

*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<sup>+</sup>
- C. CIP Cumulative (2035) Conditions<sup>++</sup>
- D. CIP Cumulative (2035) plus Proposed Project Conditions<sup>+++</sup>

<sup>+</sup> Scenario adds traffic associated with 42 new students to Existing (2017) Conditions

<sup>++</sup> 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.

<sup>+++</sup> 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 standards<sup>1</sup>. 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.

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<sup>1</sup> 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

VICINITY MAP



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

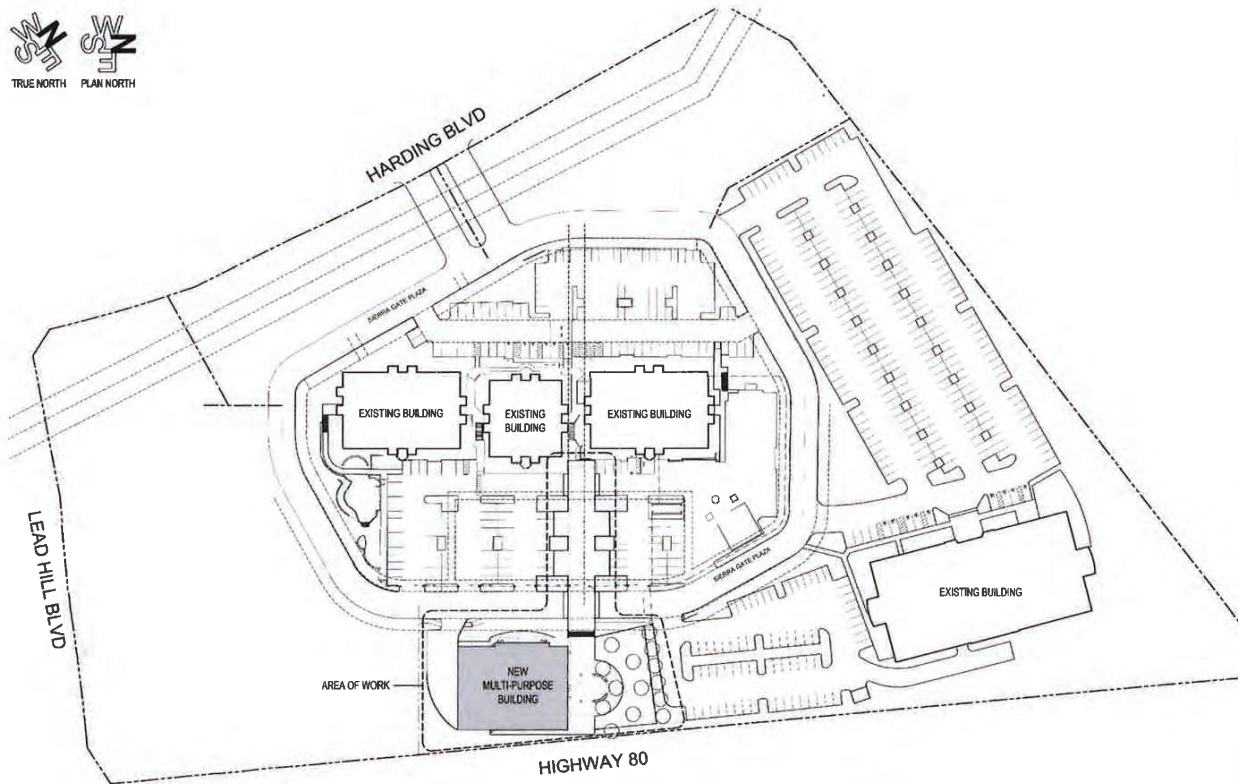
