.6	10.8	15.6	3.3	14.1				
Green Ext Time (p_c), s	0.2	8.7	0.7	1.1	0.9	13.4	0.1	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			21.5									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Plus Project Conditions
School PM Peak

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	704	255	177	1051	114	822		
Future Volume (veh/h)	704	255	177	1051	114	822		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	765	277	192	1142	124	893		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1091	508	435	2224	476	901		
Arrive On Green	0.32	0.30	0.25	0.63	0.27	0.27		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	765	277	192	1142	124	893		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	9.6	7.0	4.4	8.6	2.7	13.0		
Cycle Q Clear(g_c), s	9.6	7.0	4.4	8.6	2.7	13.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1091	508	435	2224	476	901		
V/C Ratio(X)	0.70	0.54	0.44	0.51	0.26	0.99		
Avail Cap(c_a), veh/h	1262	588	769	3068	476	901		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.4	13.5	15.5	4.9	13.9	7.3		
Incr Delay (d2), s/veh	1.5	0.9	0.7	0.2	0.3	27.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.7	3.2	2.2	4.2	1.3	18.6		
LnGrp Delay(d),s/veh	15.9	14.4	16.2	5.1	14.2	35.1		
LnGrp LOS	B	B	B	A	B	D		
Approach Vol, veh/h	1042			1334	1017			
Approach Delay, s/veh	15.5			6.7	32.6			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.9	17.6		16.0		32.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	20.0	16.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	6.4	11.6		15.0		10.6		
Green Ext Time (p_c), s	5.3	2.0		0.0		7.0		
Intersection Summary								
HCM 2010 Ctrl Delay			17.2					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Plus Project Conditions
School PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↑
Traffic Volume (vph)	796	862	884	1208	0	1116
Future Volume (vph)	796	862	884	1208	0	1116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	937	961	1313	0	1213
RTOR Reduction (vph)	0	526	0	0	0	300
Lane Group Flow (vph)	865	411	961	1313	0	913
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	37.0	37.0	35.0	76.0		65.0
Effective Green, g (s)	39.0	39.0	36.0	78.0		66.0
Actuated g/C Ratio	0.26	0.26	0.24	0.52		0.44
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1322	411	823	1840		708
v/s Ratio Prot	0.17		c0.28	0.37		
v/s Ratio Perm		c0.26				c0.57
v/c Ratio	0.65	1.00	1.17	0.71		1.29
Uniform Delay, d1	49.5	55.5	57.0	27.5		42.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	44.0	88.4	1.3		140.7
Delay (s)	50.7	99.4	145.4	28.8		182.7
Level of Service	D	F	F	C		F
Approach Delay (s)	76.0			78.1	182.7	
Approach LOS	E			E	F	
Intersection Summary						
HCM 2000 Control Delay			101.4		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.18			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			91.1%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	163	1419	341	0	1306	1053	179	410	578	340	0	459
Future Volume (vph)	163	1419	341	0	1306	1053	179	410	578	340	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	1542	371	0	1420	1145	195	446	628	370	0	499
RTOR Reduction (vph)	0	0	180	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	177	1542	191	0	1420	1145	195	446	628	370	0	441
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	9.9	35.7	35.7		21.8	71.4	11.0	12.5	71.4	11.2		26.6
Effective Green, g (s)	11.4	37.2	36.7		23.3	71.4	12.5	14.0	71.4	12.7		28.1
Actuated g/C Ratio	0.16	0.52	0.51		0.33	1.00	0.18	0.20	1.00	0.18		0.39
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	548	1843	813		2091	1583	309	693	1583	610		623
v/s Ratio Prot	0.05	c0.44			0.22		0.11	0.13		0.11		0.28
v/s Ratio Perm			0.12			c0.72			0.40			
v/c Ratio	0.32	0.84	0.23		0.68	0.72	0.63	0.64	0.40	0.61		0.71
Uniform Delay, d1	26.6	14.5	9.6		20.8	0.0	27.3	26.4	0.0	27.0		18.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	3.5	0.1		0.9	2.9	4.2	2.1	0.7	1.7		3.7
Delay (s)	26.9	18.0	9.7		21.7	2.9	31.5	28.5	0.7	28.8		21.9
Level of Service	C	B	A		C	A	C	C	A	C		C
Approach Delay (s)		17.3			13.3			15.2			24.8	
Approach LOS		B			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			16.4									
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			71.4									
Intersection Capacity Utilization			70.3%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Plus Project Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	251	1527	409	170	1775	59	455	453	219	145	558	159
Future Volume (vph)	251	1527	409	170	1775	59	455	453	219	145	558	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	273	1660	445	185	1929	64	495	492	238	158	607	173
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	273	1660	445	185	1929	64	495	492	238	158	607	173
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	10.5	24.5	72.4	9.1	23.1	72.4	11.2	14.3	72.4	8.5	11.6	72.4
Effective Green, g (s)	11.5	27.0	72.4	10.1	25.6	72.4	12.2	16.8	72.4	9.5	14.1	72.4
Actuated g/C Ratio	0.16	0.37	1.00	0.14	0.35	1.00	0.17	0.23	1.00	0.13	0.19	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	545	1896	1583	478	2265	1583	840	1179	1583	450	990	1583
v/s Ratio Prot	c0.08	c0.33		0.05	0.30		c0.10	0.10		0.05	c0.12	
v/s Ratio Perm			c0.28			0.04			0.15			0.11
v/c Ratio	0.50	0.88	0.28	0.39	0.85	0.04	0.59	0.42	0.15	0.35	0.61	0.11
Uniform Delay, d1	27.8	21.1	0.0	28.3	21.6	0.0	27.8	23.6	0.0	28.6	26.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	4.9	0.4	0.5	3.3	0.0	1.1	0.2	0.2	0.5	1.1	0.1
Delay (s)	28.6	26.0	0.4	28.9	24.9	0.0	28.9	23.9	0.2	29.1	27.8	0.1
Level of Service	C	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s)		21.5			24.5			21.3			22.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			22.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			72.4			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			67.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	1254	891	322	1438	601	538	612	79	790	1071	409
Future Volume (veh/h)	328	1254	891	322	1438	601	538	612	79	790	1071	409
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	357	1363	0	350	1563	0	585	665	0	859	1164	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	493	1683	380	496	1650	372	616	1533	451	1096	1208	514
Arrive On Green	0.15	0.26	0.00	0.14	0.26	0.00	0.18	0.30	0.00	0.22	0.34	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	357	1363	0	350	1563	0	585	665	0	859	1164	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.2	17.8	0.0	8.7	21.4	0.0	15.0	9.4	0.0	14.5	28.8	0.0
Cycle Q Clear(g_c), s	9.2	17.8	0.0	8.7	21.4	0.0	15.0	9.4	0.0	14.5	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	493	1683	380	496	1650	372	616	1533	451	1096	1208	514
V/C Ratio(X)	0.72	0.81	0.00	0.71	0.95	0.00	0.95	0.43	0.00	0.78	0.96	0.00
Avail Cap(c_a), veh/h	518	1683	380	539	1650	372	616	1533	451	1176	1208	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	30.8	0.0	36.4	32.6	0.0	36.3	25.1	0.0	32.9	28.9	0.0
Incr Delay (d2), s/veh	4.7	3.1	0.0	3.8	12.0	0.0	24.3	0.2	0.0	3.3	17.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.2	0.0	4.4	10.8	0.0	9.2	4.4	0.0	7.0	17.0	0.0
LnGrp Delay(d),s/veh	41.0	33.9	0.0	40.2	44.6	0.0	60.6	25.3	0.0	36.2	46.6	0.0
LnGrp LOS	D	C		D	D		E	C		D	D	
Approach Vol, veh/h		1720			1913			1250			2023	
Approach Delay, s/veh		35.4			43.8			41.8			42.2	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.6	28.4	14.9	24.5	18.0	32.0	15.3	24.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	19.0	23.0	12.0	20.0	14.0	28.0	12.0	20.0				
Max Q Clear Time (g_c+I1), s	16.5	11.4	10.7	19.8	17.0	30.8	11.2	23.4				
Green Ext Time (p_c), s	1.1	4.6	0.2	0.2	0.0	0.0	0.1	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.9									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	5	204	23	23	50	304	1197	3	5	1687	549
Future Volume (vph)	210	5	204	23	23	50	304	1197	3	5	1687	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	5	222	25	25	54	330	1301	3	5	1834	597
RTOR Reduction (vph)	0	0	81	0	0	51	0	0	0	0	0	95
Lane Group Flow (vph)	116	117	141	0	50	3	330	1304	0	5	1834	502
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	13.2	13.2	29.8		7.2	7.2	16.6	96.0		1.2	80.6	80.6
Effective Green, g (s)	14.2	14.2	31.8		8.2	8.2	17.6	98.5		2.2	83.1	83.1
Actuated g/C Ratio	0.11	0.11	0.24		0.06	0.06	0.13	0.74		0.02	0.62	0.62
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	178	179	412		111	97	452	2608		29	2201	984
v/s Ratio Prot	0.07	c0.07	0.05		c0.03		c0.10	0.37		0.00	c0.52	
v/s Ratio Perm			0.04			0.00						0.32
v/c Ratio	0.65	0.65	0.34		0.45	0.03	0.73	0.50		0.17	0.83	0.51
Uniform Delay, d1	57.3	57.3	42.2		60.5	59.0	55.7	7.3		64.8	19.8	14.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.3	8.3	0.5		2.9	0.1	6.0	0.2		2.8	2.9	0.4
Delay (s)	65.6	65.6	42.7		63.4	59.1	61.7	7.5		67.6	22.7	14.4
Level of Service	E	E	D		E	E	E	A		E	C	B
Approach Delay (s)		54.4			61.2			18.4			20.8	
Approach LOS		D			E			B			C	
Intersection Summary												
HCM 2000 Control Delay			24.1									C
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			133.6									
Intersection Capacity Utilization			77.9%									D
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Plus Project Conditions
School PM Peak

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	647	527	837	466	1080	816
Future Volume (vph)	647	527	837	466	1080	816
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.97	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3372	1441	3539	1583	3433	3539
Flt Permitted	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3372	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	573	910	507	1174	887
RTOR Reduction (vph)	30	282	0	359	0	0
Lane Group Flow (vph)	845	119	910	148	1174	887
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	20.0	20.0	18.0	18.0	25.0	47.0
Effective Green, g (s)	21.0	22.3	20.3	20.3	27.3	48.0
Actuated g/C Ratio	0.28	0.30	0.27	0.27	0.36	0.64
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	944	428	957	428	1249	2264
v/s Ratio Prot	c0.25		c0.26		c0.34	0.25
v/s Ratio Perm		0.08		0.09		
v/c Ratio	0.90	0.28	0.95	0.35	0.94	0.39
Uniform Delay, d1	25.9	20.2	26.9	22.0	23.1	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	0.4	18.3	0.5	13.4	0.1
Delay (s)	36.9	20.5	45.2	22.5	36.5	6.6
Level of Service	D	C	D	C	D	A
Approach Delay (s)	31.7		37.1			23.6
Approach LOS	C		D			C
Intersection Summary						
HCM 2000 Control Delay			29.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.91			
Actuated Cycle Length (s)			75.0		Sum of lost time (s)	6.4
Intersection Capacity Utilization			87.9%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	544	478	86	585	162	324	406	62	169	628	349
Future Volume (vph)	153	544	478	86	585	162	324	406	62	169	628	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	591	520	93	636	176	352	441	67	184	683	379
RTOR Reduction (vph)	0	0	370	0	0	131	0	0	48	0	0	305
Lane Group Flow (vph)	166	591	150	93	636	45	352	441	19	184	683	74
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.4	18.1	18.1	7.4	15.1	15.1	16.9	19.2	19.2	9.0	11.3	11.3
Effective Green, g (s)	11.4	20.1	20.1	8.4	17.8	17.8	17.9	21.5	20.2	10.0	13.6	13.6
Actuated g/C Ratio	0.16	0.29	0.29	0.12	0.26	0.26	0.26	0.31	0.29	0.14	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	1020	456	213	903	404	454	1568	458	509	1026	319
v/s Ratio Prot	c0.09	c0.17		0.05	c0.18		c0.20	0.09		0.05	c0.13	
v/s Ratio Perm			0.09			0.03			0.01			0.05
v/c Ratio	0.57	0.58	0.33	0.44	0.70	0.11	0.78	0.28	0.04	0.36	0.67	0.23
Uniform Delay, d1	26.9	21.2	19.5	28.5	23.6	19.9	24.0	18.2	17.8	27.0	25.9	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.8	0.4	1.4	2.5	0.1	8.1	0.1	0.0	0.4	1.6	0.4
Delay (s)	29.7	22.0	19.9	29.9	26.1	20.0	32.1	18.3	17.8	27.4	27.6	24.0
Level of Service	C	C	B	C	C	C	C	B	B	C	C	C
Approach Delay (s)		22.1			25.3			23.9			26.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.4									
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			69.7									
Intersection Capacity Utilization			68.1%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	323	16	28	27	13	57	42	962	0	81	1202	159
Future Volume (vph)	323	16	28	27	13	57	42	962	0	81	1202	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1666			1802	1583	1770	3539		1770	3477	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1666			1802	1583	1770	3539		1770	3477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	17	30	29	14	62	46	1046	0	88	1307	173
RTOR Reduction (vph)	0	4	0	0	0	58	0	0	0	0	7	0
Lane Group Flow (vph)	200	194	0	0	43	4	46	1046	0	88	1473	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	19.6	19.6			6.4	6.4	6.5	52.6		8.4	54.5	
Effective Green, g (s)	20.6	20.6			7.4	7.4	7.5	54.6		9.4	56.5	
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.07	0.53		0.09	0.55	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	333			129	113	128	1876		161	1907	
v/s Ratio Prot	c0.12	0.12			c0.02		0.03	0.30		c0.05	c0.42	
v/s Ratio Perm						0.00						
v/c Ratio	0.60	0.58			0.33	0.04	0.36	0.56		0.55	0.77	
Uniform Delay, d1	37.4	37.3			45.5	44.5	45.5	16.1		44.8	18.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	2.6			1.5	0.1	1.7	0.4		3.8	2.0	
Delay (s)	40.2	39.9			47.0	44.6	47.2	16.5		48.5	20.2	
Level of Service	D	D			D	D	D	B		D	C	
Approach Delay (s)		40.1			45.6			17.8			21.8	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.5									
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			103.0									
Intersection Capacity Utilization			68.5%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	149	19	177	144	8	53	129	820	28	28	1134	35
Future Volume (vph)	149	19	177	144	8	53	129	820	28	28	1134	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1779	1583	1770	3522		1770	3523	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1779	1583	1770	3522		1770	3523	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	21	192	157	9	58	140	891	30	30	1233	38
RTOR Reduction (vph)	0	0	162	0	0	49	0	1	0	0	2	0
Lane Group Flow (vph)	0	183	30	0	166	9	140	920	0	30	1269	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		17.6	17.6		16.4	16.4	14.7	62.8		4.7	52.8	
Effective Green, g (s)		18.6	18.6		17.4	17.4	15.7	64.8		5.7	54.8	
Actuated g/C Ratio		0.16	0.16		0.15	0.15	0.13	0.55		0.05	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		282	250		263	234	236	1942		85	1643	
v/s Ratio Prot		c0.10			c0.09		c0.08	0.26		0.02	c0.36	
v/s Ratio Perm			0.02			0.01						
v/c Ratio		0.65	0.12		0.63	0.04	0.59	0.47		0.35	0.77	
Uniform Delay, d1		46.4	42.4		47.0	42.9	47.9	16.0		54.1	26.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1	0.2		4.9	0.1	4.0	0.2		2.5	2.3	
Delay (s)		51.5	42.7		51.9	42.9	51.9	16.2		56.6	28.5	
Level of Service		D	D		D	D	D	B		E	C	
Approach Delay (s)		47.0			49.6			20.9			29.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.0									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			117.5								11.0	
Intersection Capacity Utilization			65.5%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Future Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	398	1474	17	98	951	742	32	33	99	1152	13	343
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	93	0	0	158
Lane Group Flow (vph)	398	1490	0	98	951	503	32	33	6	588	577	185
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	31.0	62.8		11.2	43.0	43.0	8.2	8.2	8.2	48.0	48.0	48.0
Effective Green, g (s)	32.0	63.8		12.2	44.0	44.0	9.2	9.2	9.2	49.0	49.0	49.0
Actuated g/C Ratio	0.22	0.44		0.08	0.30	0.30	0.06	0.06	0.06	0.34	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	387	1541		147	1065	476	111	117	99	563	565	530
v/s Ratio Prot	c0.22	0.42		0.06	0.27		c0.02	0.02		c0.35	0.34	
v/s Ratio Perm						c0.32			0.00			0.12
v/c Ratio	1.03	0.97		0.67	0.89	1.06	0.29	0.28	0.06	1.04	1.02	0.35
Uniform Delay, d1	57.1	40.2		65.0	48.8	51.1	65.4	65.3	64.4	48.6	48.6	36.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.2	15.6		10.9	9.7	57.0	1.4	1.3	0.3	50.0	43.3	0.4
Delay (s)	110.3	55.8		75.9	58.5	108.1	66.8	66.7	64.7	98.6	91.9	37.0
Level of Service	F	E		E	E	F	E	E	E	F	F	D
Approach Delay (s)		67.3			80.0			65.5			82.0	
Approach LOS		E			F			E			F	
Intersection Summary												
HCM 2000 Control Delay			75.7			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			146.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			90.8%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↖↖		↗
Traffic Volume (veh/h)	0	1145	802	0	1542	1129	0	0	0	892	0	154
Future Volume (veh/h)	0	1145	802	0	1542	1129	0	0	0	892	0	154
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1245	0	0	1676	0				970	0	167
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2112	928	0	2136	928				1103	0	508
Arrive On Green	0.00	0.60	0.00	0.00	0.60	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1245	0	0	1676	0				970	0	167
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	12.7	0.0	0.0	20.7	0.0				15.5	0.0	4.6
Cycle Q Clear(g_c), s	0.0	12.7	0.0	0.0	20.7	0.0				15.5	0.0	4.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2112	928	0	2136	928				1103	0	508
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.78	0.00				0.88	0.00	0.33
Avail Cap(c_a), veh/h	0	2232	982	0	2257	982				1103	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.3	0.0	0.0	8.7	0.0				18.7	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	1.8	0.0				8.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.2	0.0	0.0	10.3	0.0				8.6	0.0	2.1
LnGrp Delay(d),s/veh	0.0	7.7	0.0	0.0	10.5	0.0				27.0	0.0	15.3
LnGrp LOS		A			B					C		B
Approach Vol, veh/h		1245			1676						1137	
Approach Delay, s/veh		7.7			10.5						25.3	
Approach LOS		A			B						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		37.0		21.0		37.0						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		35.0		17.0		35.0						
Max Q Clear Time (g_c+I1), s		14.7		17.5		22.7						
Green Ext Time (p_c), s		15.7		0.0		10.3						
Intersection Summary												
HCM 2010 Ctrl Delay	13.8											
HCM 2010 LOS	B											

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	1008	0	0	2179	668	0	0	478	0	0	512
Future Volume (vph)	331	1008	0	0	2179	668	0	0	478	0	0	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	360	1096	0	0	2368	726	0	0	520	0	0	557
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	0	0	0	519
Lane Group Flow (vph)	360	1096	0	0	2368	565	0	0	520	0	0	38
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	30.9	109.2			75.3	75.3			125.7			6.5
Effective Green, g (s)	32.9	111.2			77.3	77.3			125.7			8.5
Actuated g/C Ratio	0.26	0.88			0.61	0.61			1.00			0.07
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	463	5668			3127	973			1611			188
v/s Ratio Prot	c0.20	0.17			c0.47							
v/s Ratio Perm						0.36			c0.32			0.01
v/c Ratio	0.78	0.19			0.76	0.58			0.32			0.20
Uniform Delay, d1	43.0	1.0			17.4	14.5			0.0			55.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	8.0	0.0			1.1	0.9			0.5			0.5
Delay (s)	51.0	1.0			18.5	15.4			0.5			55.9
Level of Service	D	A			B	B			A			E
Approach Delay (s)		13.4			17.8			0.5			55.9	
Approach LOS		B			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			18.8		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			125.7		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			67.1%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	446	1598	188	244	2164	157	324	478	161	157	732	346
Future Volume (veh/h)	446	1598	188	244	2164	157	324	478	161	157	732	346
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	485	1737	204	265	2352	171	352	520	175	171	796	376
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	548	2380	937	387	2588	188	465	764	333	290	839	504
Arrive On Green	0.16	0.47	0.46	0.11	0.42	0.42	0.14	0.22	0.21	0.08	0.16	0.16
Sat Flow, veh/h	3442	5085	1583	3442	6145	445	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	485	1737	204	265	1838	685	352	520	175	171	796	376
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1784	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	12.1	24.3	5.3	6.5	31.5	31.7	8.7	11.9	8.6	4.2	13.6	14.0
Cycle Q Clear(g_c), s	12.1	24.3	5.3	6.5	31.5	31.7	8.7	11.9	8.6	4.2	13.6	14.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	548	2380	937	387	2024	751	465	764	333	290	839	504
V/C Ratio(X)	0.88	0.73	0.22	0.69	0.91	0.91	0.76	0.68	0.53	0.59	0.95	0.75
Avail Cap(c_a), veh/h	548	2380	937	509	2077	771	509	764	333	509	839	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	18.9	8.4	37.5	23.9	23.9	36.6	31.7	30.8	38.8	36.3	26.8
Incr Delay (d2), s/veh	15.8	1.2	0.1	2.5	6.3	14.8	5.9	2.5	1.5	1.9	19.8	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	11.5	2.3	3.2	15.0	18.5	4.5	6.0	3.9	2.1	7.9	9.0
LnGrp Delay(d),s/veh	52.0	20.1	8.5	40.0	30.1	38.7	42.5	34.2	32.4	40.7	56.1	32.7
LnGrp LOS	D	C	A	D	C	D	D	C	C	D	E	C
Approach Vol, veh/h	2426		2788				1047		1343			
Approach Delay, s/veh	25.5		33.2				36.7		47.6			
Approach LOS	C		C				D		D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	43.1	14.9	17.0	17.0	39.0	10.4	21.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	37.0	12.0	13.0	13.0	36.0	12.0	13.0				
Max Q Clear Time (g_c+I1), s	8.5	26.3	10.7	16.0	14.1	33.7	6.2	13.9				
Green Ext Time (p_c), s	0.4	10.7	0.2	0.0	0.0	1.3	0.3	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	33.7											
HCM 2010 LOS	C											

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Conditions
PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	731	269	247	1640	116	649		
Future Volume (veh/h)	731	269	247	1640	116	649		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	795	292	268	1783	126	705		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1110	517	507	2363	426	868		
Arrive On Green	0.33	0.31	0.29	0.67	0.24	0.24		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	795	292	268	1783	126	705		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	11.1	8.2	6.9	18.3	3.1	13.0		
Cycle Q Clear(g_c), s	11.1	8.2	6.9	18.3	3.1	13.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1110	517	507	2363	426	868		
V/C Ratio(X)	0.72	0.56	0.53	0.75	0.30	0.81		
Avail Cap(c_a), veh/h	1317	614	589	2744	426	868		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	16.0	15.1	16.3	6.0	16.8	8.5		
Incr Delay (d2), s/veh	1.5	1.0	0.9	1.0	0.4	5.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.4	3.8	3.5	9.0	1.6	11.8		
LnGrp Delay(d),s/veh	17.6	16.0	17.1	7.1	17.2	14.4		
LnGrp LOS	B	B	B	A	B	B		
Approach Vol, veh/h	1087			2051	831			
Approach Delay, s/veh	17.1			8.4	14.8			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.5	19.7		16.0		38.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	17.0	19.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	8.9	13.1		15.0		20.3		
Green Ext Time (p_c), s	5.8	2.6		0.0		11.0		
Intersection Summary								
HCM 2010 Ctrl Delay			12.1					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Conditions
PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↑
Traffic Volume (vph)	838	660	993	1888	0	1060
Future Volume (vph)	838	660	993	1888	0	1060
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	911	717	1079	2052	0	1152
RTOR Reduction (vph)	0	478	0	0	0	405
Lane Group Flow (vph)	911	239	1079	2052	0	747
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	21.0	21.0	32.0	57.0		40.0
Effective Green, g (s)	23.0	23.0	33.0	59.0		41.0
Actuated g/C Ratio	0.22	0.22	0.31	0.56		0.39
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1103	343	1068	1969		623
v/s Ratio Prot	0.18		0.31	c0.58		
v/s Ratio Perm		0.15				c0.46
v/c Ratio	0.83	0.70	1.01	1.04		1.20
Uniform Delay, d1	39.6	38.3	36.5	23.5		32.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	5.2	6.1	30.1	32.3		104.7
Delay (s)	44.8	44.4	66.6	55.8		137.2
Level of Service	D	D	E	E		F
Approach Delay (s)	44.6			59.5	137.2	
Approach LOS	D			E	F	
Intersection Summary						
HCM 2000 Control Delay			70.5		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.15			
Actuated Cycle Length (s)			106.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			88.5%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	214	1364	319	0	1723	1456	243	452	556	376	0	462
Future Volume (vph)	214	1364	319	0	1723	1456	243	452	556	376	0	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	1483	347	0	1873	1583	264	491	604	409	0	502
RTOR Reduction (vph)	0	0	164	0	0	0	0	0	0	0	0	42
Lane Group Flow (vph)	233	1483	183	0	1873	1583	264	491	604	409	0	460
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.0	49.0	49.0		34.0	100.8	18.0	23.7	100.8	16.1		36.8
Effective Green, g (s)	12.5	50.5	50.0		35.5	100.8	19.5	25.2	100.8	17.6		38.3
Actuated g/C Ratio	0.12	0.50	0.50		0.35	1.00	0.19	0.25	1.00	0.17		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	425	1773	785		2256	1583	342	884	1583	599		601
v/s Ratio Prot	0.07	0.42			0.29		0.15	0.14		0.12		0.29
v/s Ratio Perm			0.12			c1.00			0.38			
v/c Ratio	0.55	0.84	0.23		0.83	1.00	0.77	0.56	0.38	0.68		0.77
Uniform Delay, d1	41.5	21.6	14.5		29.9	50.4	38.5	32.9	0.0	39.0		27.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.4	3.6	0.2		2.7	22.6	10.3	0.8	0.7	3.2		5.8
Delay (s)	42.9	25.2	14.6		32.6	73.0	48.9	33.7	0.7	42.2		33.1
Level of Service	D	C	B		C	E	D	C	A	D		C
Approach Delay (s)		25.4			51.1			22.0			37.2	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			37.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			100.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			77.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	216	1575	354	190	2423	92	536	525	204	162	478	257
Future Volume (vph)	216	1575	354	190	2423	92	536	525	204	162	478	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	235	1712	385	207	2634	100	583	571	222	176	520	279
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	235	1712	385	207	2634	100	583	571	222	176	520	279
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	11.1	49.0	104.0	10.8	48.7	104.0	15.4	18.0	104.0	10.2	12.8	104.0
Effective Green, g (s)	12.1	51.5	104.0	11.8	51.2	104.0	16.4	20.5	104.0	11.2	15.3	104.0
Actuated g/C Ratio	0.12	0.50	1.00	0.11	0.49	1.00	0.16	0.20	1.00	0.11	0.15	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	399	2518	1583	389	3154	1583	786	1002	1583	369	748	1583
v/s Ratio Prot	c0.07	0.34		0.06	c0.41		c0.12	0.11		0.05	c0.10	
v/s Ratio Perm			c0.24			0.06			0.14			0.18
v/c Ratio	0.59	0.68	0.24	0.53	0.84	0.06	0.74	0.57	0.14	0.48	0.70	0.18
Uniform Delay, d1	43.6	20.0	0.0	43.5	22.8	0.0	41.8	37.8	0.0	43.6	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.7	0.4	1.4	2.0	0.1	3.8	0.7	0.2	1.0	2.8	0.2
Delay (s)	45.8	20.7	0.4	44.9	24.8	0.1	45.6	38.5	0.2	44.6	45.0	0.2
Level of Service	D	C	A	D	C	A	D	D	A	D	D	A
Approach Delay (s)		19.9			25.4			35.3			32.1	
Approach LOS		B			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			26.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			104.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			74.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	1457	793	309	1865	680	655	846	77	810	990	459
Future Volume (veh/h)	306	1457	793	309	1865	680	655	846	77	810	990	459
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	333	1584	0	336	2027	0	712	920	0	880	1076	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	454	1945	449	464	1928	445	656	1418	418	1089	1083	461
Arrive On Green	0.14	0.30	0.00	0.13	0.30	0.00	0.19	0.28	0.00	0.22	0.31	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	333	1584	0	336	2027	0	712	920	0	880	1076	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.6	22.8	0.0	9.3	30.0	0.0	19.0	15.9	0.0	16.6	30.2	0.0
Cycle Q Clear(g_c), s	9.6	22.8	0.0	9.3	30.0	0.0	19.0	15.9	0.0	16.6	30.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	1945	449	464	1928	445	656	1418	418	1089	1083	461
V/C Ratio(X)	0.73	0.81	0.00	0.72	1.05	0.00	1.09	0.65	0.00	0.81	0.99	0.00
Avail Cap(c_a), veh/h	464	1945	449	483	1928	445	656	1418	418	1154	1083	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.3	32.1	0.0	41.4	34.8	0.0	40.3	31.7	0.0	37.0	34.5	0.0
Incr Delay (d2), s/veh	5.8	2.8	0.0	5.1	35.5	0.0	60.6	1.0	0.0	4.2	25.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	10.4	0.0	4.8	17.9	0.0	14.4	7.5	0.0	8.1	18.5	0.0
LnGrp Delay(d),s/veh	47.1	34.9	0.0	46.5	70.3	0.0	101.0	32.7	0.0	41.2	60.3	0.0
LnGrp LOS	D	C		D	F		F	C		D	E	
Approach Vol, veh/h		1917			2363			1632			1956	
Approach Delay, s/veh		37.0			66.9			62.5			51.7	
Approach LOS		D			E			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.7	29.3	15.4	31.3	21.0	32.0	15.7	31.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	21.0	24.0	12.0	27.0	17.0	28.0	12.0	27.0				
Max Q Clear Time (g_c+I1), s	18.6	17.9	11.3	24.8	21.0	32.2	11.6	32.0				
Green Ext Time (p_c), s	1.1	3.8	0.1	2.1	0.0	0.0	0.1	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			54.9									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	7	196	16	16	40	220	1440	5	5	1543	613
Future Volume (vph)	304	7	196	16	16	40	220	1440	5	5	1543	613
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	8	213	17	17	43	239	1565	5	5	1677	666
RTOR Reduction (vph)	0	0	134	0	0	40	0	0	0	0	0	154
Lane Group Flow (vph)	168	170	79	0	34	3	239	1570	0	5	1677	512
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	12.4	12.4	23.4		5.8	5.8	11.0	63.0		1.2	53.2	53.2
Effective Green, g (s)	13.4	13.4	25.4		6.8	6.8	12.0	65.5		2.2	55.7	55.7
Actuated g/C Ratio	0.14	0.14	0.26		0.07	0.07	0.12	0.67		0.02	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	228	230	456		125	109	418	2355		39	2003	896
v/s Ratio Prot	0.10	c0.10	0.02		c0.02		c0.07	0.44		0.00	c0.47	
v/s Ratio Perm			0.03			0.00						0.32
v/c Ratio	0.74	0.74	0.17		0.27	0.03	0.57	0.67		0.13	0.84	0.57
Uniform Delay, d1	40.8	40.8	28.4		43.5	42.7	40.8	9.9		47.2	17.6	13.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.7	11.7	0.2		1.2	0.1	1.9	0.7		1.5	3.2	0.9
Delay (s)	52.5	52.6	28.5		44.6	42.8	42.7	10.6		48.6	20.8	14.6
Level of Service	D	D	C		D	D	D	B		D	C	B
Approach Delay (s)		43.3			43.6			14.8			19.1	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			20.7									
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			98.4									
Intersection Capacity Utilization			74.2%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Conditions
PM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	793	744	818	444	1016	825
Future Volume (vph)	793	744	818	444	1016	825
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.96	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3354	1441	3539	1583	3433	3539
Flt Permitted	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3354	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	862	809	889	483	1104	897
RTOR Reduction (vph)	31	331	0	344	0	0
Lane Group Flow (vph)	1114	195	889	139	1104	897
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	36.9	36.9	25.0	25.0	32.0	61.0
Effective Green, g (s)	37.9	39.2	27.3	27.3	34.3	62.0
Actuated g/C Ratio	0.36	0.37	0.26	0.26	0.32	0.59
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1200	533	912	408	1111	2071
v/s Ratio Prot	c0.33		c0.25		c0.32	0.25
v/s Ratio Perm		0.14		0.09		
v/c Ratio	0.93	0.37	0.97	0.34	0.99	0.43
Uniform Delay, d1	32.7	24.3	39.0	32.0	35.7	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.2	0.4	23.6	0.5	25.3	0.1
Delay (s)	44.9	24.7	62.5	32.5	61.0	12.3
Level of Service	D	C	E	C	E	B
Approach Delay (s)	38.6		52.0			39.2
Approach LOS	D		D			D
Intersection Summary						
HCM 2000 Control Delay			42.5		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			105.9		Sum of lost time (s)	6.4
Intersection Capacity Utilization			92.0%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	643	543	83	601	181	488	683	58	163	638	313
Future Volume (vph)	201	643	543	83	601	181	488	683	58	163	638	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	699	590	90	653	197	530	742	63	177	693	340
RTOR Reduction (vph)	0	0	411	0	0	149	0	0	39	0	0	233
Lane Group Flow (vph)	218	699	179	90	653	48	530	742	24	177	693	107
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.8	27.7	27.7	8.1	21.0	21.0	32.5	36.1	36.1	10.1	13.7	13.7
Effective Green, g (s)	15.8	29.7	29.7	9.1	23.7	23.7	33.5	38.4	37.1	11.1	16.0	16.0
Actuated g/C Ratio	0.16	0.30	0.30	0.09	0.24	0.24	0.34	0.39	0.38	0.11	0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	285	1072	479	164	855	382	605	1992	599	402	859	267
v/s Ratio Prot	c0.12	0.20		0.05	c0.18		c0.30	0.15		0.05	c0.13	
v/s Ratio Perm			0.11			0.03			0.02			0.07
v/c Ratio	0.76	0.65	0.37	0.55	0.76	0.12	0.88	0.37	0.04	0.44	0.81	0.40
Uniform Delay, d1	39.3	29.7	26.8	42.5	34.5	29.0	30.3	21.2	19.2	40.6	39.5	36.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.6	1.4	0.5	3.7	4.1	0.1	13.4	0.1	0.0	0.8	5.6	1.0
Delay (s)	50.9	31.1	27.3	46.2	38.6	29.2	43.7	21.3	19.2	41.3	45.1	37.7
Level of Service	D	C	C	D	D	C	D	C	B	D	D	D
Approach Delay (s)		32.5			37.4			30.1			42.5	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			35.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			98.0				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			80.4%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	302	14	27	25	12	53	47	907	0	71	1358	187
Future Volume (vph)	302	14	27	25	12	53	47	907	0	71	1358	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1665			1802	1583	1770	3539		1770	3475	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1665			1802	1583	1770	3539		1770	3475	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	15	29	27	13	58	51	986	0	77	1476	203
RTOR Reduction (vph)	0	6	0	0	0	54	0	0	0	0	9	0
Lane Group Flow (vph)	187	179	0	0	40	4	51	986	0	77	1670	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	13.1	13.1			5.9	5.9	6.5	48.7		7.3	49.5	
Effective Green, g (s)	14.1	14.1			6.9	6.9	7.5	50.7		8.3	51.5	
Actuated g/C Ratio	0.15	0.15			0.08	0.08	0.08	0.56		0.09	0.57	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	257			136	120	145	1971		161	1966	
v/s Ratio Prot	c0.11	0.11			c0.02		0.03	0.28		c0.04	c0.48	
v/s Ratio Perm						0.00						
v/c Ratio	0.72	0.70			0.29	0.04	0.35	0.50		0.48	0.85	
Uniform Delay, d1	36.6	36.4			39.7	39.0	39.5	12.4		39.3	16.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2	8.0			1.2	0.1	1.5	0.2		2.2	3.6	
Delay (s)	45.7	44.4			41.0	39.1	40.9	12.6		41.5	20.2	
Level of Service	D	D			D	D	D	B		D	C	
Approach Delay (s)		45.1			39.9			14.0			21.1	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.1									
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			91.0									
Intersection Capacity Utilization			73.1%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Cumulative Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	159	20	129	132	7	48	130	779	20	25	1179	39
Future Volume (vph)	159	20	129	132	7	48	130	779	20	25	1179	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1779	1583	1770	3526		1770	3522	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1779	1583	1770	3526		1770	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	173	22	140	143	8	52	141	847	22	27	1282	42
RTOR Reduction (vph)	0	0	118	0	0	45	0	1	0	0	2	0
Lane Group Flow (vph)	0	195	22	0	151	7	141	868	0	27	1322	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		14.0	14.0		11.6	11.6	11.4	50.7		4.4	43.7	
Effective Green, g (s)		15.0	15.0		12.6	12.6	12.4	52.7		5.4	45.7	
Actuated g/C Ratio		0.16	0.16		0.13	0.13	0.13	0.54		0.06	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		276	245		231	206	226	1921		98	1664	
v/s Ratio Prot		c0.11			c0.08		c0.08	0.25		0.02	c0.38	
v/s Ratio Perm			0.01			0.00						
v/c Ratio		0.71	0.09		0.65	0.03	0.62	0.45		0.28	0.79	
Uniform Delay, d1		38.8	35.0		40.0	36.7	39.9	13.3		43.8	21.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.0	0.2		6.5	0.1	5.3	0.2		1.5	2.7	
Delay (s)		46.8	35.2		46.5	36.8	45.2	13.4		45.3	24.2	
Level of Service		D	D		D	D	D	B		D	C	
Approach Delay (s)		41.9			44.0			17.9			24.7	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			25.6									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			96.7								11.0	
Intersection Capacity Utilization			67.6%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	370	1307	18	109	1103	580	48	60	114	1012	12	336
Future Volume (vph)	370	1307	18	109	1103	580	48	60	114	1012	12	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	1421	20	118	1199	630	52	65	124	1100	13	365
RTOR Reduction (vph)	0	1	0	0	0	227	0	0	112	0	0	248
Lane Group Flow (vph)	402	1440	0	118	1199	403	52	65	12	561	552	117
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	19.0	39.3		10.7	31.0	31.0	8.9	8.9	8.9	28.0	28.0	28.0
Effective Green, g (s)	20.0	40.3		11.7	32.0	32.0	9.9	9.9	9.9	29.0	29.0	29.0
Actuated g/C Ratio	0.19	0.39		0.11	0.31	0.31	0.10	0.10	0.10	0.28	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	344	1383		201	1100	492	170	179	152	473	475	446
v/s Ratio Prot	c0.23	c0.41		0.07	0.34		0.03	c0.03		c0.33	0.33	
v/s Ratio Perm						0.25			0.01			0.07
v/c Ratio	1.17	1.04		0.59	1.09	0.82	0.31	0.36	0.08	1.19	1.16	0.26
Uniform Delay, d1	41.5	31.3		43.3	35.5	32.8	43.3	43.5	42.3	37.0	37.0	28.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	102.7	35.7		4.3	55.1	10.2	1.0	1.3	0.2	103.4	94.0	0.3
Delay (s)	144.1	67.0		47.6	90.5	43.0	44.3	44.8	42.6	140.3	131.0	29.0
Level of Service	F	E		D	F	D	D	D	D	F	F	C
Approach Delay (s)		83.9			72.5			43.5			109.3	
Approach LOS		F			E			D			F	
Intersection Summary												
HCM 2000 Control Delay			84.9			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			102.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			96.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑	↑				↑↑		↑
Traffic Volume (veh/h)	0	1094	767	0	1612	1401	0	0	0	1019	0	175
Future Volume (veh/h)	0	1094	767	0	1612	1401	0	0	0	1019	0	175
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1189	0	0	1752	0				1108	0	190
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2174	956	0	2198	956				1043	0	480
Arrive On Green	0.00	0.61	0.00	0.00	0.62	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1189	0	0	1752	0				1108	0	190
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	11.3	0.0	0.0	21.6	0.0				17.6	0.0	5.5
Cycle Q Clear(g_c), s	0.0	11.3	0.0	0.0	21.6	0.0				17.6	0.0	5.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2174	956	0	2198	956				1043	0	480
V/C Ratio(X)	0.00	0.55	0.00	0.00	0.80	0.00				1.06	0.00	0.40
Avail Cap(c_a), veh/h	0	2292	1009	0	2317	1009				1043	0	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.5	0.0	0.0	8.3	0.0				20.2	0.0	16.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	1.9	0.0				45.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.5	0.0	0.0	10.8	0.0				14.9	0.0	2.4
LnGrp Delay(d),s/veh	0.0	6.8	0.0	0.0	10.2	0.0				66.1	0.0	16.5
LnGrp LOS		A			B					F		B
Approach Vol, veh/h		1189			1752						1298	
Approach Delay, s/veh		6.8			10.2						58.8	
Approach LOS		A			B						E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		38.1		20.0		38.1						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		36.0		16.0		36.0						
Max Q Clear Time (g_c+I1), s		13.3		19.6		23.6						
Green Ext Time (p_c), s		17.2		0.0		10.5						
Intersection Summary												
HCM 2010 Ctrl Delay			24.1									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	1079	0	0	2547	527	0	0	1179	0	0	465
Future Volume (vph)	288	1079	0	0	2547	527	0	0	1179	0	0	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	1173	0	0	2768	573	0	0	1282	0	0	505
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	0	0	0	431
Lane Group Flow (vph)	313	1173	0	0	2768	412	0	0	1282	0	0	74
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	18.6	79.7			58.1	58.1			97.9			8.2
Effective Green, g (s)	20.6	81.7			60.1	60.1			97.9			10.2
Actuated g/C Ratio	0.21	0.83			0.61	0.61			1.00			0.10
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	372	5347			3121	971			1611			290
v/s Ratio Prot	0.18	0.18			c0.54							
v/s Ratio Perm						0.26			c0.80			0.03
v/c Ratio	0.84	0.22			0.89	0.42			0.80			0.26
Uniform Delay, d1	37.1	1.6			16.0	9.9			0.0			40.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	15.7	0.0			3.4	0.3			4.2			0.5
Delay (s)	52.7	1.7			19.4	10.2			4.2			40.8
Level of Service	D	A			B	B			A			D
Approach Delay (s)		12.4			17.9			4.2			40.8	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			15.7		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			97.9		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			72.1%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Cumulative Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	429	1599	188	212	2221	144	389	494	164	183	783	465
Future Volume (veh/h)	429	1599	188	212	2221	144	389	494	164	183	783	465
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	466	1738	204	230	2414	157	423	537	178	199	851	505
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	499	2358	946	350	2605	169	499	797	348	318	878	494
Arrive On Green	0.14	0.46	0.45	0.10	0.42	0.42	0.14	0.23	0.22	0.09	0.17	0.17
Sat Flow, veh/h	3442	5085	1583	3442	6196	402	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	466	1738	204	230	1871	700	423	537	178	199	851	505
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1792	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	12.0	25.0	5.3	5.8	33.1	33.4	10.8	12.4	8.9	5.0	14.9	15.0
Cycle Q Clear(g_c), s	12.0	25.0	5.3	5.8	33.1	33.4	10.8	12.4	8.9	5.0	14.9	15.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	499	2358	946	350	2021	753	499	797	348	318	878	494
V/C Ratio(X)	0.93	0.74	0.22	0.66	0.93	0.93	0.85	0.67	0.51	0.63	0.97	1.02
Avail Cap(c_a), veh/h	499	2358	946	499	2035	759	499	797	348	499	878	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	19.6	8.3	38.8	24.7	24.7	37.4	31.7	30.8	39.2	36.9	30.9
Incr Delay (d2), s/veh	25.0	1.2	0.1	2.1	7.9	17.7	12.9	2.2	1.3	2.0	23.0	46.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	11.9	2.4	2.8	16.0	20.1	6.0	6.3	4.0	2.5	8.8	18.5
LnGrp Delay(d),s/veh	63.0	20.8	8.5	40.9	32.5	42.5	50.3	34.0	32.0	41.3	59.8	77.1
LnGrp LOS	E	C	A	D	C	D	D	C	C	D	E	F
Approach Vol, veh/h	2408				2801				1138			
Approach Delay, s/veh	27.9				35.7				39.8			
Approach LOS	C				D				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	43.6	16.0	18.0	16.0	39.7	11.3	22.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	36.0	12.0	14.0	12.0	36.0	12.0	14.0				
Max Q Clear Time (g_c+I1), s	7.8	27.0	12.8	17.0	14.0	35.4	7.0	14.4				
Green Ext Time (p_c), s	0.4	9.0	0.0	0.0	0.0	0.4	0.3	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	39.3											
HCM 2010 LOS	D											