NEW BUILDING INFORMATION

BUILDING GROSS AREA: 11,400 SQ FT

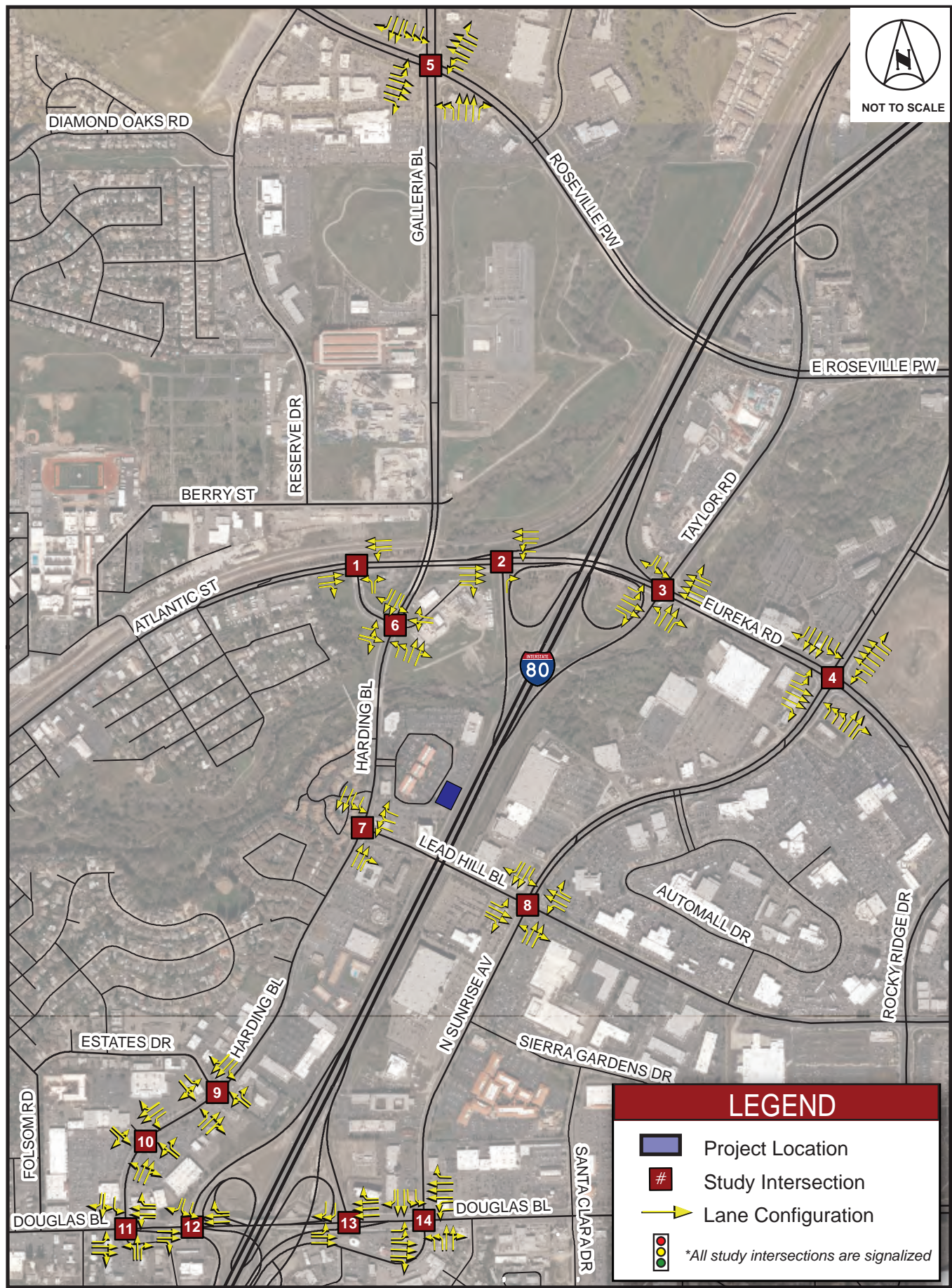
BUILDING HEIGHT: 36'-0"

BUILDING USE: ASSEMBLY  
EDUCATION

SITE PLAN



**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)<sup>2</sup>. 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 project<sup>3</sup>, as well as data included in the *Trip Generation Manual, 9<sup>th</sup> 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:

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

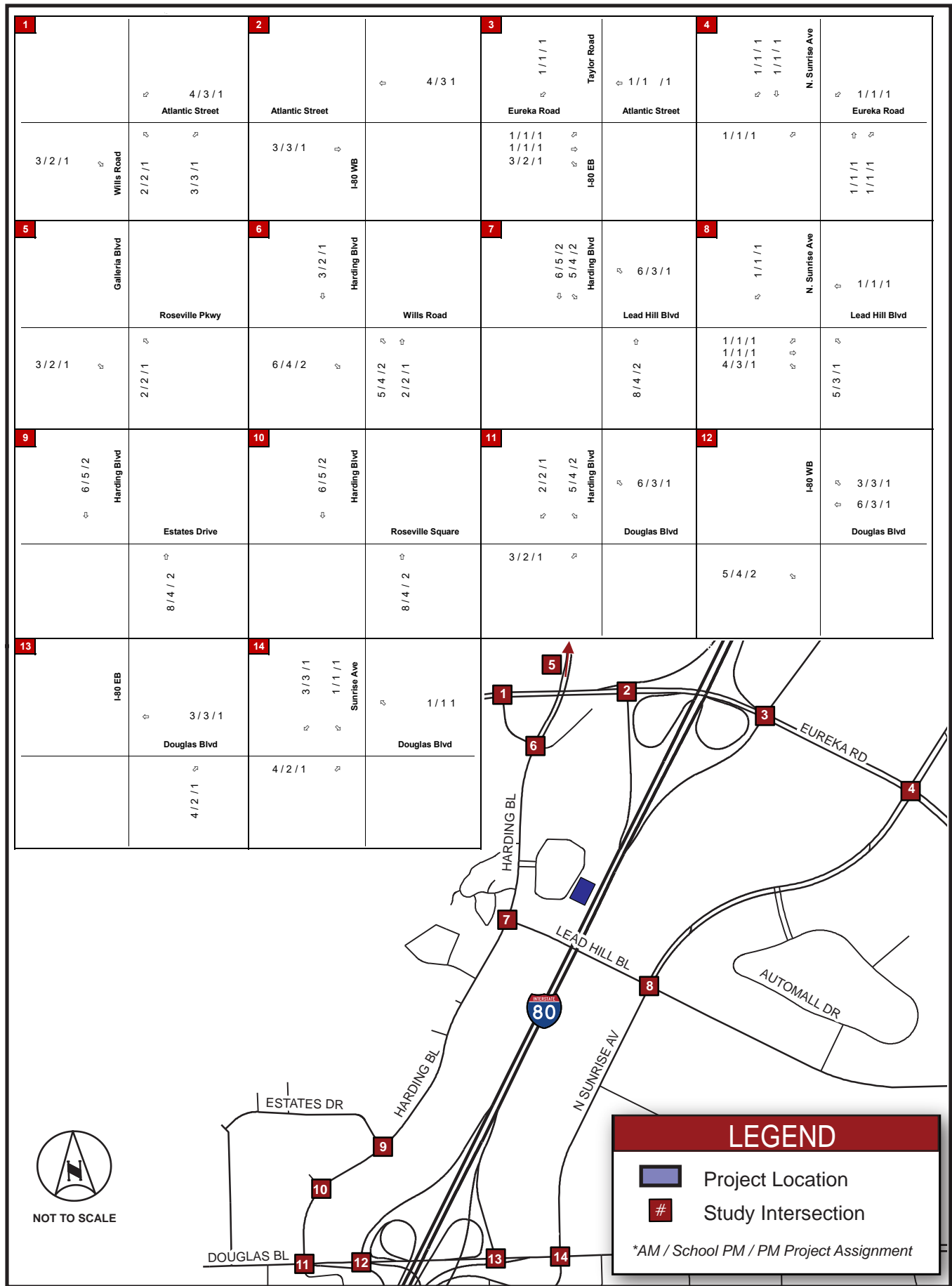
AM, School PM, and PM Peak-Hour in and out percentages were calculated based on the previous study. The proposed project trip generation for the three peak-hours are presented in **Table 1**.

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**.

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

<sup>3</sup> *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		
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 requirements<sup>1</sup>.

### 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 guidelines<sup>1</sup>, this LOS analysis 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

## 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.

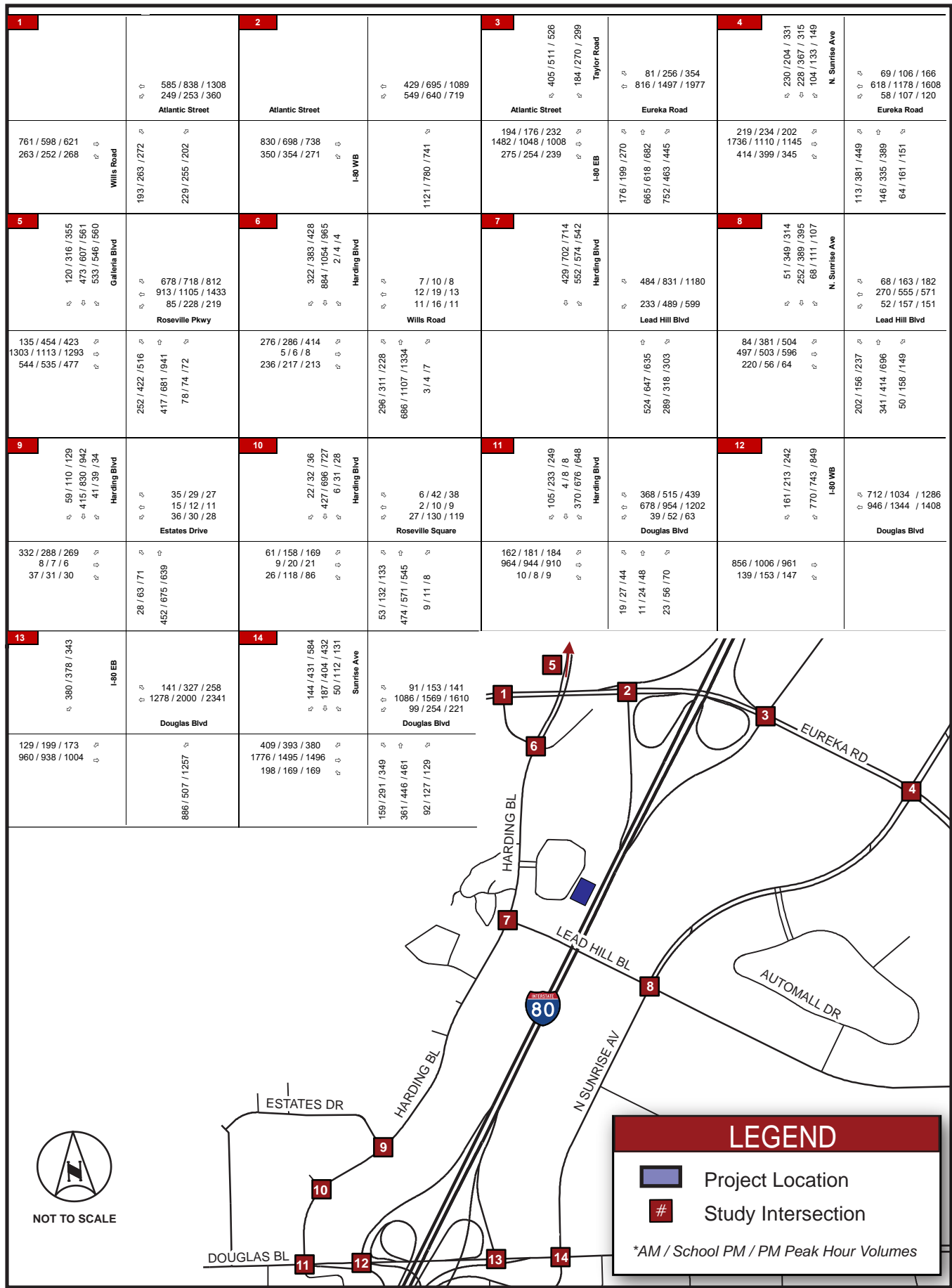
**Table 3 – Existing (2017) Intersection Levels of Service**

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.