Appendix E

*Analysis Worksheets for
CIP Cumulative (2035) plus Proposed Project Conditions*

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Plus Project Conditions
AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	952	294	372	857	141	279		
Future Volume (veh/h)	952	294	372	857	141	279		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	1035	320	404	932	153	303		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1324	617	505	2583	315	869		
Arrive On Green	0.39	0.37	0.28	0.73	0.18	0.18		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	1035	320	404	932	153	303		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	14.4	8.3	11.4	5.2	4.2	5.8		
Cycle Q Clear(g_c), s	14.4	8.3	11.4	5.2	4.2	5.8		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1324	617	505	2583	315	869		
V/C Ratio(X)	0.78	0.52	0.80	0.36	0.49	0.35		
Avail Cap(c_a), veh/h	1447	674	526	2753	427	969		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.5	12.6	17.9	2.7	20.0	6.8		
Incr Delay (d2), s/veh	2.6	0.7	8.3	0.1	1.2	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.2	3.8	6.7	2.5	2.1	4.5		
LnGrp Delay(d),s/veh	17.1	13.3	26.2	2.8	21.1	7.0		
LnGrp LOS	B	B	C	A	C	A		
Approach Vol, veh/h	1355			1336	456			
Approach Delay, s/veh	16.2			9.9	11.8			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.4	23.0		12.6		41.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.0	21.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	13.4	16.4		7.8		7.2		
Green Ext Time (p_c), s	1.0	2.6		0.8		6.8		
Intersection Summary								
HCM 2010 Ctrl Delay			12.9					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Plus Project Conditions
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↑
Traffic Volume (vph)	962	282	592	1257	0	1139
Future Volume (vph)	962	282	592	1257	0	1139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1046	307	643	1366	0	1238
RTOR Reduction (vph)	0	235	0	0	0	328
Lane Group Flow (vph)	1046	72	643	1366	0	910
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	12.0	12.0	12.0	28.0		23.0
Effective Green, g (s)	14.0	14.0	13.0	30.0		24.0
Actuated g/C Ratio	0.23	0.23	0.22	0.50		0.40
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1186	369	743	1769		644
v/s Ratio Prot	c0.21		0.19	c0.39		
v/s Ratio Perm		0.05				c0.57
v/c Ratio	0.88	0.19	0.87	0.77		1.41
Uniform Delay, d1	22.2	18.5	22.7	12.2		18.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	8.0	0.3	10.3	2.2		195.3
Delay (s)	30.2	18.7	33.0	14.4		213.3
Level of Service	C	B	C	B		F
Approach Delay (s)	27.6			20.3	213.3	
Approach LOS	C			C	F	
Intersection Summary						
HCM 2000 Control Delay			74.4		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.16			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			95.8%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	201	1665	234	0	717	1115	156	375	708	92	0	362
Future Volume (vph)	201	1665	234	0	717	1115	156	375	708	92	0	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	218	1810	254	0	779	1212	170	408	770	100	0	393
RTOR Reduction (vph)	0	0	117	0	0	0	0	0	0	0	0	87
Lane Group Flow (vph)	218	1810	137	0	779	1212	170	408	770	100	0	306
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	9.9	38.2	38.2		24.3	72.8	10.7	16.5	72.8	6.1		25.8
Effective Green, g (s)	11.4	39.7	39.2		25.8	72.8	12.2	18.0	72.8	7.6		27.3
Actuated g/C Ratio	0.16	0.55	0.54		0.35	1.00	0.17	0.25	1.00	0.10		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	537	1929	852		2270	1583	296	875	1583	358		593
v/s Ratio Prot	0.06	c0.51			0.12		0.10	0.12		0.03		0.19
v/s Ratio Perm			0.09			c0.77			0.49			
v/c Ratio	0.41	0.94	0.16		0.34	0.77	0.57	0.47	0.49	0.28		0.52
Uniform Delay, d1	27.7	15.4	8.5		17.3	0.0	27.9	23.3	0.0	30.1		17.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	9.4	0.1		0.1	3.6	2.7	0.4	1.1	0.4		0.8
Delay (s)	28.2	24.8	8.6		17.4	3.6	30.6	23.7	1.1	30.5		18.4
Level of Service	C	C	A		B	A	C	C	A	C		B
Approach Delay (s)		23.3			9.0			11.6			20.8	
Approach LOS		C			A			B			C	
Intersection Summary												
HCM 2000 Control Delay			15.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			72.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			69.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	190	1958	324	71	1763	32	163	267	145	181	300	158
Future Volume (vph)	190	1958	324	71	1763	32	163	267	145	181	300	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	2128	352	77	1916	35	177	290	158	197	326	172
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	207	2128	352	77	1916	35	177	290	158	197	326	172
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	9.5	31.9	72.3	5.7	28.1	72.3	9.0	9.4	72.3	9.3	9.7	72.3
Effective Green, g (s)	10.5	34.4	72.3	6.7	30.6	72.3	10.0	11.9	72.3	10.3	12.2	72.3
Actuated g/C Ratio	0.15	0.48	1.00	0.09	0.42	1.00	0.14	0.16	1.00	0.14	0.17	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	498	2419	1583	318	2712	1583	690	836	1583	489	858	1583
v/s Ratio Prot	c0.06	c0.42		0.02	0.30		0.04	c0.06		c0.06	0.06	
v/s Ratio Perm			c0.22			0.02			0.10			0.11
v/c Ratio	0.42	0.88	0.22	0.24	0.71	0.02	0.26	0.35	0.10	0.40	0.38	0.11
Uniform Delay, d1	28.1	17.1	0.0	30.4	17.2	0.0	27.8	26.8	0.0	28.2	26.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	4.0	0.3	0.4	0.9	0.0	0.2	0.3	0.1	0.5	0.3	0.1
Delay (s)	28.7	21.1	0.3	30.8	18.0	0.0	28.0	27.0	0.1	28.7	27.0	0.1
Level of Service	C	C	A	C	B	A	C	C	A	C	C	A
Approach Delay (s)		19.0			18.2			20.5			20.8	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			19.1			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			72.3			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			64.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	304	1473	802	83	1566	392	906	538	51	940	803	285
Future Volume (veh/h)	304	1473	802	83	1566	392	906	538	51	940	803	285
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	330	1601	0	90	1702	0	985	585	0	1022	873	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	472	2152	496	229	1662	375	970	1356	396	1289	858	357
Arrive On Green	0.14	0.34	0.00	0.07	0.26	0.00	0.28	0.27	0.00	0.26	0.24	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	330	1601	0	90	1702	0	985	585	0	1022	873	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	8.4	19.6	0.0	2.2	23.0	0.0	25.0	8.5	0.0	16.9	21.5	0.0
Cycle Q Clear(g_c), s	8.4	19.6	0.0	2.2	23.0	0.0	25.0	8.5	0.0	16.9	21.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	472	2152	496	229	1662	375	970	1356	396	1289	858	357
V/C Ratio(X)	0.70	0.74	0.00	0.39	1.02	0.00	1.02	0.43	0.00	0.79	1.02	0.00
Avail Cap(c_a), veh/h	522	2152	496	543	1662	375	970	1356	396	1411	858	357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	26.1	0.0	39.7	32.8	0.0	31.8	26.9	0.0	30.7	33.6	0.0
Incr Delay (d2), s/veh	3.7	1.4	0.0	1.1	28.4	0.0	32.7	0.2	0.0	2.9	35.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	8.9	0.0	1.1	13.3	0.0	16.1	4.0	0.0	8.1	14.6	0.0
LnGrp Delay(d),s/veh	39.8	27.5	0.0	40.8	61.2	0.0	64.5	27.2	0.0	33.6	68.7	0.0
LnGrp LOS	D	C		D	F		F	C		C	F	
Approach Vol, veh/h		1931			1792			1570			1895	
Approach Delay, s/veh		29.6			60.2			50.6			49.8	
Approach LOS		C			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	25.2	7.9	30.8	27.0	23.0	14.7	24.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	23.0	19.0	12.0	20.0	23.0	19.0	12.0	20.0				
Max Q Clear Time (g_c+I1), s	18.9	10.5	4.2	21.6	27.0	23.5	10.4	25.0				
Green Ext Time (p_c), s	2.0	4.8	0.1	0.0	0.0	0.0	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			47.1									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	313	0	390	3	0	18	118	1192	8	7	1401	329
Future Volume (vph)	313	0	390	3	0	18	118	1192	8	7	1401	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1681	1583		1770	1583	3433	3536		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1681	1583		1770	1583	3433	3536		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	0	424	3	0	20	128	1296	9	8	1523	358
RTOR Reduction (vph)	0	0	190	0	0	19	0	0	0	0	0	97
Lane Group Flow (vph)	170	170	234	0	3	1	128	1305	0	8	1523	261
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	11.0	11.0	19.5		2.1	2.1	8.5	47.3		1.2	40.0	40.0
Effective Green, g (s)	12.0	12.0	21.5		3.1	3.1	9.5	49.8		2.2	42.5	42.5
Actuated g/C Ratio	0.15	0.15	0.28		0.04	0.04	0.12	0.64		0.03	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	259	259	499		70	63	420	2269		50	1938	866
v/s Ratio Prot	c0.10	0.10	c0.06		c0.00		0.04	0.37		0.00	c0.43	
v/s Ratio Perm			0.09			0.00						0.16
v/c Ratio	0.66	0.66	0.47		0.04	0.01	0.30	0.57		0.16	0.79	0.30
Uniform Delay, d1	30.9	30.9	23.3		35.8	35.8	31.0	7.9		36.8	13.9	9.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.9	5.9	0.7		0.3	0.1	0.4	0.4		1.5	2.2	0.2
Delay (s)	36.7	36.7	24.0		36.1	35.9	31.5	8.2		38.3	16.1	9.7
Level of Service	D	D	C		D	D	C	A		D	B	A
Approach Delay (s)		29.7			35.9			10.3			15.0	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.2									
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			77.6									
Intersection Capacity Utilization			76.2%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Plus Project Conditions
AM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	137	458	888	459	898	810
Future Volume (vph)	137	458	888	459	898	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.91	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3214	1441	3539	1583	3433	3539
Flt Permitted	0.98	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3214	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	498	965	499	976	880
RTOR Reduction (vph)	205	199	0	306	0	0
Lane Group Flow (vph)	193	50	965	193	976	880
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	8.8	8.8	17.1	17.1	17.6	38.7
Effective Green, g (s)	9.8	11.1	19.4	19.4	19.9	39.7
Actuated g/C Ratio	0.18	0.20	0.35	0.35	0.36	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	567	288	1237	553	1230	2531
v/s Ratio Prot	c0.06		c0.27		c0.28	0.25
v/s Ratio Perm		0.03		0.12		
v/c Ratio	0.34	0.17	0.78	0.35	0.79	0.35
Uniform Delay, d1	20.0	18.4	16.1	13.4	16.0	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.3	3.3	0.4	3.6	0.1
Delay (s)	20.4	18.7	19.4	13.8	19.6	3.1
Level of Service	C	B	B	B	B	A
Approach Delay (s)	19.7		17.5			11.7
Approach LOS	B		B			B
Intersection Summary						
HCM 2000 Control Delay			15.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			55.5		Sum of lost time (s)	6.4
Intersection Capacity Utilization			68.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	234	732	290	65	184	77	380	427	34	80	334	56
Future Volume (vph)	234	732	290	65	184	77	380	427	34	80	334	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	254	796	315	71	200	84	413	464	37	87	363	61
RTOR Reduction (vph)	0	0	217	0	0	66	0	0	25	0	0	51
Lane Group Flow (vph)	254	796	98	71	200	18	413	464	12	87	363	10
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	12.3	18.4	18.4	5.1	11.2	11.2	17.6	20.7	20.7	5.6	8.7	8.7
Effective Green, g (s)	13.3	20.4	20.4	6.1	13.9	13.9	18.6	23.0	21.7	6.6	11.0	11.0
Actuated g/C Ratio	0.20	0.31	0.31	0.09	0.21	0.21	0.28	0.35	0.33	0.10	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	1097	490	164	747	334	500	1777	522	356	879	273
v/s Ratio Prot	c0.14	c0.22		0.04	0.06		c0.23	0.09		0.02	c0.07	
v/s Ratio Perm			0.06			0.01			0.01			0.01
v/c Ratio	0.71	0.73	0.20	0.43	0.27	0.05	0.83	0.26	0.02	0.24	0.41	0.04
Uniform Delay, d1	24.5	20.2	16.7	28.2	21.7	20.7	22.1	15.3	14.9	27.3	24.5	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	2.4	0.2	1.8	0.2	0.1	10.7	0.1	0.0	0.4	0.3	0.1
Delay (s)	31.0	22.6	16.9	30.0	21.9	20.8	32.8	15.4	14.9	27.7	24.8	23.0
Level of Service	C	C	B	C	C	C	C	B	B	C	C	C
Approach Delay (s)		22.9			23.3			23.2			25.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			65.8				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			64.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	329	12	18	36	20	45	12	1082	0	38	759	109
Future Volume (vph)	329	12	18	36	20	45	12	1082	0	38	759	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1673			1805	1583	1770	3539		1770	3473	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1673			1805	1583	1770	3539		1770	3473	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	13	20	39	22	49	13	1176	0	41	825	118
RTOR Reduction (vph)	0	6	0	0	0	43	0	0	0	0	11	0
Lane Group Flow (vph)	197	188	0	0	61	6	13	1176	0	41	932	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	10.8	10.8			6.2	6.2	1.2	26.1		2.9	27.8	
Effective Green, g (s)	11.8	11.8			7.2	7.2	2.2	28.1		3.9	29.8	
Actuated g/C Ratio	0.19	0.19			0.12	0.12	0.04	0.45		0.06	0.48	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	319	318			209	183	62	1603		111	1669	
v/s Ratio Prot	c0.12	0.11			c0.03		0.01	c0.33		c0.02	0.27	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.59			0.29	0.03	0.21	0.73		0.37	0.56	
Uniform Delay, d1	23.0	22.9			25.1	24.3	29.1	13.9		27.9	11.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	2.9			0.8	0.1	1.7	1.8		2.1	0.4	
Delay (s)	26.6	25.8			25.8	24.4	30.7	15.7		29.9	11.8	
Level of Service	C	C			C	C	C	B		C	B	
Approach Delay (s)		26.2			25.2			15.8			12.6	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			16.5									
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			62.0									
Intersection Capacity Utilization			54.9%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰	↱		↰	↱	↱	↰↱		↱	↰↱	
Traffic Volume (vph)	76	10	27	25	1	7	41	1092	26	8	784	27
Future Volume (vph)	76	10	27	25	1	7	41	1092	26	8	784	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1777	1583	1770	3527		1770	3522	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1777	1583	1770	3527		1770	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	11	29	27	1	8	45	1187	28	9	852	29
RTOR Reduction (vph)	0	0	25	0	0	8	0	1	0	0	2	0
Lane Group Flow (vph)	0	94	4	0	28	0	45	1214	0	9	879	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		7.0	7.0		2.4	2.4	2.8	33.6		1.1	31.9	
Effective Green, g (s)		8.0	8.0		3.4	3.4	3.8	35.6		2.1	33.9	
Actuated g/C Ratio		0.13	0.13		0.06	0.06	0.06	0.59		0.03	0.56	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		237	210		100	89	111	2089		61	1986	
v/s Ratio Prot		c0.05			c0.02		c0.03	c0.34		0.01	0.25	
v/s Ratio Perm			0.00			0.00						
v/c Ratio		0.40	0.02		0.28	0.01	0.41	0.58		0.15	0.44	
Uniform Delay, d1		23.8	22.6		27.2	26.8	27.1	7.6		28.1	7.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		1.5	0.0	2.4	0.4		1.1	0.2	
Delay (s)		24.9	22.7		28.7	26.8	29.5	8.0		29.3	7.8	
Level of Service		C	C		C	C	C	A		C	A	
Approach Delay (s)		24.4			28.3			8.8			8.0	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.6									
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			60.1									
Intersection Capacity Utilization			52.1%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	1344	16	70	658	922	16	8	29	650	11	206
Future Volume (vph)	226	1344	16	70	658	922	16	8	29	650	11	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	1461	17	76	715	1002	17	9	32	707	12	224
RTOR Reduction (vph)	0	1	0	0	0	452	0	0	30	0	0	175
Lane Group Flow (vph)	246	1477	0	76	715	550	17	9	2	361	358	49
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.1	38.6		7.5	34.0	34.0	4.0	4.0	4.0	17.1	17.1	17.1
Effective Green, g (s)	13.1	39.6		8.5	35.0	35.0	5.0	5.0	5.0	18.1	18.1	18.1
Actuated g/C Ratio	0.16	0.48		0.10	0.42	0.42	0.06	0.06	0.06	0.22	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	278	1681		180	1488	665	106	111	95	365	367	344
v/s Ratio Prot	c0.14	c0.42		0.04	0.20		c0.01	0.00		c0.21	0.21	
v/s Ratio Perm						0.35			0.00			0.03
v/c Ratio	0.88	0.88		0.42	0.48	0.83	0.16	0.08	0.02	0.99	0.98	0.14
Uniform Delay, d1	34.3	19.6		35.0	17.5	21.4	37.1	36.9	36.8	32.5	32.3	26.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.6	5.6		1.6	0.2	8.3	0.7	0.3	0.1	43.7	40.1	0.2
Delay (s)	60.9	25.2		36.6	17.7	29.7	37.8	37.2	36.9	76.1	72.4	26.5
Level of Service	E	C		D	B	C	D	D	D	E	E	C
Approach Delay (s)		30.3			25.2			37.2			62.9	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			35.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			83.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			82.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↗↗		↗
Traffic Volume (veh/h)	0	1013	320	0	1482	1051	0	0	0	842	0	157
Future Volume (veh/h)	0	1013	320	0	1482	1051	0	0	0	842	0	157
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1101	0	0	1611	0				915	0	171
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2159	950	0	2183	950				1067	0	491
Arrive On Green	0.00	0.61	0.00	0.00	1.00	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1101	0	0	1611	0				915	0	171
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	10.6	0.0	0.0	0.0	0.0				15.0	0.0	5.0
Cycle Q Clear(g_c), s	0.0	10.6	0.0	0.0	0.0	0.0				15.0	0.0	5.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2159	950	0	2183	950				1067	0	491
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.74	0.00				0.86	0.00	0.35
Avail Cap(c_a), veh/h	0	2159	950	0	2183	950				1067	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	0.48	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.6	0.0	0.0	0.0	0.0				19.5	0.0	16.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	1.1	0.0				7.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.3	0.0	0.0	0.3	0.0				8.2	0.0	2.2
LnGrp Delay(d),s/veh	0.0	7.5	0.0	0.0	1.1	0.0				26.6	0.0	16.4
LnGrp LOS		A			A					C		B
Approach Vol, veh/h		1101			1611						1086	
Approach Delay, s/veh		7.5			1.1						25.0	
Approach LOS		A			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		39.0		21.0		39.0						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		35.0		17.0		35.0						
Max Q Clear Time (g_c+I1), s		12.6		17.0		2.0						
Green Ext Time (p_c), s		15.8		0.0		20.5						
Intersection Summary												
HCM 2010 Ctrl Delay			9.8									
HCM 2010 LOS			A									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Plus Project Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	1042	0	0	1546	271	0	0	1389	0	0	981
Future Volume (vph)	205	1042	0	0	1546	271	0	0	1389	0	0	981
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	1133	0	0	1680	295	0	0	1510	0	0	1066
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	0	0	0	573
Lane Group Flow (vph)	223	1133	0	0	1680	122	0	0	1510	0	0	493
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	10.9	36.7			22.8	22.8			60.0			13.3
Effective Green, g (s)	12.9	38.7			24.8	24.8			60.0			15.3
Actuated g/C Ratio	0.22	0.65			0.41	0.41			1.00			0.26
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	380	4133			2101	654			1611			710
v/s Ratio Prot	0.13	0.18			0.33							
v/s Ratio Perm						0.08			c0.94			0.18
v/c Ratio	0.59	0.27			0.80	0.19			0.94			0.69
Uniform Delay, d1	21.2	4.6			15.4	11.2			0.0			20.2
Progression Factor	1.15	1.13			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.7	0.0			3.3	0.6			11.8			3.0
Delay (s)	26.1	5.2			18.7	11.8			11.8			23.2
Level of Service	C	A			B	B			B			C
Approach Delay (s)		8.7			17.7			11.8			23.2	
Approach LOS		A			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			15.1		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			70.9%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Cumulative Plus Project Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	390	1826	216	109	1336	66	316	562	74	56	169	165
Future Volume (veh/h)	390	1826	216	109	1336	66	316	562	74	56	169	165
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	424	1985	235	118	1452	72	343	611	80	61	184	179
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	2553	1000	241	2546	126	491	847	368	176	750	490
Arrive On Green	0.17	0.50	0.49	0.07	0.40	0.40	0.14	0.24	0.23	0.05	0.15	0.14
Sat Flow, veh/h	3442	5085	1583	3442	6301	312	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	424	1985	235	118	1107	417	343	611	80	61	184	179
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1808	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	8.9	24.4	4.9	2.5	13.6	13.7	7.3	12.1	3.1	1.3	2.4	6.7
Cycle Q Clear(g_c), s	8.9	24.4	4.9	2.5	13.6	13.7	7.3	12.1	3.1	1.3	2.4	6.7
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	579	2553	1000	241	1942	730	491	847	368	176	750	490
V/C Ratio(X)	0.73	0.78	0.23	0.49	0.57	0.57	0.70	0.72	0.22	0.35	0.25	0.37
Avail Cap(c_a), veh/h	766	2553	1000	585	2075	781	676	847	368	585	965	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	15.5	6.1	34.2	17.6	17.6	31.2	26.7	23.7	35.0	28.8	20.6
Incr Delay (d2), s/veh	2.5	1.6	0.1	1.5	0.3	0.9	1.9	3.0	0.3	1.2	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	11.6	2.1	1.2	6.0	6.9	3.6	6.3	1.4	0.6	1.2	3.0
LnGrp Delay(d),s/veh	32.7	17.1	6.2	35.7	18.0	18.5	33.1	29.8	24.0	36.2	29.0	21.0
LnGrp LOS	C	B	A	D	B	B	C	C	C	D	C	C
Approach Vol, veh/h	2644					1642		1034			424	
Approach Delay, s/veh	18.6					19.4		30.4			26.7	
Approach LOS	B					B		C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.4	40.4	13.9	13.8	15.9	32.9	6.9	20.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	35.0	14.0	13.0	16.0	31.0	12.0	15.0				
Max Q Clear Time (g_c+I1), s	4.5	26.4	9.3	8.7	10.9	15.7	3.3	14.1				
Green Ext Time (p_c), s	0.2	8.6	0.7	1.1	0.9	13.2	0.1	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			21.6									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Plus Project Conditions
School PM Peak