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



## EXISTING (2017) PLUS PROPOSED PROJECT CONDITIONS

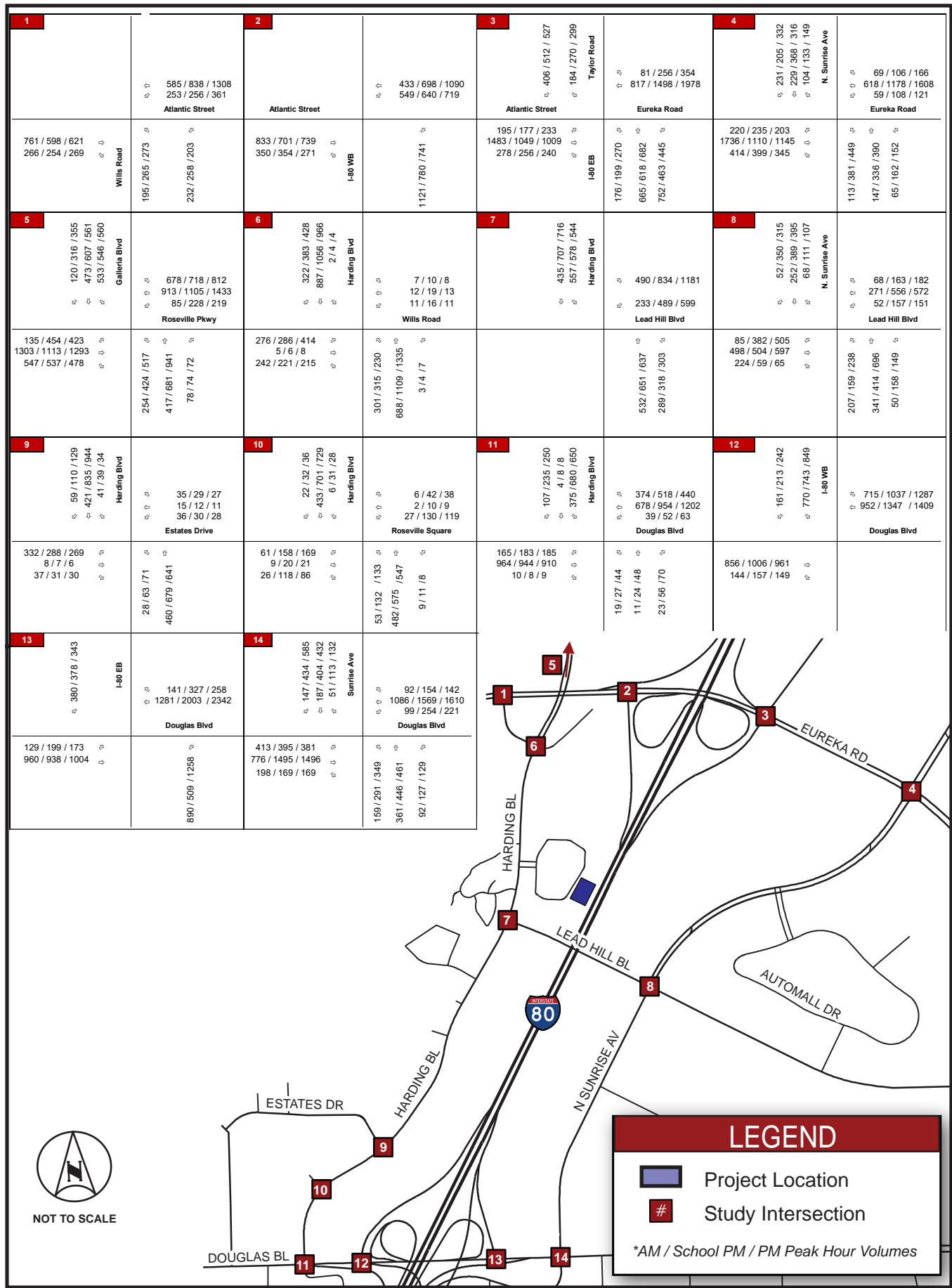
As previously discussed, the number of trips anticipated to be generated by the proposed project was derived using site-specific trip generation rates previously developed for the project, as well as data published by ITE. These trips were then assigned to the roadway network based on existing traffic 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**