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	704	255	177	1051	114	822		
Future Volume (veh/h)	704	255	177	1051	114	822		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	765	277	192	1142	124	893		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1091	508	435	2224	476	901		
Arrive On Green	0.32	0.30	0.25	0.63	0.27	0.27		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	765	277	192	1142	124	893		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	9.6	7.0	4.4	8.6	2.7	13.0		
Cycle Q Clear(g_c), s	9.6	7.0	4.4	8.6	2.7	13.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1091	508	435	2224	476	901		
V/C Ratio(X)	0.70	0.54	0.44	0.51	0.26	0.99		
Avail Cap(c_a), veh/h	1262	588	769	3068	476	901		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.4	13.5	15.5	4.9	13.9	7.3		
Incr Delay (d2), s/veh	1.5	0.9	0.7	0.2	0.3	27.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.7	3.2	2.2	4.2	1.3	18.6		
LnGrp Delay(d),s/veh	15.9	14.4	16.2	5.1	14.2	35.1		
LnGrp LOS	B	B	B	A	B	D		
Approach Vol, veh/h	1042			1334	1017			
Approach Delay, s/veh	15.5			6.7	32.6			
Approach LOS	B			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.9	17.6		16.0		32.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	20.0	16.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	6.4	11.6		15.0		10.6		
Green Ext Time (p_c), s	5.3	2.0		0.0		7.0		
Intersection Summary								
HCM 2010 Ctrl Delay			17.2					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Plus Project Conditions
School PM Peak

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↘↙	↑↑		↑
Traffic Volume (vph)	796	862	884	1208	0	1116
Future Volume (vph)	796	862	884	1208	0	1116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	937	961	1313	0	1213
RTOR Reduction (vph)	0	526	0	0	0	300
Lane Group Flow (vph)	865	411	961	1313	0	913
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	37.0	37.0	35.0	76.0		65.0
Effective Green, g (s)	39.0	39.0	36.0	78.0		66.0
Actuated g/C Ratio	0.26	0.26	0.24	0.52		0.44
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1322	411	823	1840		708
v/s Ratio Prot	0.17		c0.28	0.37		
v/s Ratio Perm		c0.26				c0.57
v/c Ratio	0.65	1.00	1.17	0.71		1.29
Uniform Delay, d1	49.5	55.5	57.0	27.5		42.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.2	44.0	88.4	1.3		140.7
Delay (s)	50.7	99.4	145.4	28.8		182.7
Level of Service	D	F	F	C		F
Approach Delay (s)	76.0			78.1	182.7	
Approach LOS	E			E	F	
Intersection Summary						
HCM 2000 Control Delay			101.4		HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.18			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			91.1%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	163	1419	341	0	1306	1053	179	410	578	340	0	459
Future Volume (vph)	163	1419	341	0	1306	1053	179	410	578	340	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	177	1542	371	0	1420	1145	195	446	628	370	0	499
RTOR Reduction (vph)	0	0	180	0	0	0	0	0	0	0	0	58
Lane Group Flow (vph)	177	1542	191	0	1420	1145	195	446	628	370	0	441
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	9.9	35.7	35.7		21.8	71.4	11.0	12.5	71.4	11.2		26.6
Effective Green, g (s)	11.4	37.2	36.7		23.3	71.4	12.5	14.0	71.4	12.7		28.1
Actuated g/C Ratio	0.16	0.52	0.51		0.33	1.00	0.18	0.20	1.00	0.18		0.39
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	548	1843	813		2091	1583	309	693	1583	610		623
v/s Ratio Prot	0.05	c0.44			0.22		0.11	0.13		0.11		0.28
v/s Ratio Perm			0.12			c0.72			0.40			
v/c Ratio	0.32	0.84	0.23		0.68	0.72	0.63	0.64	0.40	0.61		0.71
Uniform Delay, d1	26.6	14.5	9.6		20.8	0.0	27.3	26.4	0.0	27.0		18.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	3.5	0.1		0.9	2.9	4.2	2.1	0.7	1.7		3.7
Delay (s)	26.9	18.0	9.7		21.7	2.9	31.5	28.5	0.7	28.8		21.9
Level of Service	C	B	A		C	A	C	C	A	C		C
Approach Delay (s)		17.3			13.3			15.2			24.8	
Approach LOS		B			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			16.4		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			71.4		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			70.3%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Plus Project Conditions
School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	251	1527	409	170	1775	59	455	453	219	145	558	159
Future Volume (vph)	251	1527	409	170	1775	59	455	453	219	145	558	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	273	1660	445	185	1929	64	495	492	238	158	607	173
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	273	1660	445	185	1929	64	495	492	238	158	607	173
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	10.5	24.5	72.4	9.1	23.1	72.4	11.2	14.3	72.4	8.5	11.6	72.4
Effective Green, g (s)	11.5	27.0	72.4	10.1	25.6	72.4	12.2	16.8	72.4	9.5	14.1	72.4
Actuated g/C Ratio	0.16	0.37	1.00	0.14	0.35	1.00	0.17	0.23	1.00	0.13	0.19	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	545	1896	1583	478	2265	1583	840	1179	1583	450	990	1583
v/s Ratio Prot	c0.08	c0.33		0.05	0.30		c0.10	0.10		0.05	c0.12	
v/s Ratio Perm			c0.28			0.04			0.15			0.11
v/c Ratio	0.50	0.88	0.28	0.39	0.85	0.04	0.59	0.42	0.15	0.35	0.61	0.11
Uniform Delay, d1	27.8	21.1	0.0	28.3	21.6	0.0	27.8	23.6	0.0	28.6	26.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	4.9	0.4	0.5	3.3	0.0	1.1	0.2	0.2	0.5	1.1	0.1
Delay (s)	28.6	26.0	0.4	28.9	24.9	0.0	28.9	23.9	0.2	29.1	27.8	0.1
Level of Service	C	C	A	C	C	A	C	C	A	C	C	A
Approach Delay (s)		21.5			24.5			21.3			22.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			22.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			72.4			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			67.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	1254	891	322	1438	601	538	612	79	790	1071	409
Future Volume (veh/h)	328	1254	891	322	1438	601	538	612	79	790	1071	409
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	357	1363	0	350	1563	0	585	665	0	859	1164	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	493	1683	380	496	1650	372	616	1533	451	1096	1208	514
Arrive On Green	0.15	0.26	0.00	0.14	0.26	0.00	0.18	0.30	0.00	0.22	0.34	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	357	1363	0	350	1563	0	585	665	0	859	1164	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.2	17.8	0.0	8.7	21.4	0.0	15.0	9.4	0.0	14.5	28.8	0.0
Cycle Q Clear(g_c), s	9.2	17.8	0.0	8.7	21.4	0.0	15.0	9.4	0.0	14.5	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	493	1683	380	496	1650	372	616	1533	451	1096	1208	514
V/C Ratio(X)	0.72	0.81	0.00	0.71	0.95	0.00	0.95	0.43	0.00	0.78	0.96	0.00
Avail Cap(c_a), veh/h	518	1683	380	539	1650	372	616	1533	451	1176	1208	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	30.8	0.0	36.4	32.6	0.0	36.3	25.1	0.0	32.9	28.9	0.0
Incr Delay (d2), s/veh	4.7	3.1	0.0	3.8	12.0	0.0	24.3	0.2	0.0	3.3	17.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	8.2	0.0	4.4	10.8	0.0	9.2	4.4	0.0	7.0	17.0	0.0
LnGrp Delay(d),s/veh	41.0	33.9	0.0	40.2	44.6	0.0	60.6	25.3	0.0	36.2	46.6	0.0
LnGrp LOS	D	C		D	D		E	C		D	D	
Approach Vol, veh/h		1720			1913			1250			2023	
Approach Delay, s/veh		35.4			43.8			41.8			42.2	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.6	28.4	14.9	24.5	18.0	32.0	15.3	24.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	19.0	23.0	12.0	20.0	14.0	28.0	12.0	20.0				
Max Q Clear Time (g_c+I1), s	16.5	11.4	10.7	19.8	17.0	30.8	11.2	23.4				
Green Ext Time (p_c), s	1.1	4.6	0.2	0.2	0.0	0.0	0.1	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.9									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	5	204	23	23	50	304	1197	3	5	1687	549
Future Volume (vph)	210	5	204	23	23	50	304	1197	3	5	1687	549
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	5	222	25	25	54	330	1301	3	5	1834	597
RTOR Reduction (vph)	0	0	81	0	0	51	0	0	0	0	0	95
Lane Group Flow (vph)	116	117	141	0	50	3	330	1304	0	5	1834	502
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	13.2	13.2	29.8		7.2	7.2	16.6	96.0		1.2	80.6	80.6
Effective Green, g (s)	14.2	14.2	31.8		8.2	8.2	17.6	98.5		2.2	83.1	83.1
Actuated g/C Ratio	0.11	0.11	0.24		0.06	0.06	0.13	0.74		0.02	0.62	0.62
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	178	179	412		111	97	452	2608		29	2201	984
v/s Ratio Prot	0.07	c0.07	0.05		c0.03		c0.10	0.37		0.00	c0.52	
v/s Ratio Perm			0.04			0.00						0.32
v/c Ratio	0.65	0.65	0.34		0.45	0.03	0.73	0.50		0.17	0.83	0.51
Uniform Delay, d1	57.3	57.3	42.2		60.5	59.0	55.7	7.3		64.8	19.8	14.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.3	8.3	0.5		2.9	0.1	6.0	0.2		2.8	2.9	0.4
Delay (s)	65.6	65.6	42.7		63.4	59.1	61.7	7.5		67.6	22.7	14.4
Level of Service	E	E	D		E	E	E	A		E	C	B
Approach Delay (s)		54.4			61.2			18.4			20.8	
Approach LOS		D			E			B			C	
Intersection Summary												
HCM 2000 Control Delay			24.1									C
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			133.6									
Intersection Capacity Utilization			77.9%									D
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Plus Project Conditions
School PM Peak

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	647	527	837	466	1080	816
Future Volume (vph)	647	527	837	466	1080	816
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.97	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3372	1441	3539	1583	3433	3539
Flt Permitted	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3372	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	703	573	910	507	1174	887
RTOR Reduction (vph)	30	282	0	359	0	0
Lane Group Flow (vph)	845	119	910	148	1174	887
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	20.0	20.0	18.0	18.0	25.0	47.0
Effective Green, g (s)	21.0	22.3	20.3	20.3	27.3	48.0
Actuated g/C Ratio	0.28	0.30	0.27	0.27	0.36	0.64
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	944	428	957	428	1249	2264
v/s Ratio Prot	c0.25		c0.26		c0.34	0.25
v/s Ratio Perm		0.08		0.09		
v/c Ratio	0.90	0.28	0.95	0.35	0.94	0.39
Uniform Delay, d1	25.9	20.2	26.9	22.0	23.1	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	0.4	18.3	0.5	13.4	0.1
Delay (s)	36.9	20.5	45.2	22.5	36.5	6.6
Level of Service	D	C	D	C	D	A
Approach Delay (s)	31.7		37.1			23.6
Approach LOS	C		D			C
Intersection Summary						
HCM 2000 Control Delay			29.8		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.91			
Actuated Cycle Length (s)			75.0		Sum of lost time (s)	6.4
Intersection Capacity Utilization			87.9%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	544	478	86	585	162	324	406	62	169	628	349
Future Volume (vph)	153	544	478	86	585	162	324	406	62	169	628	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	591	520	93	636	176	352	441	67	184	683	379
RTOR Reduction (vph)	0	0	370	0	0	131	0	0	48	0	0	305
Lane Group Flow (vph)	166	591	150	93	636	45	352	441	19	184	683	74
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.4	18.1	18.1	7.4	15.1	15.1	16.9	19.2	19.2	9.0	11.3	11.3
Effective Green, g (s)	11.4	20.1	20.1	8.4	17.8	17.8	17.9	21.5	20.2	10.0	13.6	13.6
Actuated g/C Ratio	0.16	0.29	0.29	0.12	0.26	0.26	0.26	0.31	0.29	0.14	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	1020	456	213	903	404	454	1568	458	509	1026	319
v/s Ratio Prot	c0.09	c0.17		0.05	c0.18		c0.20	0.09		0.05	c0.13	
v/s Ratio Perm			0.09			0.03			0.01			0.05
v/c Ratio	0.57	0.58	0.33	0.44	0.70	0.11	0.78	0.28	0.04	0.36	0.67	0.23
Uniform Delay, d1	26.9	21.2	19.5	28.5	23.6	19.9	24.0	18.2	17.8	27.0	25.9	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.8	0.4	1.4	2.5	0.1	8.1	0.1	0.0	0.4	1.6	0.4
Delay (s)	29.7	22.0	19.9	29.9	26.1	20.0	32.1	18.3	17.8	27.4	27.6	24.0
Level of Service	C	C	B	C	C	C	C	B	B	C	C	C
Approach Delay (s)		22.1			25.3			23.9			26.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			24.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			69.7			Sum of lost time (s)			9.7			
Intersection Capacity Utilization			68.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	323	16	28	27	13	57	42	962	0	81	1202	159
Future Volume (vph)	323	16	28	27	13	57	42	962	0	81	1202	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1666			1802	1583	1770	3539		1770	3477	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1666			1802	1583	1770	3539		1770	3477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	17	30	29	14	62	46	1046	0	88	1307	173
RTOR Reduction (vph)	0	4	0	0	0	58	0	0	0	0	7	0
Lane Group Flow (vph)	200	194	0	0	43	4	46	1046	0	88	1473	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	19.6	19.6			6.4	6.4	6.5	52.6		8.4	54.5	
Effective Green, g (s)	20.6	20.6			7.4	7.4	7.5	54.6		9.4	56.5	
Actuated g/C Ratio	0.20	0.20			0.07	0.07	0.07	0.53		0.09	0.55	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	333			129	113	128	1876		161	1907	
v/s Ratio Prot	c0.12	0.12			c0.02		0.03	0.30		c0.05	c0.42	
v/s Ratio Perm						0.00						
v/c Ratio	0.60	0.58			0.33	0.04	0.36	0.56		0.55	0.77	
Uniform Delay, d1	37.4	37.3			45.5	44.5	45.5	16.1		44.8	18.2	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	2.6			1.5	0.1	1.7	0.4		3.8	2.0	
Delay (s)	40.2	39.9			47.0	44.6	47.2	16.5		48.5	20.2	
Level of Service	D	D			D	D	D	B		D	C	
Approach Delay (s)		40.1			45.6			17.8			21.8	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			23.5									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			103.0									Sum of lost time (s) 11.0
Intersection Capacity Utilization			68.5%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

Cumulative Plus Project Conditions

School PM Peak

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	149	19	177	144	8	53	129	820	28	28	1134	35
Future Volume (vph)	149	19	177	144	8	53	129	820	28	28	1134	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1779	1583	1770	3522		1770	3523	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1779	1583	1770	3522		1770	3523	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	162	21	192	157	9	58	140	891	30	30	1233	38
RTOR Reduction (vph)	0	0	162	0	0	49	0	1	0	0	2	0
Lane Group Flow (vph)	0	183	30	0	166	9	140	920	0	30	1269	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		17.6	17.6		16.4	16.4	14.7	62.8		4.7	52.8	
Effective Green, g (s)		18.6	18.6		17.4	17.4	15.7	64.8		5.7	54.8	
Actuated g/C Ratio		0.16	0.16		0.15	0.15	0.13	0.55		0.05	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		282	250		263	234	236	1942		85	1643	
v/s Ratio Prot		c0.10			c0.09		c0.08	0.26		0.02	c0.36	
v/s Ratio Perm			0.02			0.01						
v/c Ratio		0.65	0.12		0.63	0.04	0.59	0.47		0.35	0.77	
Uniform Delay, d1		46.4	42.4		47.0	42.9	47.9	16.0		54.1	26.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1	0.2		4.9	0.1	4.0	0.2		2.5	2.3	
Delay (s)		51.5	42.7		51.9	42.9	51.9	16.2		56.6	28.5	
Level of Service		D	D		D	D	D	B		E	C	
Approach Delay (s)		47.0			49.6			20.9			29.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.0									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			117.5								11.0	
Intersection Capacity Utilization			65.5%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Future Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	398	1474	17	98	951	742	32	33	99	1152	13	343
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	93	0	0	158
Lane Group Flow (vph)	398	1490	0	98	951	503	32	33	6	588	577	185
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	31.0	62.8		11.2	43.0	43.0	8.2	8.2	8.2	48.0	48.0	48.0
Effective Green, g (s)	32.0	63.8		12.2	44.0	44.0	9.2	9.2	9.2	49.0	49.0	49.0
Actuated g/C Ratio	0.22	0.44		0.08	0.30	0.30	0.06	0.06	0.06	0.34	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	387	1541		147	1065	476	111	117	99	563	565	530
v/s Ratio Prot	c0.22	0.42		0.06	0.27		c0.02	0.02		c0.35	0.34	
v/s Ratio Perm						c0.32			0.00			0.12
v/c Ratio	1.03	0.97		0.67	0.89	1.06	0.29	0.28	0.06	1.04	1.02	0.35
Uniform Delay, d1	57.1	40.2		65.0	48.8	51.1	65.4	65.3	64.4	48.6	48.6	36.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.2	15.6		10.9	9.7	57.0	1.4	1.3	0.3	50.0	43.3	0.4
Delay (s)	110.3	55.8		75.9	58.5	108.1	66.8	66.7	64.7	98.6	91.9	37.0
Level of Service	F	E		E	E	F	E	E	E	F	F	D
Approach Delay (s)		67.3			80.0			65.5			82.0	
Approach LOS		E			F			E			F	
Intersection Summary												
HCM 2000 Control Delay			75.7			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			146.2			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			90.8%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↘↘		↗
Traffic Volume (veh/h)	0	1145	802	0	1542	1129	0	0	0	892	0	154
Future Volume (veh/h)	0	1145	802	0	1542	1129	0	0	0	892	0	154
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1245	0	0	1676	0				970	0	167
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2112	928	0	2136	928				1103	0	508
Arrive On Green	0.00	0.60	0.00	0.00	0.60	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1245	0	0	1676	0				970	0	167
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	12.7	0.0	0.0	20.7	0.0				15.5	0.0	4.6
Cycle Q Clear(g_c), s	0.0	12.7	0.0	0.0	20.7	0.0				15.5	0.0	4.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2112	928	0	2136	928				1103	0	508
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.78	0.00				0.88	0.00	0.33
Avail Cap(c_a), veh/h	0	2232	982	0	2257	982				1103	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.3	0.0	0.0	8.7	0.0				18.7	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	1.8	0.0				8.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.2	0.0	0.0	10.3	0.0				8.6	0.0	2.1
LnGrp Delay(d),s/veh	0.0	7.7	0.0	0.0	10.5	0.0				27.0	0.0	15.3
LnGrp LOS		A			B					C		B
Approach Vol, veh/h		1245			1676						1137	
Approach Delay, s/veh		7.7			10.5						25.3	
Approach LOS		A			B						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		37.0		21.0		37.0						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		35.0		17.0		35.0						
Max Q Clear Time (g_c+I1), s		14.7		17.5		22.7						
Green Ext Time (p_c), s		15.7		0.0		10.3						
Intersection Summary												
HCM 2010 Ctrl Delay			13.8									
HCM 2010 LOS			B									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Plus Project Conditions

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	1008	0	0	2179	668	0	0	478	0	0	512
Future Volume (vph)	331	1008	0	0	2179	668	0	0	478	0	0	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	360	1096	0	0	2368	726	0	0	520	0	0	557
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	0	0	0	519
Lane Group Flow (vph)	360	1096	0	0	2368	565	0	0	520	0	0	38
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	30.9	109.2			75.3	75.3			125.7			6.5
Effective Green, g (s)	32.9	111.2			77.3	77.3			125.7			8.5
Actuated g/C Ratio	0.26	0.88			0.61	0.61			1.00			0.07
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	463	5668			3127	973			1611			188
v/s Ratio Prot	c0.20	0.17			c0.47							
v/s Ratio Perm						0.36			c0.32			0.01
v/c Ratio	0.78	0.19			0.76	0.58			0.32			0.20
Uniform Delay, d1	43.0	1.0			17.4	14.5			0.0			55.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	8.0	0.0			1.1	0.9			0.5			0.5
Delay (s)	51.0	1.0			18.5	15.4			0.5			55.9
Level of Service	D	A			B	B			A			E
Approach Delay (s)		13.4			17.8			0.5			55.9	
Approach LOS		B			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			18.8									
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			125.7									
Intersection Capacity Utilization			67.1%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

Cumulative Plus Project Conditions
School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	446	1598	188	244	2164	157	324	478	161	157	732	346
Future Volume (veh/h)	446	1598	188	244	2164	157	324	478	161	157	732	346
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	485	1737	204	265	2352	171	352	520	175	171	796	376
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	548	2380	937	387	2588	188	465	764	333	290	839	504
Arrive On Green	0.16	0.47	0.46	0.11	0.42	0.42	0.14	0.22	0.21	0.08	0.16	0.16
Sat Flow, veh/h	3442	5085	1583	3442	6145	445	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	485	1737	204	265	1838	685	352	520	175	171	796	376
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1784	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	12.1	24.3	5.3	6.5	31.5	31.7	8.7	11.9	8.6	4.2	13.6	14.0
Cycle Q Clear(g_c), s	12.1	24.3	5.3	6.5	31.5	31.7	8.7	11.9	8.6	4.2	13.6	14.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	548	2380	937	387	2024	751	465	764	333	290	839	504
V/C Ratio(X)	0.88	0.73	0.22	0.69	0.91	0.91	0.76	0.68	0.53	0.59	0.95	0.75
Avail Cap(c_a), veh/h	548	2380	937	509	2077	771	509	764	333	509	839	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	18.9	8.4	37.5	23.9	23.9	36.6	31.7	30.8	38.8	36.3	26.8
Incr Delay (d2), s/veh	15.8	1.2	0.1	2.5	6.3	14.8	5.9	2.5	1.5	1.9	19.8	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	11.5	2.3	3.2	15.0	18.5	4.5	6.0	3.9	2.1	7.9	9.0
LnGrp Delay(d),s/veh	52.0	20.1	8.5	40.0	30.1	38.7	42.5	34.2	32.4	40.7	56.1	32.7
LnGrp LOS	D	C	A	D	C	D	D	C	C	D	E	C
Approach Vol, veh/h	2426					2788		1047			1343	
Approach Delay, s/veh	25.5					33.2		36.7			47.6	
Approach LOS	C					C		D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	43.1	14.9	17.0	17.0	39.0	10.4	21.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	37.0	12.0	13.0	13.0	36.0	12.0	13.0				
Max Q Clear Time (g_c+I1), s	8.5	26.3	10.7	16.0	14.1	33.7	6.2	13.9				
Green Ext Time (p_c), s	0.4	10.7	0.2	0.0	0.0	1.3	0.3	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			33.7									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
1: Wills Road & Atlantic Street

Cumulative Plus Project Conditions
PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Volume (veh/h)	731	270	248	1640	117	650		
Future Volume (veh/h)	731	270	248	1640	117	650		
Number	2	12	1	6	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863		
Adj Flow Rate, veh/h	795	293	270	1783	127	707		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	1110	517	507	2364	425	868		
Arrive On Green	0.33	0.31	0.29	0.67	0.24	0.24		
Sat Flow, veh/h	3487	1583	1774	3632	1774	1583		
Grp Volume(v), veh/h	795	293	270	1783	127	707		
Grp Sat Flow(s),veh/h/ln	1699	1583	1774	1770	1774	1583		
Q Serve(g_s), s	11.2	8.3	6.9	18.3	3.2	13.0		
Cycle Q Clear(g_c), s	11.2	8.3	6.9	18.3	3.2	13.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1110	517	507	2364	425	868		
V/C Ratio(X)	0.72	0.57	0.53	0.75	0.30	0.81		
Avail Cap(c_a), veh/h	1316	613	589	2742	425	868		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	16.0	15.1	16.3	6.0	16.9	8.5		
Incr Delay (d2), s/veh	1.5	1.0	0.9	1.0	0.4	6.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.4	3.8	3.5	9.0	1.6	11.9		
LnGrp Delay(d),s/veh	17.6	16.1	17.2	7.1	17.3	14.5		
LnGrp LOS	B	B	B	A	B	B		
Approach Vol, veh/h	1088			2053	834			
Approach Delay, s/veh	17.2			8.4	14.9			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.5	19.7		16.0		38.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	17.0	19.0		12.0		40.0		
Max Q Clear Time (g_c+I1), s	8.9	13.2		15.0		20.3		
Green Ext Time (p_c), s	5.8	2.6		0.0		11.0		
Intersection Summary								
HCM 2010 Ctrl Delay			12.2					
HCM 2010 LOS			B					

JAA MPR Traffic Analysis
2: I-80 WB & Atlantic Street

Cumulative Plus Project Conditions
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↑	↑↑	↑↑		↑
Traffic Volume (vph)	839	660	993	1889	0	1060
Future Volume (vph)	839	660	993	1889	0	1060
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0	3.0	2.0		4.0
Lane Util. Factor	0.91	1.00	0.97	0.95		1.00
Frt	1.00	0.85	1.00	1.00		0.86
Flt Protected	1.00	1.00	0.95	1.00		1.00
Satd. Flow (prot)	5085	1583	3433	3539		1611
Flt Permitted	1.00	1.00	0.95	1.00		1.00
Satd. Flow (perm)	5085	1583	3433	3539		1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	912	717	1079	2053	0	1152
RTOR Reduction (vph)	0	478	0	0	0	405
Lane Group Flow (vph)	912	239	1079	2053	0	747
Turn Type	NA	Perm	Prot	NA		Perm
Protected Phases	2		1	6		
Permitted Phases		2				8
Actuated Green, G (s)	21.0	21.0	32.0	57.0		40.0
Effective Green, g (s)	23.0	23.0	33.0	59.0		41.0
Actuated g/C Ratio	0.22	0.22	0.31	0.56		0.39
Clearance Time (s)	4.0	4.0	4.0	4.0		5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1103	343	1068	1969		623
v/s Ratio Prot	0.18		0.31	c0.58		
v/s Ratio Perm		0.15				c0.46
v/c Ratio	0.83	0.70	1.01	1.04		1.20
Uniform Delay, d1	39.6	38.3	36.5	23.5		32.5
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	5.2	6.1	30.1	32.4		104.7
Delay (s)	44.8	44.4	66.6	55.9		137.2
Level of Service	D	D	E	E		F
Approach Delay (s)	44.6			59.6	137.2	
Approach LOS	D			E	F	
Intersection Summary						
HCM 2000 Control Delay			70.6		HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.15			
Actuated Cycle Length (s)			106.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			88.5%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis

3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

Cumulative Plus Project Conditions

PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	215	1365	320	0	1724	1456	243	452	556	376	0	472
Future Volume (vph)	215	1365	320	0	1724	1456	243	452	556	376	0	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5	3.0		2.5	2.5	2.5	2.5	3.0	2.5		2.5
Lane Util. Factor	0.97	0.95	1.00		0.86	1.00	1.00	0.95	1.00	0.97		1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539	1583		6408	1583	1770	3539	1583	3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	1484	348	0	1874	1583	264	491	604	409	0	513
RTOR Reduction (vph)	0	0	165	0	0	0	0	0	0	0	0	42
Lane Group Flow (vph)	234	1484	183	0	1874	1583	264	491	604	409	0	471
Turn Type	Prot	NA	Perm		NA	Free	Prot	NA	Free	Prot		pt+ov
Protected Phases	5	2			6		3	8		7		4 5
Permitted Phases			2		6	Free		8	Free			
Actuated Green, G (s)	11.0	49.0	49.0		34.0	101.0	18.0	23.9	101.0	16.1		37.0
Effective Green, g (s)	12.5	50.5	50.0		35.5	101.0	19.5	25.4	101.0	17.6		38.5
Actuated g/C Ratio	0.12	0.50	0.50		0.35	1.00	0.19	0.25	1.00	0.17		0.38
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	424	1769	783		2252	1583	341	890	1583	598		603
v/s Ratio Prot	0.07	0.42			0.29		0.15	0.14		0.12		0.30
v/s Ratio Perm			0.12			c1.00			0.38			
v/c Ratio	0.55	0.84	0.23		0.83	1.00	0.77	0.55	0.38	0.68		0.78
Uniform Delay, d1	41.6	21.7	14.6		30.0	50.5	38.7	32.9	0.0	39.1		27.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.6	3.7	0.2		2.8	22.6	10.5	0.7	0.7	3.2		6.5
Delay (s)	43.2	25.4	14.7		32.8	73.1	49.1	33.6	0.7	42.3		34.0
Level of Service	D	C	B		C	E	D	C	A	D		C
Approach Delay (s)		25.6			51.3			22.0			37.7	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			37.8			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			101.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			77.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
4: N. Sunrise Ave & Eureka Road

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	217	1575	354	191	2423	92	536	526	205	162	479	258
Future Volume (vph)	217	1575	354	191	2423	92	536	526	205	162	479	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0	3.0	1.5	3.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	1.00	0.94	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	6408	1583	4990	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	236	1712	385	208	2634	100	583	572	223	176	521	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	236	1712	385	208	2634	100	583	572	223	176	521	280
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases		4	Free			Free			Free		6	Free
Actuated Green, G (s)	11.2	49.1	104.1	10.8	48.7	104.1	15.4	18.0	104.1	10.2	12.8	104.1
Effective Green, g (s)	12.2	51.6	104.1	11.8	51.2	104.1	16.4	20.5	104.1	11.2	15.3	104.1
Actuated g/C Ratio	0.12	0.50	1.00	0.11	0.49	1.00	0.16	0.20	1.00	0.11	0.15	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	402	2520	1583	389	3151	1583	786	1001	1583	369	747	1583
v/s Ratio Prot	c0.07	0.34		0.06	c0.41		c0.12	0.11		0.05	c0.10	
v/s Ratio Perm			c0.24			0.06			0.14			0.18
v/c Ratio	0.59	0.68	0.24	0.53	0.84	0.06	0.74	0.57	0.14	0.48	0.70	0.18
Uniform Delay, d1	43.6	20.0	0.0	43.6	22.8	0.0	41.8	37.8	0.0	43.7	42.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.7	0.4	1.4	2.1	0.1	3.8	0.8	0.2	1.0	2.9	0.2
Delay (s)	45.8	20.7	0.4	45.0	24.9	0.1	45.6	38.6	0.2	44.7	45.1	0.2
Level of Service	D	C	A	D	C	A	D	D	A	D	D	A
Approach Delay (s)		19.9			25.5			35.4			32.1	
Approach LOS		B			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			26.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			104.1			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			74.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
5: Galleria Blvd & Roseville Pkwy

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	1457	794	309	1865	680	656	846	77	810	990	459
Future Volume (veh/h)	306	1457	794	309	1865	680	656	846	77	810	990	459
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1788	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	333	1584	0	336	2027	0	713	920	0	880	1076	0
Adj No. of Lanes	2	4	1	2	4	1	2	3	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	454	1945	449	464	1928	445	656	1418	418	1089	1083	461
Arrive On Green	0.14	0.30	0.00	0.13	0.30	0.00	0.19	0.28	0.00	0.22	0.31	0.00
Sat Flow, veh/h	3304	6408	1583	3442	6408	1583	3442	5085	1583	5003	3539	1583
Grp Volume(v), veh/h	333	1584	0	336	2027	0	713	920	0	880	1076	0
Grp Sat Flow(s),veh/h/ln	1652	1602	1583	1721	1602	1583	1721	1695	1583	1668	1770	1583
Q Serve(g_s), s	9.6	22.8	0.0	9.3	30.0	0.0	19.0	15.9	0.0	16.6	30.2	0.0
Cycle Q Clear(g_c), s	9.6	22.8	0.0	9.3	30.0	0.0	19.0	15.9	0.0	16.6	30.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	1945	449	464	1928	445	656	1418	418	1089	1083	461
V/C Ratio(X)	0.73	0.81	0.00	0.72	1.05	0.00	1.09	0.65	0.00	0.81	0.99	0.00
Avail Cap(c_a), veh/h	464	1945	449	483	1928	445	656	1418	418	1154	1083	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.3	32.1	0.0	41.4	34.8	0.0	40.3	31.7	0.0	37.0	34.5	0.0
Incr Delay (d2), s/veh	5.8	2.8	0.0	5.1	35.5	0.0	61.1	1.0	0.0	4.2	25.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	10.4	0.0	4.8	17.9	0.0	14.5	7.5	0.0	8.1	18.5	0.0
LnGrp Delay(d),s/veh	47.1	34.9	0.0	46.5	70.3	0.0	101.5	32.7	0.0	41.2	60.3	0.0
LnGrp LOS	D	C		D	F		F	C		D	E	
Approach Vol, veh/h		1917			2363			1633			1956	
Approach Delay, s/veh		37.0			66.9			62.7			51.7	
Approach LOS		D			E			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.7	29.3	15.4	31.3	21.0	32.0	15.7	31.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	21.0	24.0	12.0	27.0	17.0	28.0	12.0	27.0				
Max Q Clear Time (g_c+I1), s	18.6	17.9	11.3	24.8	21.0	32.2	11.6	32.0				
Green Ext Time (p_c), s	1.1	3.8	0.1	2.1	0.0	0.0	0.1	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			55.0									
HCM 2010 LOS			D									

JAA MPR Traffic Analysis
6: Harding Blvd & Wills Road

Cumulative Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	7	198	16	16	40	222	1441	5	5	1544	613
Future Volume (vph)	304	7	198	16	16	40	222	1441	5	5	1544	613
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0		3.0	3.0	3.0	1.5		3.0	1.5	1.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1817	1583	3433	3538		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	330	8	215	17	17	43	241	1566	5	5	1678	666
RTOR Reduction (vph)	0	0	134	0	0	40	0	0	0	0	0	154
Lane Group Flow (vph)	168	170	81	0	34	3	241	1571	0	5	1678	512
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	5	3	3		5	2		1	6	
Permitted Phases			4			3						6
Actuated Green, G (s)	12.4	12.4	23.4		5.8	5.8	11.0	63.1		1.2	53.3	53.3
Effective Green, g (s)	13.4	13.4	25.4		6.8	6.8	12.0	65.6		2.2	55.8	55.8
Actuated g/C Ratio	0.14	0.14	0.26		0.07	0.07	0.12	0.67		0.02	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	228	229	456		125	109	418	2356		39	2004	896
v/s Ratio Prot	0.10	c0.10	0.02		c0.02		c0.07	0.44		0.00	c0.47	
v/s Ratio Perm			0.03			0.00						0.32
v/c Ratio	0.74	0.74	0.18		0.27	0.03	0.58	0.67		0.13	0.84	0.57
Uniform Delay, d1	40.9	40.9	28.4		43.5	42.8	40.9	9.9		47.2	17.6	13.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.7	12.2	0.2		1.2	0.1	1.9	0.7		1.5	3.2	0.9
Delay (s)	52.6	53.1	28.6		44.7	42.9	42.8	10.6		48.7	20.8	14.6
Level of Service	D	D	C		D	D	D	B		D	C	B
Approach Delay (s)		43.4			43.7			14.9			19.1	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			20.7									
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			98.5									
Intersection Capacity Utilization			74.3%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
7: Harding Blvd & Lead Hill Blvd