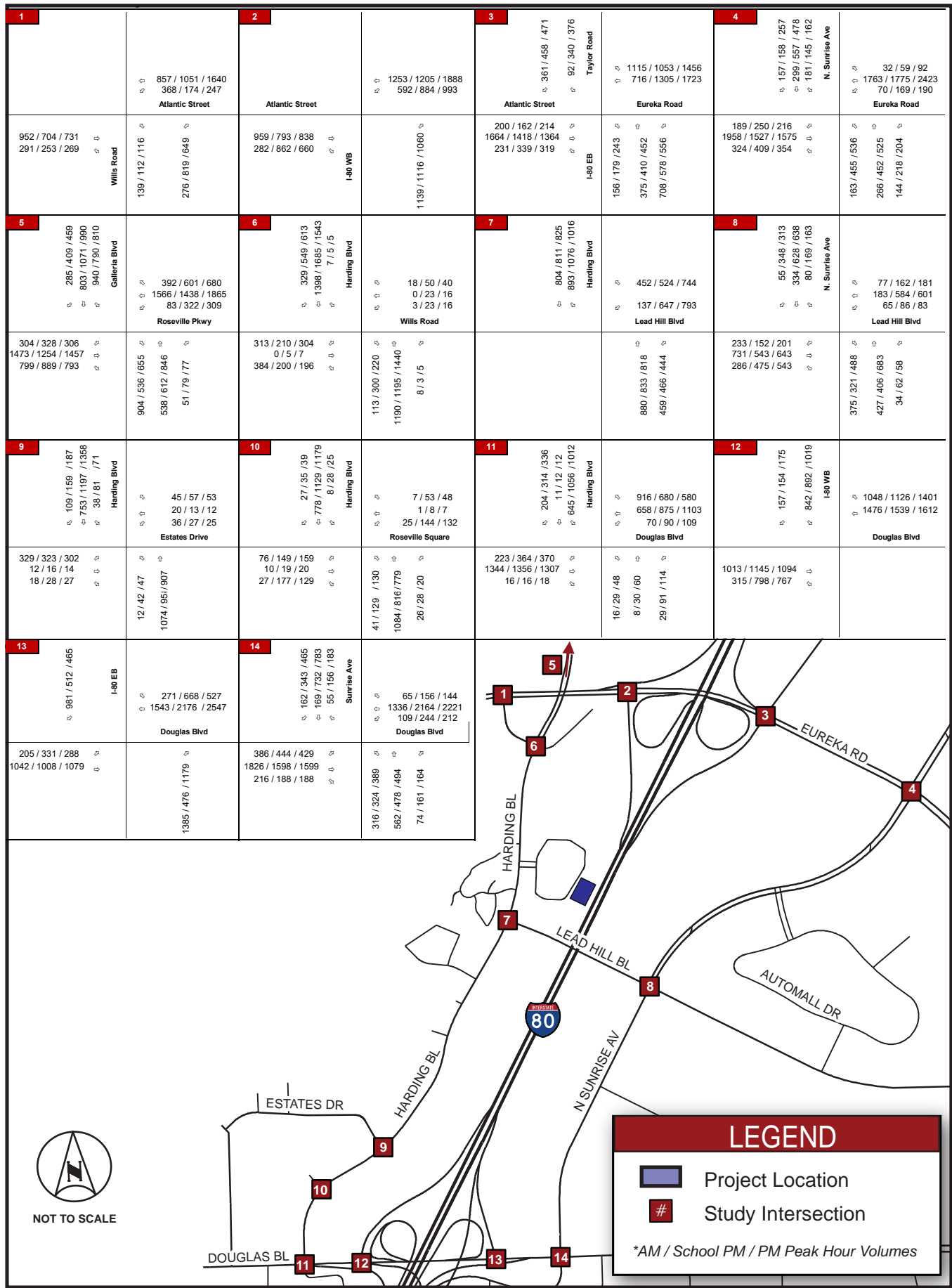
ID	Intersection	Control	Peak Hour	CIP Cumulative (2035)	
				Delay (sec)	LOS
1	Atlantic Street @ Wills Road	Signal	AM	12.7	B
			School PM	16.8	B
			PM	12.1	B
2	Atlantic Street @ I-80 WB Ramps	Signal	AM	74.4	E
			School PM	101.4	F
			PM	70.5	E
3	Atlantic Street/Eureka Road @ US-80 EB Ramps/Taylor Road	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.



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



### 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).

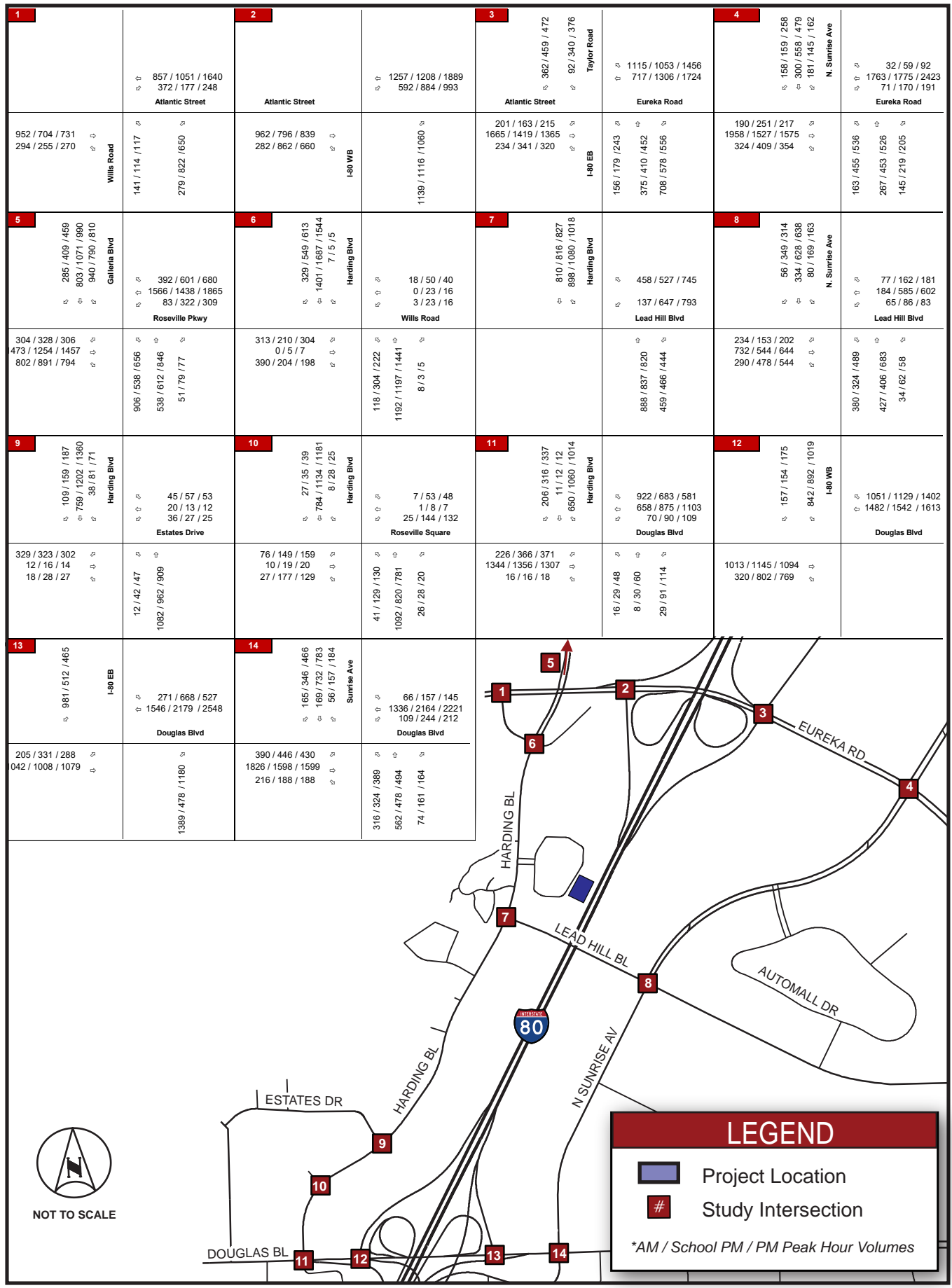
**Table 6 – CIP Cumulative (2035) plus Proposed Project Intersection Levels of Service**

wv	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*<sup>4</sup> 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.

<sup>4</sup> 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

Table with columns: Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 130

Table with columns: Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00, plus a Summary row.



Turning Movement Volume Report

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

Intersection: 131

Table with columns for Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), and Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 36

Table with columns: Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), Int Total. Rows represent 15-second intervals from 27/04/17 00:00-00:15 to 27/04/17 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 73

Table with columns for Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), and Int Total. Rows represent 15-second intervals from 00:00-00:15 to 23:45-00:00, plus a Summary row.



Turning Movement Volume Report

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

Intersection: 75

Table with columns: Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), Int Total. Rows represent 15-second intervals from 27/04/17 00:00-00:15 to 27/04/17 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 76

Table with columns: Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00, plus a Summary row.



Turning Movement Volume Report

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

Intersection: 34

Table with columns: Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00, plus a Summary row.



Turning Movement Volume Report

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

Intersection: 77

Table with columns: Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), Int Total. Rows represent 15-second intervals from 27/04/17 00:00-00:15 to 27/04/17 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 78

Table with columns for Time, NW (Left, Thru, Right, Total), SE (Left, Thru, Right, Total), NE (Left, Thru, Right, Total), SW (Left, Thru, Right, Total), and Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 62

Table with columns: Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), Int Total. Rows represent 15-minute intervals from 27/04/17 00:00-00:15 to 27/04/17 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 135

Table with columns for Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), and Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.



Turning Movement Volume Report

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

Intersection: 148

Table with columns for Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), and Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.



Turning Movement Volume Report







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

Intersection: 33

Table with columns for Time, N (Left, Thru, Right, Total), S (Left, Thru, Right, Total), E (Left, Thru, Right, Total), W (Left, Thru, Right, Total), and Int Total. Rows represent 15-minute intervals from 00:00-00:15 to 23:45-00:00.

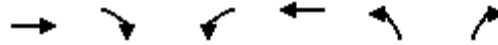
## Appendix B

*Analysis Worksheets for  
Existing (2017) Conditions*

								
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		
<b>Intersection Summary</b>								
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	Sum of lost time (s)	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				
<b>Intersection Summary</b>												
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	57.3%	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  
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
Frbp, 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	
<b>Intersection Summary</b>												
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	

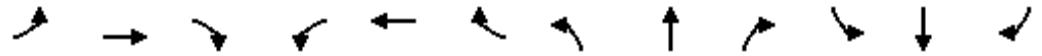
Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
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	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

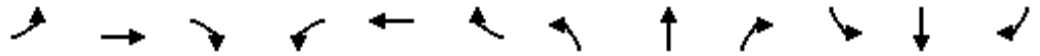
JAA MPR Traffic Analysis  
12: Douglas Blvd & I-80 WB

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						
<b>Intersection Summary</b>												
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		

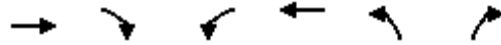
c Critical Lane Group

												
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			433	
Approach Delay, s/veh		19.8			21.5			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	19.5	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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.3									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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	

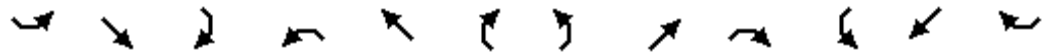
Intersection Summary

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				
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
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

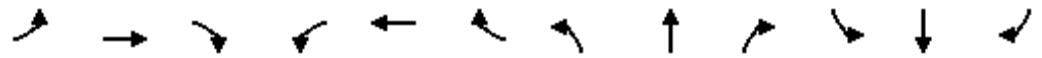


Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	489	831	647	318	574	702
Future Volume (vph)	489	831	647	318	574	702
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frbp, ped/bikes	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	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.74	
Actuated Cycle Length (s)	64.1	Sum of lost time (s) 9.7
Intersection Capacity Utilization	72.4%	ICU Level of Service 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	

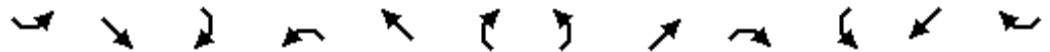
Intersection Summary

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	

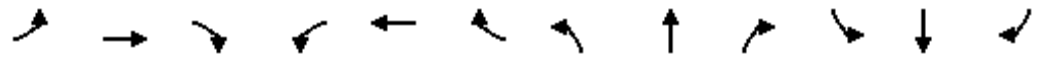
Intersection Summary

HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
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