Cumulative Plus Project Conditions
PM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	793	745	820	444	1018	827
Future Volume (vph)	793	745	820	444	1018	827
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.96	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3353	1441	3539	1583	3433	3539
Flt Permitted	0.96	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3353	1441	3539	1583	3433	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	862	810	891	483	1107	899
RTOR Reduction (vph)	31	331	0	343	0	0
Lane Group Flow (vph)	1115	195	891	140	1107	899
Confl. Peds. (#/hr)	484					
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	36.9	36.9	25.0	25.0	32.0	61.0
Effective Green, g (s)	37.9	39.2	27.3	27.3	34.3	62.0
Actuated g/C Ratio	0.36	0.37	0.26	0.26	0.32	0.59
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1199	533	912	408	1111	2071
v/s Ratio Prot	c0.33		c0.25		c0.32	0.25
v/s Ratio Perm		0.14		0.09		
v/c Ratio	0.93	0.37	0.98	0.34	1.00	0.43
Uniform Delay, d1	32.7	24.3	39.0	32.0	35.7	12.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	0.4	24.0	0.5	25.9	0.1
Delay (s)	45.1	24.7	63.0	32.5	61.7	12.3
Level of Service	D	C	E	C	E	B
Approach Delay (s)	38.7		52.3			39.6
Approach LOS	D		D			D
Intersection Summary						
HCM 2000 Control Delay			42.7		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.95			
Actuated Cycle Length (s)			105.9		Sum of lost time (s)	6.4
Intersection Capacity Utilization			92.1%		ICU Level of Service	F
Analysis Period (min)			15			
c Critical Lane Group						

JAA MPR Traffic Analysis
8: N. Sunrise Ave & Lead Hill Blvd

Cumulative Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	644	544	83	602	181	489	683	58	163	638	314
Future Volume (vph)	202	644	544	83	602	181	489	683	58	163	638	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			0%			-7%	
Total Lost time (s)	3.0	2.0	2.0	3.0	1.3	1.3	3.0	1.7	3.0	3.0	1.7	1.7
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	5085	1583	3553	5263	1639
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	220	700	591	90	654	197	532	742	63	177	693	341
RTOR Reduction (vph)	0	0	412	0	0	149	0	0	39	0	0	232
Lane Group Flow (vph)	220	700	179	90	654	48	532	742	24	177	693	109
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.8	27.7	27.7	8.1	21.0	21.0	32.6	36.2	36.2	10.1	13.7	13.7
Effective Green, g (s)	15.8	29.7	29.7	9.1	23.7	23.7	33.6	38.5	37.2	11.1	16.0	16.0
Actuated g/C Ratio	0.16	0.30	0.30	0.09	0.24	0.24	0.34	0.39	0.38	0.11	0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	285	1071	479	164	854	382	606	1995	600	402	858	267
v/s Ratio Prot	c0.12	0.20		0.05	c0.18		c0.30	0.15		0.05	c0.13	
v/s Ratio Perm			0.11			0.03			0.02			0.07
v/c Ratio	0.77	0.65	0.37	0.55	0.77	0.12	0.88	0.37	0.04	0.44	0.81	0.41
Uniform Delay, d1	39.4	29.7	26.9	42.5	34.6	29.1	30.3	21.2	19.2	40.6	39.6	36.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.2	1.4	0.5	3.7	4.1	0.1	13.6	0.1	0.0	0.8	5.6	1.0
Delay (s)	51.6	31.2	27.4	46.3	38.8	29.2	43.9	21.3	19.2	41.4	45.2	37.8
Level of Service	D	C	C	D	D	C	D	C	B	D	D	D
Approach Delay (s)		32.7			37.5			30.2			42.6	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			35.3				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			98.1				Sum of lost time (s)			9.7		
Intersection Capacity Utilization			80.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
9: Harding Blvd & Estates Drive

Cumulative Plus Project Conditions

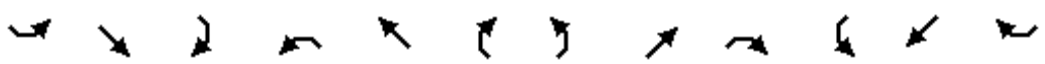
PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	302	14	27	25	12	53	47	909	0	71	1360	187
Future Volume (vph)	302	14	27	25	12	53	47	909	0	71	1360	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1665			1802	1583	1770	3539		1770	3475	
Flt Permitted	0.95	0.96			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1665			1802	1583	1770	3539		1770	3475	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	15	29	27	13	58	51	988	0	77	1478	203
RTOR Reduction (vph)	0	6	0	0	0	54	0	0	0	0	9	0
Lane Group Flow (vph)	187	179	0	0	40	4	51	988	0	77	1672	0
Turn Type	Split	NA		Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases						3						
Actuated Green, G (s)	13.1	13.1			5.9	5.9	6.5	48.7		7.3	49.5	
Effective Green, g (s)	14.1	14.1			6.9	6.9	7.5	50.7		8.3	51.5	
Actuated g/C Ratio	0.15	0.15			0.08	0.08	0.08	0.56		0.09	0.57	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	257			136	120	145	1971		161	1966	
v/s Ratio Prot	c0.11	0.11			c0.02		0.03	0.28		c0.04	c0.48	
v/s Ratio Perm						0.00						
v/c Ratio	0.72	0.70			0.29	0.04	0.35	0.50		0.48	0.85	
Uniform Delay, d1	36.6	36.4			39.7	39.0	39.5	12.4		39.3	16.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.2	8.0			1.2	0.1	1.5	0.2		2.2	3.7	
Delay (s)	45.7	44.4			41.0	39.1	40.9	12.6		41.5	20.3	
Level of Service	D	D			D	D	D	B		D	C	
Approach Delay (s)		45.1			39.9			14.0			21.2	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.2									
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			91.0									
Intersection Capacity Utilization			73.1%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
10: Harding Blvd & Roseville Square

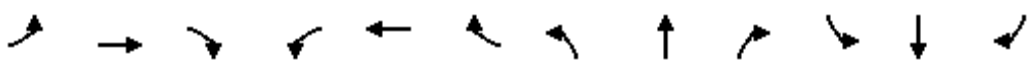
Cumulative Plus Project Conditions

PM Peak Hour

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰	↱		↰	↱	↱	↰↱		↱	↰↱	
Traffic Volume (vph)	159	20	129	132	7	48	130	781	20	25	1181	39
Future Volume (vph)	159	20	129	132	7	48	130	781	20	25	1181	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.0	2.0		3.0	2.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784	1583		1779	1583	1770	3526		1770	3522	
Flt Permitted		0.96	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1784	1583		1779	1583	1770	3526		1770	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	173	22	140	143	8	52	141	849	22	27	1284	42
RTOR Reduction (vph)	0	0	118	0	0	45	0	1	0	0	2	0
Lane Group Flow (vph)	0	195	22	0	151	7	141	870	0	27	1324	0
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4			3						
Actuated Green, G (s)		14.0	14.0		11.6	11.6	11.4	50.8		4.4	43.8	
Effective Green, g (s)		15.0	15.0		12.6	12.6	12.4	52.8		5.4	45.8	
Actuated g/C Ratio		0.15	0.15		0.13	0.13	0.13	0.55		0.06	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		276	245		231	206	226	1923		98	1666	
v/s Ratio Prot		c0.11			c0.08		c0.08	0.25		0.02	c0.38	
v/s Ratio Perm			0.01			0.00						
v/c Ratio		0.71	0.09		0.65	0.03	0.62	0.45		0.28	0.79	
Uniform Delay, d1		38.8	35.0		40.0	36.8	40.0	13.3		43.8	21.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.0	0.2		6.5	0.1	5.3	0.2		1.5	2.7	
Delay (s)		46.8	35.2		46.5	36.8	45.3	13.4		45.4	24.2	
Level of Service		D	D		D	D	D	B		D	C	
Approach Delay (s)		42.0			44.0			17.9			24.7	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			25.6									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			96.8									Sum of lost time (s) 11.0
Intersection Capacity Utilization			67.6%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	371	1307	18	109	1103	581	48	60	114	1014	12	337
Future Volume (vph)	371	1307	18	109	1103	581	48	60	114	1014	12	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	403	1421	20	118	1199	632	52	65	124	1102	13	366
RTOR Reduction (vph)	0	1	0	0	0	228	0	0	112	0	0	249
Lane Group Flow (vph)	403	1440	0	118	1199	404	52	65	12	562	553	117
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	19.0	39.3		10.7	31.0	31.0	8.9	8.9	8.9	28.0	28.0	28.0
Effective Green, g (s)	20.0	40.3		11.7	32.0	32.0	9.9	9.9	9.9	29.0	29.0	29.0
Actuated g/C Ratio	0.19	0.39		0.11	0.31	0.31	0.10	0.10	0.10	0.28	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	344	1383		201	1100	492	170	179	152	473	475	446
v/s Ratio Prot	c0.23	c0.41		0.07	0.34		0.03	c0.03		c0.33	0.33	
v/s Ratio Perm						0.26			0.01			0.07
v/c Ratio	1.17	1.04		0.59	1.09	0.82	0.31	0.36	0.08	1.19	1.16	0.26
Uniform Delay, d1	41.5	31.3		43.3	35.5	32.8	43.3	43.5	42.3	37.0	37.0	28.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.8	35.7		4.3	55.1	10.6	1.0	1.3	0.2	104.2	94.8	0.3
Delay (s)	145.2	67.0		47.6	90.5	43.4	44.3	44.8	42.6	141.1	131.8	29.0
Level of Service	F	E		D	F	D	D	D	D	F	F	C
Approach Delay (s)		84.1			72.6			43.5			109.9	
Approach LOS		F			E			D			F	
Intersection Summary												
HCM 2000 Control Delay			85.2			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			102.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			96.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
12: Douglas Blvd & I-80 WB

Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗				↗↗		↗
Traffic Volume (veh/h)	0	1094	769	0	1613	1402	0	0	0	1019	0	175
Future Volume (veh/h)	0	1094	769	0	1613	1402	0	0	0	1019	0	175
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863				1863	0	1863
Adj Flow Rate, veh/h	0	1189	0	0	1753	0				1108	0	190
Adj No. of Lanes	0	2	1	0	2	1				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2174	956	0	2198	956				1043	0	480
Arrive On Green	0.00	0.61	0.00	0.00	0.62	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	3632	1583	0	3632	1583				3442	0	1583
Grp Volume(v), veh/h	0	1189	0	0	1753	0				1108	0	190
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1770	1583				1721	0	1583
Q Serve(g_s), s	0.0	11.3	0.0	0.0	21.6	0.0				17.6	0.0	5.5
Cycle Q Clear(g_c), s	0.0	11.3	0.0	0.0	21.6	0.0				17.6	0.0	5.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2174	956	0	2198	956				1043	0	480
V/C Ratio(X)	0.00	0.55	0.00	0.00	0.80	0.00				1.06	0.00	0.40
Avail Cap(c_a), veh/h	0	2292	1009	0	2316	1009				1043	0	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.5	0.0	0.0	8.3	0.0				20.2	0.0	16.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	2.0	0.0				45.9	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.5	0.0	0.0	10.8	0.0				14.9	0.0	2.4
LnGrp Delay(d),s/veh	0.0	6.8	0.0	0.0	10.2	0.0				66.1	0.0	16.6
LnGrp LOS		A			B					F		B
Approach Vol, veh/h		1189			1753						1298	
Approach Delay, s/veh		6.8			10.2						58.9	
Approach LOS		A			B						E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		38.1		20.0		38.1						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		36.0		16.0		36.0						
Max Q Clear Time (g_c+I1), s		13.3		19.6		23.6						
Green Ext Time (p_c), s		17.2		0.0		10.5						
Intersection Summary												
HCM 2010 Ctrl Delay			24.1									
HCM 2010 LOS			C									

JAA MPR Traffic Analysis
13: I-80 EB & Douglas Blvd

Cumulative Plus Project Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							 
Traffic Volume (vph)	288	1079	0	0	2548	527	0	0	1180	0	0	465
Future Volume (vph)	288	1079	0	0	2548	527	0	0	1180	0	0	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	3.0			2.0	2.0			3.0			3.0
Lane Util. Factor	1.00	0.86			0.91	1.00			1.00			0.88
Frt	1.00	1.00			1.00	0.85			0.86			0.85
Flt Protected	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (prot)	1770	6408			5085	1583			1611			2787
Flt Permitted	0.95	1.00			1.00	1.00			1.00			1.00
Satd. Flow (perm)	1770	6408			5085	1583			1611			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	1173	0	0	2770	573	0	0	1283	0	0	505
RTOR Reduction (vph)	0	0	0	0	0	160	0	0	0	0	0	431
Lane Group Flow (vph)	313	1173	0	0	2770	413	0	0	1283	0	0	74
Turn Type	Prot	NA			NA	Perm			Free			Perm
Protected Phases	5	2			6							
Permitted Phases						6			Free			4
Actuated Green, G (s)	18.6	79.7			58.1	58.1			97.9			8.2
Effective Green, g (s)	20.6	81.7			60.1	60.1			97.9			10.2
Actuated g/C Ratio	0.21	0.83			0.61	0.61			1.00			0.10
Clearance Time (s)	4.0	5.0			4.0	4.0						5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0						3.0
Lane Grp Cap (vph)	372	5347			3121	971			1611			290
v/s Ratio Prot	0.18	0.18			c0.54							
v/s Ratio Perm						0.26			c0.80			0.03
v/c Ratio	0.84	0.22			0.89	0.43			0.80			0.26
Uniform Delay, d1	37.1	1.6			16.0	9.9			0.0			40.4
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	15.7	0.0			3.4	0.3			4.2			0.5
Delay (s)	52.7	1.7			19.5	10.2			4.2			40.8
Level of Service	D	A			B	B			A			D
Approach Delay (s)		12.4			17.9			4.2			40.8	
Approach LOS		B			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			15.7									
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			97.9									
Intersection Capacity Utilization			72.2%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
14: Sunrise Ave & Douglas Blvd

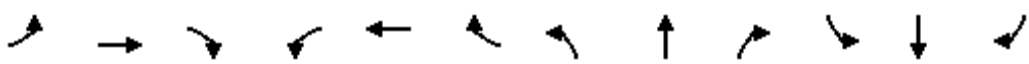
Cumulative Plus Project Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	430	1599	188	212	2221	145	389	494	164	184	783	466
Future Volume (veh/h)	430	1599	188	212	2221	145	389	494	164	184	783	466
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	467	1738	204	230	2414	158	423	537	178	200	851	507
Adj No. of Lanes	2	3	1	2	4	0	2	2	1	2	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	499	2359	946	350	2605	170	499	796	347	319	878	494
Arrive On Green	0.14	0.46	0.45	0.10	0.42	0.42	0.14	0.22	0.22	0.09	0.17	0.17
Sat Flow, veh/h	3442	5085	1583	3442	6193	404	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	467	1738	204	230	1872	700	423	537	178	200	851	507
Grp Sat Flow(s),veh/h/ln	1721	1695	1583	1721	1602	1791	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	12.0	25.0	5.3	5.8	33.2	33.4	10.8	12.4	8.9	5.0	14.9	15.0
Cycle Q Clear(g_c), s	12.0	25.0	5.3	5.8	33.2	33.4	10.8	12.4	8.9	5.0	14.9	15.0
Prop In Lane	1.00		1.00	1.00		0.23	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	499	2359	946	350	2021	753	499	796	347	319	878	494
V/C Ratio(X)	0.94	0.74	0.22	0.66	0.93	0.93	0.85	0.67	0.51	0.63	0.97	1.03
Avail Cap(c_a), veh/h	499	2359	946	499	2035	759	499	796	347	499	878	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	19.6	8.3	38.8	24.7	24.7	37.4	31.8	30.8	39.2	36.9	30.9
Incr Delay (d2), s/veh	25.4	1.2	0.1	2.1	7.9	17.8	12.9	2.3	1.3	2.0	23.0	47.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	11.9	2.4	2.8	16.0	20.1	6.0	6.3	4.0	2.5	8.8	18.7
LnGrp Delay(d),s/veh	63.4	20.8	8.5	40.9	32.6	42.5	50.4	34.0	32.1	41.3	59.9	78.2
LnGrp LOS	E	C	A	D	C	D	D	C	C	D	E	F
Approach Vol, veh/h	2409				2802			1138			1558	
Approach Delay, s/veh	28.0				35.7			39.8			63.4	
Approach LOS	C				D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	43.6	16.0	18.0	16.0	39.7	11.3	22.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	12.0	36.0	12.0	14.0	12.0	36.0	12.0	14.0				
Max Q Clear Time (g_c+I1), s	7.8	27.0	12.8	17.0	14.0	35.4	7.0	14.4				
Green Ext Time (p_c), s	0.4	9.0	0.0	0.0	0.0	0.4	0.3	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	39.4											
HCM 2010 LOS	D											

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions - Mitigated

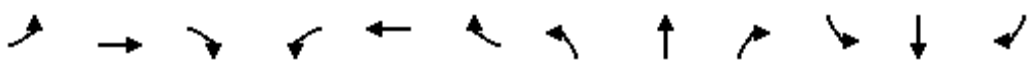
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	1344	16	70	658	922	16	8	29	650	11	206
Future Volume (vph)	226	1344	16	70	658	922	16	8	29	650	11	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	1461	17	76	715	1002	17	9	32	707	12	224
RTOR Reduction (vph)	0	1	0	0	0	216	0	0	30	0	0	171
Lane Group Flow (vph)	246	1477	0	76	715	786	17	9	2	361	358	53
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	12.3	33.7		7.2	28.6	46.0	3.8	3.8	3.8	17.4	17.4	17.4
Effective Green, g (s)	13.3	34.7		8.2	29.6	48.0	4.8	4.8	4.8	18.4	18.4	18.4
Actuated g/C Ratio	0.17	0.44		0.10	0.38	0.61	0.06	0.06	0.06	0.24	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	301	1569		185	1341	972	108	114	97	396	397	372
v/s Ratio Prot	c0.14	c0.42		0.04	0.20	0.19	c0.01	0.00		c0.21	0.21	
v/s Ratio Perm						0.31			0.00			0.03
v/c Ratio	0.82	0.94		0.41	0.53	0.81	0.16	0.08	0.02	0.91	0.90	0.14
Uniform Delay, d1	31.2	20.7		32.7	18.9	11.5	34.7	34.6	34.4	29.1	29.0	23.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.6	11.6		1.5	0.4	5.0	0.7	0.3	0.1	24.7	23.0	0.2
Delay (s)	46.9	32.3		34.2	19.3	16.5	35.4	34.9	34.5	53.8	52.0	23.8
Level of Service	D	C		C	B	B	D	C	C	D	D	C
Approach Delay (s)		34.4			18.4			34.8			46.0	
Approach LOS		C			B			C			D	
Intersection Summary												
HCM 2000 Control Delay			30.5									
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			78.1									
Intersection Capacity Utilization			82.9%									
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions - Mitigated

School PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Future Volume (vph)	366	1356	16	90	875	683	29	30	91	1060	12	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3533		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	398	1474	17	98	951	742	32	33	99	1152	13	343
RTOR Reduction (vph)	0	1	0	0	0	98	0	0	93	0	0	158
Lane Group Flow (vph)	398	1490	0	98	951	644	32	33	6	588	577	185
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	31.0	62.8		11.2	43.0	91.0	8.2	8.2	8.2	48.0	48.0	48.0
Effective Green, g (s)	32.0	63.8		12.2	44.0	93.0	9.2	9.2	9.2	49.0	49.0	49.0
Actuated g/C Ratio	0.22	0.44		0.08	0.30	0.64	0.06	0.06	0.06	0.34	0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	387	1541		147	1065	1006	111	117	99	563	565	530
v/s Ratio Prot	c0.22	c0.42		0.06	0.27	0.21	c0.02	0.02		c0.35	0.34	
v/s Ratio Perm						0.19			0.00			0.12
v/c Ratio	1.03	0.97		0.67	0.89	0.64	0.29	0.28	0.06	1.04	1.02	0.35
Uniform Delay, d1	57.1	40.2		65.0	48.8	16.3	65.4	65.3	64.4	48.6	48.6	36.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	53.2	15.6		10.9	9.7	1.4	1.4	1.3	0.3	50.0	43.3	0.4
Delay (s)	110.3	55.8		75.9	58.5	17.7	66.8	66.7	64.7	98.6	91.9	37.0
Level of Service	F	E		E	E	B	E	E	E	F	F	D
Approach Delay (s)		67.3			42.6			65.5			82.0	
Approach LOS		E			D			E			F	
Intersection Summary												
HCM 2000 Control Delay			63.1									HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			146.2									Sum of lost time (s) 12.0
Intersection Capacity Utilization			90.8%									ICU Level of Service E
Analysis Period (min)			15									
c Critical Lane Group												

JAA MPR Traffic Analysis
11: Harding Blvd & Douglas Blvd

Cumulative Plus Project Conditions - Mitigated

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	371	1307	18	109	1103	581	48	60	114	1014	12	337
Future Volume (vph)	371	1307	18	109	1103	581	48	60	114	1014	12	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	1770	3532		1770	3539	1583	1770	1863	1583	1681	1687	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	403	1421	20	118	1199	632	52	65	124	1102	13	366
RTOR Reduction (vph)	0	1	0	0	0	114	0	0	112	0	0	249
Lane Group Flow (vph)	403	1440	0	118	1199	518	52	65	12	562	553	117
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			3			4
Actuated Green, G (s)	19.0	39.3		10.7	31.0	59.0	8.9	8.9	8.9	28.0	28.0	28.0
Effective Green, g (s)	20.0	40.3		11.7	32.0	61.0	9.9	9.9	9.9	29.0	29.0	29.0
Actuated g/C Ratio	0.19	0.39		0.11	0.31	0.59	0.10	0.10	0.10	0.28	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	344	1383		201	1100	938	170	179	152	473	475	446
v/s Ratio Prot	c0.23	c0.41		0.07	0.34	0.16	0.03	c0.03		c0.33	0.33	
v/s Ratio Perm						0.17			0.01			0.07
v/c Ratio	1.17	1.04		0.59	1.09	0.55	0.31	0.36	0.08	1.19	1.16	0.26
Uniform Delay, d1	41.5	31.3		43.3	35.5	12.7	43.3	43.5	42.3	37.0	37.0	28.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.8	35.7		4.3	55.1	0.7	1.0	1.3	0.2	104.2	94.8	0.3
Delay (s)	145.2	67.0		47.6	90.5	13.4	44.3	44.8	42.6	141.1	131.8	29.0
Level of Service	F	E		D	F	B	D	D	D	F	F	C
Approach Delay (s)		84.1			62.9			43.5			109.9	
Approach LOS		F			E			D			F	
Intersection Summary												
HCM 2000 Control Delay			81.8			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			102.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			96.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



***Planning Division Staff Report
Planning Commission Meeting***

June 26, 2025

Prepared by: Escarlet Mar, Associate Planner

ITEM 6.2: Conditional Use Permit – 5 Sierra Gate Plaza – INFILL PCL 241 – John Adams Expansion – File #PL25-0180

REQUEST

The applicant, John Adams Academy Charter School, requests a Conditional Use Permit to allow the expansion of a legal nonconforming use. John Adams Academy Charter School proposes to occupy the first floor (approximately 12,200-square-feet) of the existing three-story commercial building located at 5 Sierra Gate Plaza for classroom and office use.

Applicant – Athena Eriksson, Comstock Johnson Architects
Property Owner – Abbasco Enterprises Limited Partnership

SUMMARY RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the three (3) findings of fact and approve the Conditional Use Permit subject to nine (9) conditions of approval.

SUMMARY OF OUTSTANDING ISSUES

There are no outstanding issues associated with this request. The applicant has reviewed and agrees with all recommended conditions of approval. The applicant has reached out to other business and property owners within Sierra Gate Plaza. It's been reported to City staff that applicant has not received any concerning feedback regarding the expansion.

BACKGROUND

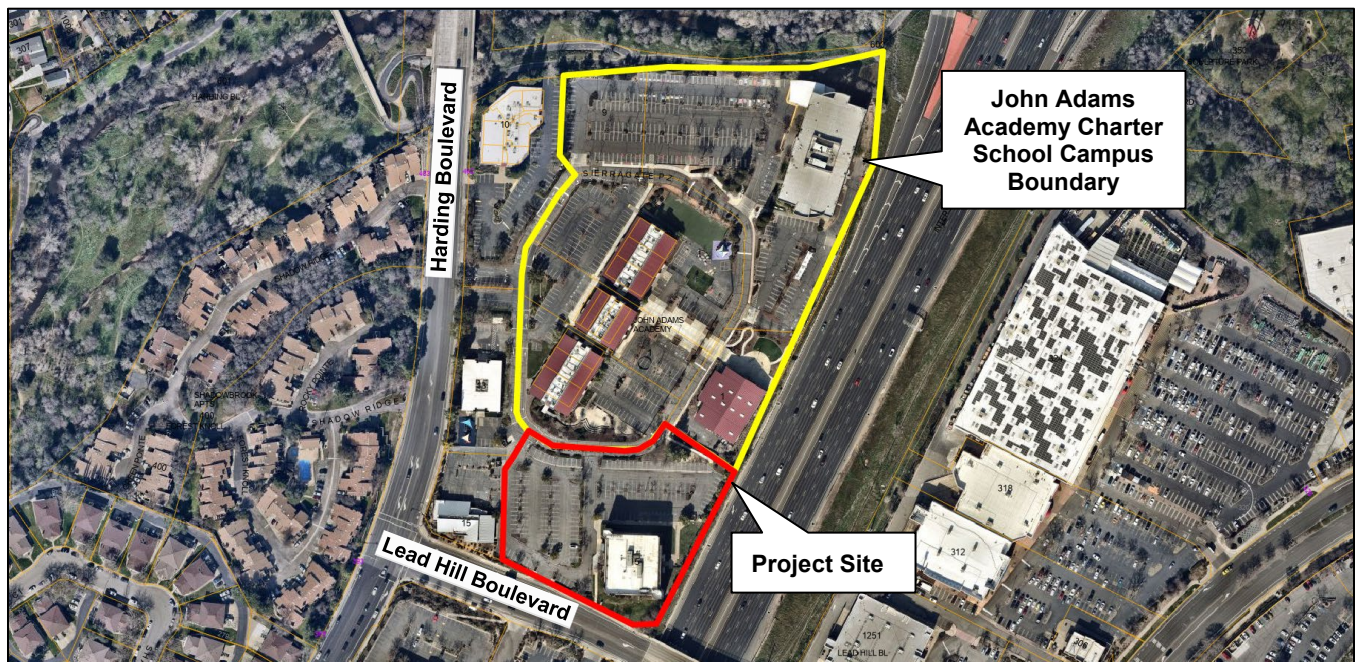
The project site is located within the Sierra Gate Plaza office complex, north of Lead Hill Boulevard, east of Harding Boulevard, south of Dry Creek and west of Interstate 80, within the City's Infill area. The project is an expansion of the existing John Adams Academy Charter School campus from its current footprint into the first floor of 5 Sierra Gate Plaza, as illustrated in Figure 1. The subject property has both zoning and General Plan land use designations of Business Professional (BP).

On May 5, 2011, Planning staff approved a Design Review Permit Modification (2011PL-023) to allow John Adams Academy (JAA) to construct a play area and install a six-foot tall steel fence around the play area. At this time the Zoning Ordinance listed Public Elementary and Secondary Schools as an allowed use within the BP zoning district. As noted in the staff report, charter schools were classified as public elementary and secondary schools and therefore JAA was in compliance with the Zoning Ordinance at the time.

On July 27, 2017, the Planning Commission adopted a Mitigated Negative Declaration and approved a Design Review Permit Modification and Tree Permit (PL15-0283) to allow construction of a 11,600-square-foot multi-purpose building (MPR) and associated site improvements, including a new concrete plaza area, landscaping, and lighting. Copies of the Supplemental Planning Commission staff report dated July 27, 2017, the original Planning Commission staff report, dated June 28, 2017, and the Initial Study/Mitigated Negative Declaration can be found in Attachments 1, 2 and 3, respectively. During the review of project PL15-0283, there were two (2) traffic analyses prepared. In 2016, a Traffic Access and Circulation Evaluation (Attachment 4) was completed by Kimley-Horn to evaluate the existing traffic

patterns and impacts, as well as potential traffic/circulation modifications that may need to be constructed to improve the traffic flow in and out of the JAA campus during peak drop-off and pickup times. This study evaluated the access and circulation within, and in the vicinity of the JAA campus. The study analyzed the addition of a 11,600-square-foot multi-purpose building to the campus and the purchase and use of building 7 Sierra Gate Plaza for classroom purposes. Due to a discrepancy in this study, as detailed in the Supplemental Planning Commission staff report (Attachment 1), a Traffic Impact Study was completed by Kimley-Horn on June 28, 2017 (Attachment 5). This study analyzed an ultimate student capacity of 1,650 students and recommended mitigation measures to ensure any traffic impacts to intersections remained less than significant.

Figure 1: Project Location



Following approval of the JAA entitlements, the Roseville City Council in 2020 considered and adopted amendments to the City's Zoning Ordinance (Title 19 of the Roseville Municipal Code). As part of these amendments, public and private elementary and secondary schools were combined into the same category within the zoning land use tables. The effect of this amendment is that both of these use types are now either principally permitted, conditionally permitted or prohibited consistent within each zoning district. Based on this amendment to Title 19, JAA's operation became a legal nonconforming use, because public and private elementary and secondary schools are not an allowed use within the Business Professional zone district.

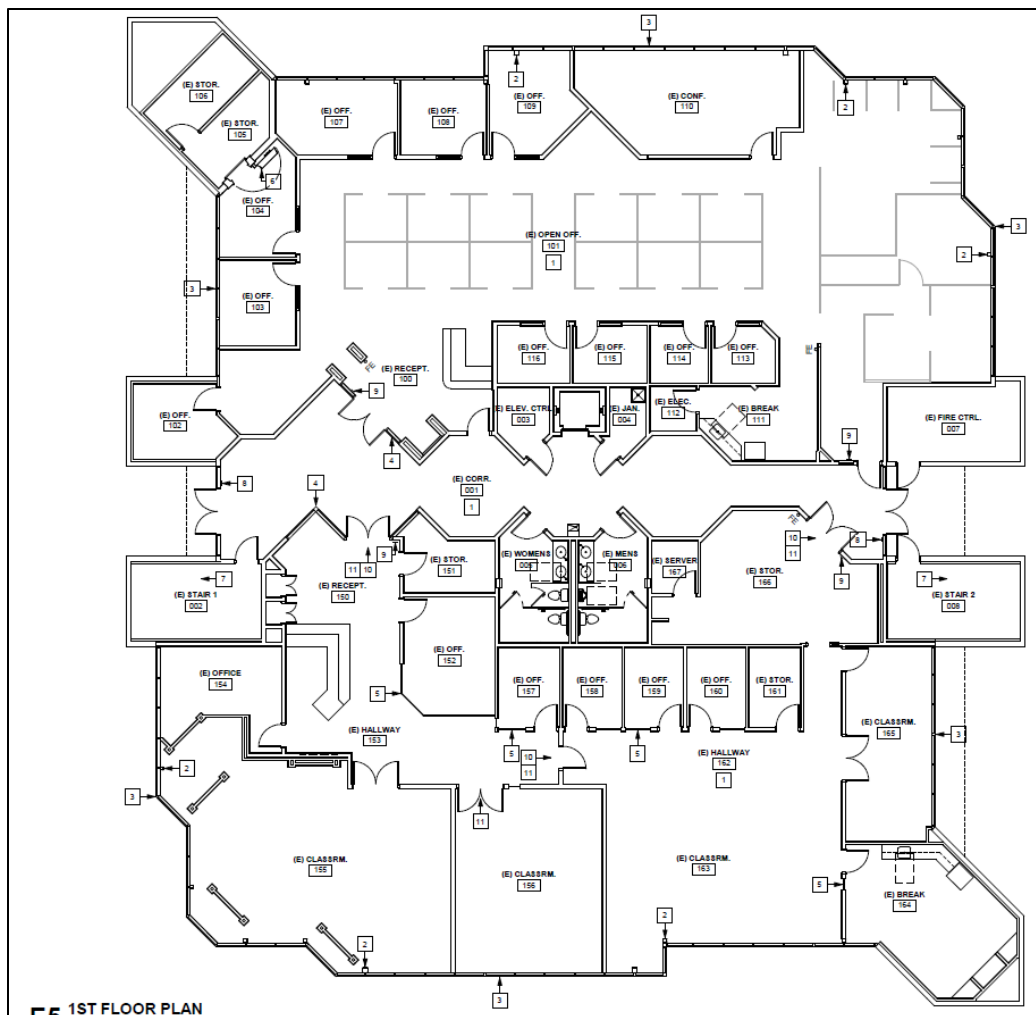
Pursuant to the City of Roseville Municipal Code Chapter 19.24 (Nonconforming uses, structures, and parcels), a nonconforming use may continue, provided that no such use shall be enlarged or increased, nor extended to occupy a greater area than which it lawfully occupied before becoming a nonconforming use. A nonconforming use in a commercial, industrial, or PD zone may be expanded or modified provided that a Conditional Use Permit is obtained.

As such, JAA requests a Conditional Use Permit to allow the expansion of a legal nonconforming use into the first floor of 5 Sierra Gate Plaza (see Figure 2). The expansion would allow for classroom and other educational space within the office building. The 5 Sierra Gate Plaza building is a three-story building with approximately 34,496-square-feet of office space, and JAA proposes to occupy the first floor, which is approximately 12,181-square-feet of floor area. The floor plan is currently broken down

into office and classroom space, and as illustrated in Figure 2 (see also Exhibit B) there are four (4) classrooms proposed, several office spaces, a conference room, and a break room. It is the ultimate goal of JAA to convert a significant portion of the first-floor office space into additional classrooms and performing arts rehearsal space. A description of the proposed uses for the first floor are detailed in the Business Operation Plan (see Exhibit A). This Conditional Use Permit would not restrict the square footage of first floor space that can be dedicated to educational purposes. The proposed addition would bring the existing 117,000-square-foot JAA campus to a total of 151,496-square-feet of educational space to the campus.

As detailed in the Business Operations Plan (Exhibit A), JAA has operated a transitional kindergarten through 12th grade education program at the campus since 2011. Since the beginning of JAA's operation, the school has retrofitted office space into educational classrooms for its students. The school's operation has expanded into four (4) of the original eight (8) buildings in the Sierra Gate Plaza. JAA now proposes to expand their operation into the first floor of 5 Sierra Gate Plaza. The proposed expansion will not increase the student capacity of 1,650 students or change the drop off and pick up procedures that are now in place. After the expansion, the operation of the JAA campus will remain consistent with the 2017 Kimley-Horn Traffic Impact Study (Attachment 5). The expansion into the first floor of 5 Sierra Gate Plaza with classrooms and performing arts rehearsal space will allow JAA to provide more after school programming and before and after school care opportunities. An increase in before and after school programming will have the impact of reducing drop-off and pick-up peak traffic.

Figure 2: Proposed Floor Plan



CONDITIONAL USE PERMIT EVALUATION

Section 19.78.060 of the City of Roseville Zoning Ordinance requires that three findings be made in order to approve a CUP. The three findings are listed below in ***italicized, bold print*** and are followed by an evaluation of the proposal in relation to each finding.

1. The proposed use or development is consistent with the City of Roseville General Plan and any applicable specific plan.

The project site has a land use designation of BP. Primary uses allowed in the BP land use designation include administrative, professional, government, and medical offices, and research and development (not including any manufacturing or assembly), hospitals, clinics, and general medical may also be permitted. In order to provide the flexibility necessary to achieve the General Plan's land use policies, the General Plan land use designations define allowable uses broadly, when compared to zoning designations, which provide more specific standards to ensure compatibility among adjacent land uses. As discussed, above, based on the 2020 amendments to the Zoning Ordinance, JAA is currently a legal nonconforming use and legally operates within Sierra Gate Plaza. The Zoning Ordinance requires a CUP in order to expand a legal nonconforming use. With approval of a CUP, the proposed expansion into the first floor of 5 Sierra Gate Plaza would be considered to be consistent with the provisions of the Zoning Ordinance and therefore, the policies of the General Plan.

2. The proposed use or development conforms with all applicable standards and requirements of the Zoning Ordinance.

The project is located in the BP zone district. Public/Private Elementary and Secondary schools are not an allowed use within the BP zone district and, as described above, JAA is considered a legal nonconforming use. The proposed CUP for this project will be considered to cover JAA's entire operation within the Sierra Gate Plaza as well as the proposal to occupy the first floor of 5 Sierra Gate Plaza. No modifications to the exterior of 5 Sierra Gate Plaza or to the site design are proposed with this application. Only interior work is proposed to allow for additional classroom and rehearsal space. As detailed in the staff report for the 2017 project (PL15-0283) all of the buildings within the Sierra Gate Plaza meet the Zoning Ordinance standards for building setbacks, landscape setback, height and lot coverage. In 2017, it was determined that the JAA campus exceeded the minimum parking requirements by 14 spaces. The proposed expansion into the first floor of 5 Sierra Gate Plaza will not increase the student capacity and is not proposed to increase faculty staffing. While the driveway on Lead Hill and the parking area associated with 5 Sierra Gate Plaza will not be used for drop-off or pick-up, or student parking, there will be additional parking stalls available to the JAA faculty and administrative staff. Based on this understanding, the JAA campus and surrounding office buildings within the Sierra Gate Plaza complex will continue to exceed the minimum parking requirements.

3. The location, size, design and operating characteristics of the proposed use or development is compatible with and shall not adversely affect or be materially detrimental to the health, safety, or welfare of persons residing or working in the area, or be detrimental or injurious to public or private property or improvements.

The purpose of this CUP is to evaluate and place operating conditions of approval on the JAA campus, including the proposed expansion into the first floor of 5 Sierra Gate Plaza. Overall, JAA will continue to operate consistent with previous entitlements. The maximum student capacity will be set at 1,650 students. Currently, the combined attendance is approximately 1,400 students. The Business Operations Plan (Exhibit A) provides a detailed description of JAA's use of the property. This operation plan is designed to ensure that, with the proposed expansion, the JAA campus will comply with the requirements for Finding #3, above. Some of the more important operating characteristics to note, include access to the campus, on-site circulation, drop-off and pick-up times, and operation of 5 Sierra Gate Plaza.

Access to the site will remain the same, as no changes to the on-site circulation are proposed at this time. Access into the campus will continue to occur from Harding Boulevard, pick-up and drop-off zones will remain the same throughout the campus. As proposed, there will be no vehicular access allowed for pick-up and drop-off from Lead Hill Boulevard to the building at 5 Sierra Gate Plaza. Parents will be notified at the beginning of the school year, as well as pick up/drop off information being included in the Family-Scholar handbook. The pick-up and drop-off schedule will remain the same with staggered schedules. Below is the schedule:

Elementary TK/K Monday through Thursday: Morning starts at 8:00am and ends at 11:30am. Elementary Afternoon TK/K starts at 11:15am and ends at 2:45pm.

Friday, TK/K starts at 8:00am and ends at 12:33pm.

1st-6th Grade: Monday through Thursday: 8:15am-2:45pm.

Friday: 8:15am to 12:30pm.

Middle School (7-8th Grade): Monday through Thursday: 8:30am to 3:00pm.

Friday: 8:30am to 1:05pm.

High School (9-12th Grade): Monday through Thursday: 8:30am to 3:40pm.

Friday: 8:30am to 1:05pm.

While JAA does operate consistent with the findings and recommendations found in the 2017 Kimley-Horn Traffic Study (Attachment 5), it is recognized that traffic does back up on Harding Boulevard during the morning drop-off and afternoon pick-up times. As mentioned above, the proposed expansion into the first floor of 5 Sierra Gate Plaza, with classrooms and performing arts rehearsal space, will allow JAA to provide more after school programming and before and after school care opportunities. An increase in before and after school programming will have the impact of reducing drop-off and pick-up peak traffic. The benefit of this expansion will be to flatten peak hour traffic.

JAA proposed to use nearly the entire first floor of 5 Sierra Gate Plaza for educational purposes. In the near term, this space will be used for four (4) classrooms with the majority of the square footage used for office space, consistent with the floor plan shown in Exhibit B. JAA plans to transform the first floor into approximately 10 to 15 classrooms and several large rehearsal rooms for performing arts programming. It is anticipated over the next year JAA will process Tenant Improvement Plans to modify this space to its ultimate configuration.

The approval of a CUP to allow JAA to expand a legal nonconforming use will result in negligible changes to the current operation of the existing school campus. This expansion is compatible with the surrounding uses and will not result in any adverse impacts or be detrimental to the general health safety and welfare.

PUBLIC OUTREACH

The proposed project was distributed to all internal and external agencies and departments who have requested such notice, and all comments or recommended conditions of approval have been incorporated into the project, as appropriate. Early notification of the project was posted on the Roseville Coalition of Neighborhood Associations (RCONA)'s website. A notice of the public hearing was published in the Roseville Press Tribune on June 13, 2025, and a notice of the hearing was also distributed to all property owners within 300 feet of the site and posted on the RCONA website. No comments have been received as of publication of the staff report.

ENVIRONMENTAL DETERMINATION

As required by the California Environmental Quality Act (CEQA), the City of Roseville, acting as Lead Agency, prepared an Initial Study/Mitigated Negative Declaration (IS/MND) for the originally approved John Adams Multi-Purpose Building project to evaluate the environmental effects of the project. The proposed project is substantially consistent with the approved project and the existing student capacity. The proposed John Adams Academy Expansion Project will not result in any new environmental impacts. Therefore, no further environmental review is required.