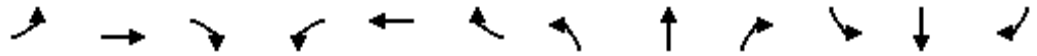
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

												
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						
<b>Intersection Summary</b>												
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		

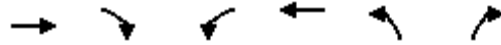
c Critical Lane Group

												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			33.6									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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	
<b>Intersection Summary</b>												
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				
<b>Intersection Summary</b>												
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	10.5
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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

Existing Conditions  
PM Peak Hour

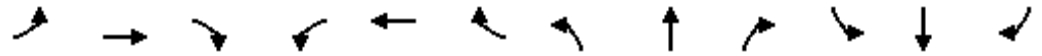


Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	599	1180	635	303	542	714
Future Volume (vph)	599	1180	635	303	542	714
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	1.7	1.7	1.7	1.7	3.0
Lane Util. Factor	0.97	0.91	0.95	1.00	0.97	0.95
Frbp, ped/bikes	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		
<b>Intersection Summary</b>													
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

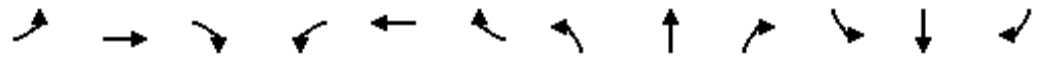
Existing Conditions  
PM Peak Hour

													
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		
<b>Intersection Summary</b>													
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						
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
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

												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			41.0									
HCM 2010 LOS			D									

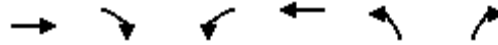
## Appendix C

*Analysis Worksheets for  
Existing (2017) plus Proposed Project Conditions*

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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  
 3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street

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)	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 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	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 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				
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.3									B
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			70.1							10.5		
Intersection Capacity Utilization			57.5%									B
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
Frbp, 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			

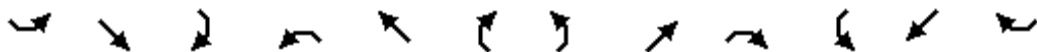
JAA MPR Traffic Analysis  
8: N. Sunrise Ave & Lead Hill Blvd

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	
<b>Intersection Summary</b>												
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

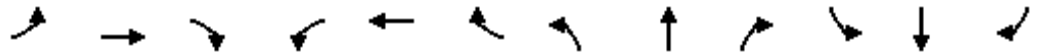
Existing Plus Project Conditions  
AM Peak Hour

													
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		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			10.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			52.9									Sum of lost time (s)	11.0
Intersection Capacity Utilization			37.5%									ICU Level of Service	A
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						
<b>Intersection Summary</b>												
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

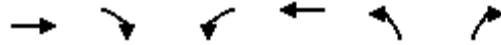
Existing Plus Project Conditions  
AM Peak Hour

												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.3									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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	

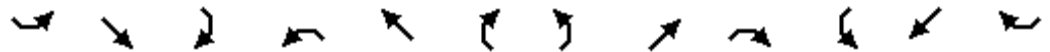
Intersection Summary

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				
<b>Intersection Summary</b>												
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
Frbp, 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	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.74	
Actuated Cycle Length (s)	64.2	Sum of lost time (s) 9.7
Intersection Capacity Utilization	72.5%	ICU Level of Service 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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
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

												
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						
<b>Intersection Summary</b>												
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		

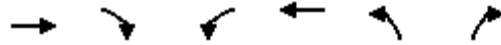
c Critical Lane Group

												
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			1119	
Approach Delay, s/veh		27.3			31.7			43.7			42.1	
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	20.2	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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			33.7									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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  
 3: I-80 EB/Taylor Road & Eureka Road/Atlantic Street





































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)	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	
<b>Intersection Summary</b>												
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				
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.4									B
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			69.4							10.5		
Intersection Capacity Utilization			68.8%									C
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
Frbp, 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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			72.1									E
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			73.5							9.7		
Intersection Capacity Utilization			87.0%									E
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.7									HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			69.3									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

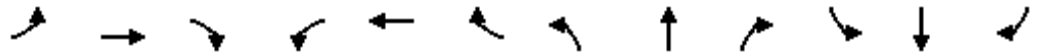
Existing Plus Project Conditions  
PM Peak Hour

													
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		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			19.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64										
Actuated Cycle Length (s)			63.3									Sum of lost time (s)	11.0
Intersection Capacity Utilization			55.8%									ICU Level of Service	B
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

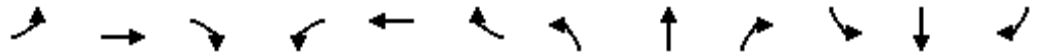
JAA MPR Traffic Analysis  
12: Douglas Blvd & I-80 WB

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						
<b>Intersection Summary</b>												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			41.2									
HCM 2010 LOS			D									

## Appendix D

*Analysis Worksheets for  
CIP Cumulative (2035) Conditions*

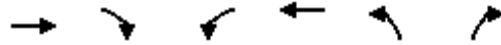
JAA MPR Traffic Analysis  
1: Wills Road & Atlantic Street

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		
<b>Intersection Summary</b>								
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				
<b>Intersection Summary</b>												
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
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
Frbp, 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	
<b>Intersection Summary</b>												
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
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						
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
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

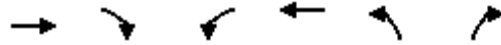
Cumulative Conditions  
 AM Peak Hour

												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.5									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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

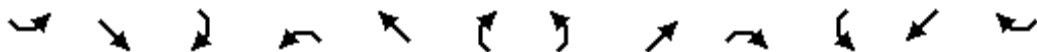
Intersection Summary

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				
<b>Intersection Summary</b>												
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	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	133.6	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	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
Frbp, 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	Sum of lost time (s)	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		
<b>Intersection Summary</b>													
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													

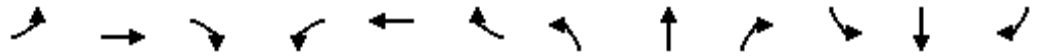
JAA MPR Traffic Analysis  
12: Douglas Blvd & I-80 WB

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						
<b>Intersection Summary</b>												
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

												
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				
<b>Intersection Summary</b>												
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		
<b>Intersection Summary</b>								
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				
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.7									C
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			98.4								10.5	
Intersection Capacity Utilization			74.2%									D
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
Frbp, 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	
<b>Intersection Summary</b>												
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 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
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		
<b>Intersection Summary</b>													
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		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 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						
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
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			1555	
Approach Delay, s/veh		27.9			35.7			39.8			63.1	
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			39.3									
HCM 2010 LOS			D									

## Appendix E

*Analysis Worksheets for  
CIP Cumulative (2035) plus Proposed Project Conditions*

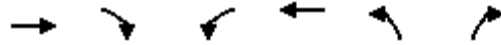
JAA MPR Traffic Analysis  
1: Wills Road & Atlantic Street

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		
<b>Intersection Summary</b>								
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				
<b>Intersection Summary</b>												
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.2									B
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			77.6								10.5	
Intersection Capacity Utilization			76.2%									D
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
Frbp, 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	
<b>Intersection Summary</b>												
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		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			16.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.60										
Actuated Cycle Length (s)			62.0									Sum of lost time (s)	11.0
Intersection Capacity Utilization			54.9%									ICU Level of Service	A
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	

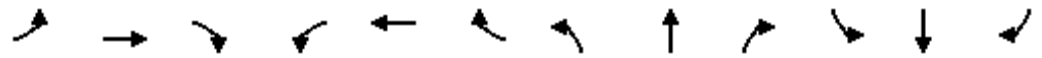
Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.1	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 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						
<b>Intersection Summary</b>												
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		
<b>Intersection Summary</b>													
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

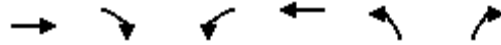
Cumulative Plus Project Conditions  
AM Peak Hour

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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.6									
HCM 2010 LOS			C									

	→	↘	↙	←	↖	↗		
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		
<b>Intersection Summary</b>								
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	
<b>Intersection Summary</b>													
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				
<b>Intersection Summary</b>												
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	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	133.6	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	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
Frbp, 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
HCM 2000 Volume to Capacity ratio	0.66	C
Actuated Cycle Length (s)	69.7	Sum of lost time (s)
Intersection Capacity Utilization	68.1%	9.7
Analysis Period (min)	15	ICU Level of Service
		C
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	Sum of lost time (s)	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		
<b>Intersection Summary</b>													
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													

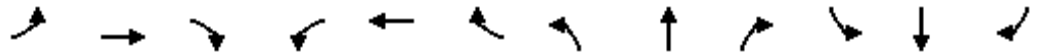
JAA MPR Traffic Analysis  
12: Douglas Blvd & I-80 WB

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						
<b>Intersection Summary</b>												
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

												
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				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			33.7									
HCM 2010 LOS			C									

								
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		
<b>Intersection Summary</b>								
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		
<b>Intersection Summary</b>													
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				
<b>Intersection Summary</b>												
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 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
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
Frbp, 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	
<b>Intersection Summary</b>												
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		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.2									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			91.0									Sum of lost time (s)	11.0
Intersection Capacity Utilization			73.1%									ICU Level of Service	D
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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			85.2									F
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			102.9								12.0	
Intersection Capacity Utilization			96.1%									F
Analysis Period (min)			15									
c Critical Lane Group												

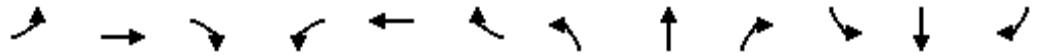
JAA MPR Traffic Analysis  
12: Douglas Blvd & I-80 WB

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						
<b>Intersection Summary</b>												
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 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

JAA MPR Traffic Analysis  
14: Sunrise Ave & Douglas Blvd

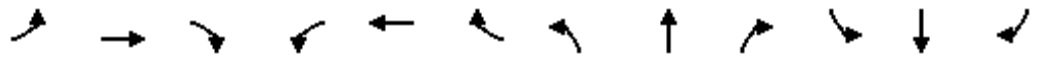
Cumulative Plus Project Conditions  
PM Peak Hour

												
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				
<b>Intersection Summary</b>												
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	4	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

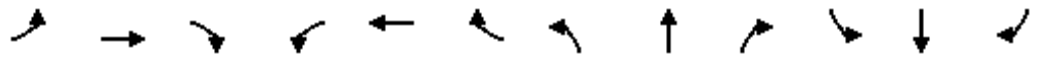
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	78.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

JAA MPR Traffic Analysis  
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	4	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	4	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	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			81.8									F
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			102.9								12.0	
Intersection Capacity Utilization			96.1%									F
Analysis Period (min)			15									
c Critical Lane Group												