RECOMMENDATION

The Planning Division recommends the Planning Commission take the following actions:

1. Adopt the three (3) findings of fact and approve the **CONDITIONAL USE PERMIT – 5 SIERRA GATE PLAZA – INFILL PCL 241 – JOHN ADAMS EXPANSION – FILE #PL25-0180** subject to nine (9) conditions of approval.

CONDITIONS OF APPROVAL FOR THE CONDITIONAL USE PERMIT, FILE #25-0180

1. This Conditional Use Permit is to allow the expansion of a legal nonconforming use at the John Adams Academy Charter School campus and provide conditions of approval for the overall school campus and is approved based on the Business Operation Plan in Exhibit A, and as conditioned below. (Planning)
2. The ground floor of 5 Sierra Gate is allowed to be converted into classrooms, teacher' offices, break rooms, meeting rooms and dedicated performing arts space, as detailed in the Business Operations Plan. (Planning)
3. The John Adams Academy Charter School campus shall have a maximum student capacity of 1,650 students. (Planning)
4. The typical pick-up and drop-off times shall be consistent with those found in the Business Operations Plan in Exhibit A, subject to the requirements in Condition #6. (Planning)
5. There shall be no pick-up or drop off utilizing the driveway on Lead Hill Boulevard and the parking lot adjacent to 5 Sierra Gate. There shall be no student parking within the parking lot adjacent to 5 Sierra Gate. (Planning and Engineering)
6. Any further expansion of the John Adams Academy Charter School campus, either within 5 Sierra Gate or other buildings within the Sierra Gate Plaza center shall require the approval of a Conditional Use Permit Modification, consistent with the provisions of the Roseville Municipal Code. (Planning)
7. Any modification to the Business Operations Plan found in Exhibit A that causes a change in the typical drop-off and pick-up times and has the potential to increase traffic generation, shall require the approval of a Conditional Use Permit Modification, consistent with the provisions of the Roseville Municipal Code. State mandated changes to the school's operation that require a modification to the Business Operations Plan are exempt from the provisions of this condition. John Adams shall notify the City of any State mandated changes to allow the Business Operations Plan to be updated. (Planning)
8. The applicant shall submit plans to the Building Division and secure a building permit for any proposed tenant improvements. At a minimum the applicant shall secure a Certificate of Occupancy for the change in use. (Building)

9. This Conditional Use Permit approval shall be effectuated within a period of two (2) years from this date and if not effectuated shall expire on **June 26, 2027**. Prior to said expiration date, the applicant may apply for an extension of time, provided, however, this approval shall be extended for no more than a total of one (1) year from **June 26, 2028**. (Planning)

ATTACHMENTS

1. PL15-0283 JAA Staff Report from July 27, 2017
2. PL15-0283 JAA Staff Report from June 22, 2017
3. PL15-0283 JAA IS/MND from July 27, 2017
4. Kimley-Horn Traffic Access and Circulation Evaluation dated January 13, 2016
5. Kimley-Horn Traffic Impact Study dated June 28, 2017

EXHIBITS

- A. JAA Business Operation Plan
- B. Floor Plan

Note to Applicant and/or Developer: Please contact Planning Division staff at (916) 774-5276 prior to the Commission meeting if you have any questions on any of the recommended conditions for your project. If you challenge the decision of the Commission in court, you may be limited to raising only those issues which you or someone else raised at the public hearing held for this project, or in written correspondence delivered to the Planning Manager at, or prior to, the public hearing.

PC EXHIBIT A: JAA BUSINESS OPERATIONS PLAN

John Adams Academy Proposal for Use of 5 Sierra Gate Plaza

John Adams Academy (JAA) seeks approval to occupy and use, the 13 Sierra Gate Plaza (“13 Sierra Gate”), Roseville, CA, 95648, for classroom and other educational space. 13 Sierra Gate Plaza is a single-story building with approximately 6,795 square feet of building area.

JAA previously applied for a conditional-use permit for the first floor of 5 Sierra Gate Plaza for approximately 12,181 square feet. This proposal is to revise that conditional use permit from 5 Sierra Gate Plaza first floor to 13 Sierra Gate Plaza, with little to no change on impacts and benefits proposed by the previously approved conditional use permit.

JAA is seeking to acquire the entire 13 Sierra Gate Plaza facility for use for its lower elementary transitional kindergarten and kindergarten (Tk and K) programing as-well as for its state mandated Expanded Learning Opportunities Program (ELOP) before and after school programing. This facility would be added to the already 117,000 square feet of education space at its John Adams Academy-Roseville campus without increasing the campus enrollment capacities or traffic profile.

The facilities were recently updated from a B-Office space use to educational use for day-care. This space is currently being operated as a day-care facility and is ideally suited for JAA’s lower elementary TK-K and ELOP programing. It has classrooms, restrooms, children’s restrooms, storage, break room, and an outdoor playground.

Allowing JAA to occupy and use, the 13 Sierra Gate Plaza would (1) free up classroom space on its existing campus, which will continue to allow for diverse performing arts programming, which in turn provides increased before- and after-school programming; and (2) provide dedicated space (at 13 Sierra Gate) for JAA’s before and after school ELOP programming (daycare-type programming) freeing up the elementary multipurpose space for lunch during the school day and for additional programing before and after school, which would also decrease peak hour traffic.

Summary

JAA has operated a transitional kindergarten-12th grade educational program at its Roseville campus at Sierra Gate Plaza since 2011. JAA has retrofitted existing office space as best as it can to serve the needs of a K-12 charter school. As our high school has begun to grow to its planned capacity, the current space has proven insufficient to serve our populations increasing diverse educational needs for a full classical program with all the attendant state mandated services.

In our TK-12 education program, the planned capacity is driven primarily by the size and number of classes in elementary school (4 sections per grade) and how those classes matriculate into the secondary program. Our Roseville elementary program has been at capacity for many years. This current enrollment profile of 4 sections per grade has not changed over the years. But the need, and in some instances requirement from the state, to provide additional programing including before and after school programing has increased the

demands on space. In other words, JAA is struggling with space issues that are limiting academic programming for before and after school programming and limiting academic programming for secondary scholars, even without changing our enrollment profile that has been in place for over a decade.

As scholars matriculate into the secondary program, the academy needs more classrooms to serve an ever-increasing diversity of classes. Whereas in our elementary program, scholars have a singular home room, in our secondary program, scholars need a variety of math classes, history classes, music and art classes, and electives. The student-to-room ratio decreases significantly in the secondary program and decreases even more as we add more electives to provide current population of students additional choices in learning. Without additional offerings in the secondary program, our ability to provide our students with a full, rich academic program is limited.

Additionally, the state has increased the on-campus services required for our existing programming, further limiting the space available to provide a full classical program. The state has required that we provide breakfast and lunch meals universally to all students. We have had to repurpose our lunchrooms into full-service cafeterias with kitchens, severely limiting a large multi-purpose space from use for additional program during and after school. This need for lunchroom space is also increasingly competing for demands for the same space with the now mandated state Expanded Learning Opportunities Program (ELOP) and with JAA's other performing arts programming

As described in more detail below, the state has implemented an Expanded Learning Opportunities Program (ELOP) that increases JAA enrichment offerings before and after school. This program mandates enrichment and expanded learning before, after, and during school throughout the school year. ELOP must run for a minimum of 9 hours a day (including the school day), which also provides parents with an on-site care option (referred to as "JAA's Foundations Program"), in lieu of their offsite day care options.

Also, the state is allocating restricted funding directly for the arts programs which in turn increases the need for additional space during the school day and before and after school (e.g., strings programming, jazz band, marching band, etc.). The ELOP programming and the additional arts programming compete with the needs in the elementary multipurpose space and expand the need for additional on-site space during the school day, before the school day, and after the school day, without changing JAA's current enrollment profile.

ELOP and other after school programming, provided both have sufficient space to operate at capacity, actually decrease afternoon peak traffic as students have additional options after school as detailed below. Occupying 13 Sierra Gate Plaza would provide for just such additional, much needed space, without affecting current pick-up and drop-off times and locations and without affecting JAA's current enrollment capacity.

Detailed Uses:

Current Facilities and Limitations:

In three of its current buildings, JAA operates its elementary school which is at capacity, serving approximately 880 students with two sections of TK and 4 sections per grade kindergarten through 6th grade. The remainder of the classrooms at JAA serve our secondary program 7th grade through 12th grade. The combined attendance is currently approximately 1400 students. When the secondary program reaches capacity, JAA will reach its permitted capacity of 1650. As the academy has grown, we have found that our current facilities are insufficient to serve all the needs of this population, especially considering the additional mandates from the state of California.

First, many of our teachers do not have their own classroom but share classrooms with no place to prepare during their preparation period.

Second, the academy currently has no specialized math, science or art rooms. The current spaces used for these courses are undersized without any of the special accoutrements of a math/science program (e.g., lab tables, sinks, specialized storage, etc.)

The academy has an increasing demand for a diversification of its performing arts programming. A recent state ballot initiative allocated specific funding for increased arts and music programming to support our increased demand in this space. For example, our Roseville program needs space during and after school for a new band program, a jazz band, and strings program for both elementary and secondary. Additionally, our spaces for our current music and drama programming are currently insufficient, as there is no room to adequately store instruments, props, and stage equipment, not to mention the additional space requirements needed to provide for the addition of new performing arts offerings.

Each of our arts programs, our athletic programs, and our ELOP programs all compete for the same spaces, limiting, in many instances, the services we can provide to our existing population. Each of these programs offers programming outside of the regular school day effectively, decreasing the peak traffic as those scholars come before and after those peak times.

Additionally, the state of California has expanded the requirements for providing school lunch by charter schools. Additional indoor space is needed to prepare, serve, and eat lunch. We also have increased requirements from the state of California during the school day to provide full-day care (ELOP programming) for some of our half-day transitional kindergarten and kindergarten students, which requires additional space without any increase in enrollment. Also, special education demands have increased encroaching on space previously used for the general program.

Currently, our secondary program only has 31 classrooms. To serve the program needs for the current enrollment capacities as discussed above with a full array of secondary classes, including performing arts, math, sciences, and other electives, the Academy is projected to need a total of 42-45 classrooms with two additional specialized performing arts rooms, and an

additional cafeteria and a lecture hall for our classical model (programmatic features that are currently in operation at JAA's other campuses).

Although 13 Sierra Gate does not free up additional space for all the secondary program needs, it does allow for the existing performing arts programming to continue during and after school. These additional classrooms would allow teachers to have dedicated classroom space rather floating between classrooms, and would provide space for specialized classrooms for math, science, art, drama, and music. The additional classrooms would also allow for dedicated space for our more recently state-mandated enrichment programming, which currently takes up lunchroom space and other valuable elementary and secondary space not previously used for enrichment programming.

Pick-up and Drop-off

Pick-up and drop-off occur for both elementary and secondary from Harding Blvd. to designated zones on campus. Typical drop-off begins at 7:45am and finishes by 8:30am. Pick-up begins at 2:30pm and finishes by 3:55pm TK-12 grades. We phase elementary pick-up first and then secondary. The following includes further details of pick-up and drop-off timing by grade.

Elementary TK/K Monday through Friday:

Morning starts at 8:00am and ends at 11:50am. Elementary Afternoon TK/K starts at 11:15am and ends at 3:05pm.

1st-6th Grade: Monday through Thursday: 8:10am-2:45pm.

Friday: 8:10am to 12:00pm.

Middle School (7-8th Grade): Monday through Thursday: 8:30am to 3:40pm.

Friday: 8:30am to 1:05pm.

High School (9-12th Grade): Monday through Thursday: 8:30am to 3:40pm.

Friday: 8:30am to 1:05pm.

TK and K scholars will be dropped off in the current drop off zones. They will gather on campus at 1 Sierra Gate Plaza and will then be escorted by teachers and aides to and from 13 Sierra Gate Plaza with a crossing guard outside of the peak morning and afternoon traffic times.

Before and After-School Programming

The new space in the 13 Sierra Gate building would be used for classrooms for our TK-K programming which would open additional classroom space on campus to provide for electives that we currently do not have space for during the school day. After school, it would provide dedicated space for our ELOP before- and after-school programming, which it turn provides additional space on campus for other before- and after-school enrichment programming. It would also alleviate some of the shared space issues that exist between various programs.

JAA's before and after school program continues to have athletics, performing arts, and enrichment programming. Previously, the academy contracted services for before and after school care. Now, those services have been brought in-house without significant change to hours of service, offerings, and capacity. Enrichment programming includes chess, music programming, academic intervention, and some other miscellaneous programs.

ELOP programming (including Foundations care programming) begins at 7:00am in the morning; after school the ELOP programming continues from the release from school until when parents pick up their student but no later than 5:30pm. Our sports programs run from right after school, and depending on the sport, usually continue until 5:00-5:30pm with some athletic programming continuing until 8pm. Our performing arts after school programming starts at the end of school and continues until 4:30 for some programming, 5-5:30 for other programming, and later for rehearsals and performances.

Having dedicated larger spaces for before-and-after school programming will decrease the competing interest and difficulties between ELOP, Performing Arts, Athletics, school lunch program when scheduling the elementary cafeteria and the large MPR gym. This in turn will allow for each of these programs to increase their before and after school offerings which will further flatten the pick-up and drop-off traffic peaks.

Proposed Use:

The additional approximately 6,795 square feet of building area at 13 Sierra Gate would help address the space issues that JAA is facing, allowing the academy to shift some of the classroom burden off of the current classrooms and cafeterias on the campus. It would also allow the Academy to expand and diversify its program offerings to meet the needs of our student population.

The proposed use of 13 Sierra Gate Plaza would be John Adams Academies educational needs with the following expected uses:

- (1) Classrooms for TK-K programming.
- (2) Space for before- and after-school ELOP programming (daycare-type enrichment programming)
- (3) Teacher breakroom and teacher offices.
- (4) Additional storage.
- (5) Other offices and reception.

13 Sierra Gate currently has four classroom areas and two indoor learning and play areas. John Adams Academy would use those classrooms for its three TK-K classrooms with one room dedicated to ELOP programming. The three TK-K classrooms collectively hold 84 students for its morning (AM) programming and 84 students (PM) for its afternoon programming. The ELOP programming would run from before the start of school until after school.

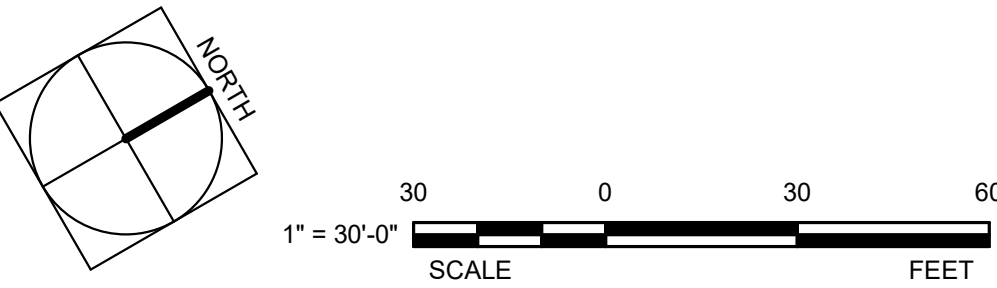
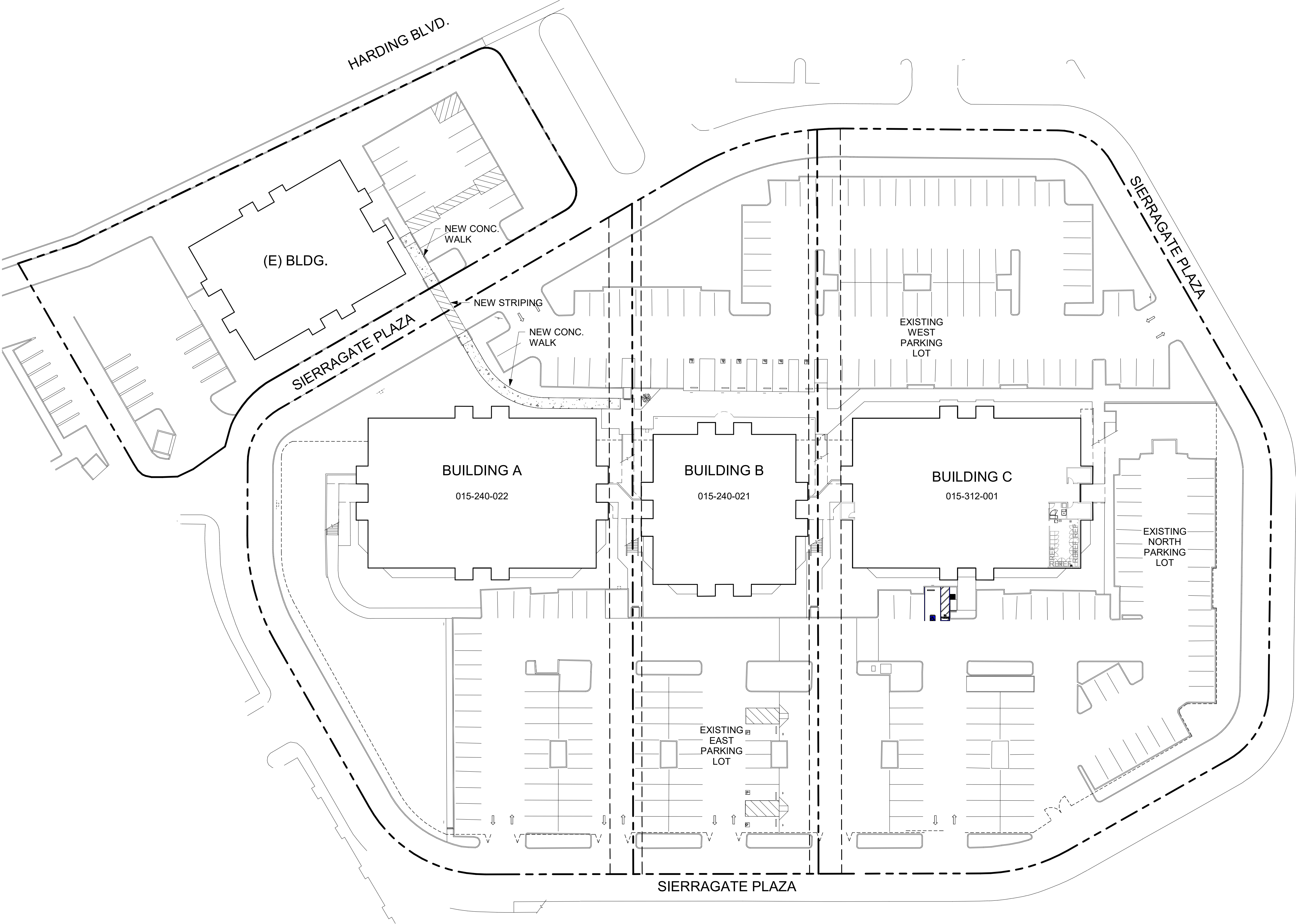
This would also free up space on the campus at 1 Sierra Gate Plaza. In total, this would likely expand our before and after school opportunities (primarily after school) by about 100 students, decreasing peak hour traffic by about that many students.

In sum, the additional space to be provided by 5 Sierra Gate Plaza alleviates the space constraints on existing programming without affecting enrollment profile; this includes: (1) allowing for additional school-day academic programming; and (2) allowing the academy to expand before and after-school offerings to existing students (which are currently limited due to space constraints) which in-turn will flatten peak pick-up and drop-off traffic.

Traffic:

Current traffic for family pick-up and drop-off proceeds onto campus at 1 Sierra Gate Plaza from the Harding Blvd. entrance and continues to several different existing pick-up and drop-off zones throughout the campus. Since the current campus facilities and 13 Sierra Gate Plaza are adjacent to the existing campus and scholars can access 13 Sierra Gate Plaza from 1 Sierra Gate Plaza by foot, there is no proposed change in our pick-up and drop-off patterns. There will be no vehicular access allowed for pick-up and drop-off from Lead Hill Boulevard to 13 Sierra Gate Plaza, which prohibition will be included in the Family-Scholar handbook.

EXHIBIT B: JAA CAMPUS MAP



Preliminary Design For:
JOHN ADAMS ACADEMY
CUP MODIFICATION
13 Sierra Gate Plaza
Roseville, California

P1.0
KLW / YT 2025235.00 28 OCT 2025





Planning Commission Communication

Meeting Date: 12/11/2025

Item #: VII.1

Item ID: 2025-951

Title: Election of Design Committee Alternate
Contact: Lupe Nelson 916-774-5281 lnelson@roseville.ca.us

REQUEST

Elect a Design Committee Alternate.

RECOMMENDATION

The Planning Division recommends that the Planning Commission take the following actions:

1. Elect a Design Committee Alternate.

Respectfully Submitted,
Lupe Nelson, Administrative Assistant

Greg Bitter, Planning Manager

ATTACHMENTS:

None

REVIEWERS:

Lupe Nelson, Development Services Department

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