

TRAFFIC IMPACT STUDY

FOR

RENO STEAD AIRPORT INDUSTRIAL

June 25, 2019

PREPARED FOR:

United Construction Company

PREPARED BY:



YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Reno Stead Airport Industrial project in Reno, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to determine what traffic controls or other mitigations may be needed to reduce potential impacts, if any are identified.

What does the project consist of?

The project consists of 1,118,000 square feet of industrial warehousing space. The project site is located on approximately 58 acres in the southwest corner of the Reno Stead Airport property.

How much traffic will the project generate?

The project is anticipated to generate approximately 1,945 Daily, 190 AM peak hour, and 212 PM peak hour trips.

Are there any traffic impacts?

The eastbound approach of the Stead Boulevard/Mt Babcock Street intersection is expected to operate at LOS E with or without the project under Future Year (10 Year horizon) conditions; however, the average delay would increase by less than 5 seconds with the project. Therefore, the project does not significantly impact the intersection and mitigation is not required. Consideration should be given to implementing a “free” eastbound to southbound right-turn at the Stead Boulevard/Mt Babcock Street intersection with future projects in the Reno Stead Airport area. That change is not justified with this project. The other study intersections are expected to operate at acceptable levels of service under all project scenarios.

Are any improvements recommended?

The project proposes to construct an extension of Moya Boulevard north of Echo Avenue that would serve as the primary access to the project site. There are six proposed driveways on Moya Boulevard that would serve the two project buildings. It is recommended that each driveway approach include one inbound lane, one outbound lane, and 75 foot left-turn pockets on Moya Boulevard into the driveways where medians are provided (see **Appendix B** for the specific locations).

The Moya Boulevard extension will not align directly with the existing segment of Moya Boulevard due to right-of-way constraints. The intersection configurations shown on the exhibit in **Appendix B** are recommended to provide adequate turning radii and spacing to adjacent driveways. The



alignment/connection of Moya Boulevard shall be designed and constructed with appropriate tapers and transition lengths and meet applicable design standards.

The Moya Boulevard extension would also cross over a minor railroad spur line that currently serves the General Motors building to the west of Moya Boulevard. The railroad crossing shall be designed and constructed to meet Union Pacific Railroad (UPRR) standards and permit requirements. A separate application must be submitted and approved by the Nevada Public Utilities Commission to obtain approval for the railroad crossing prior to the start of construction.

The project shall pay the appropriate Regional Road Impact Fees (RRIF) based on the Regional Transportation Commission's RRIF Schedule. The estimated fees are approximately \$635,000.



LIST OF FIGURES

1. Project Location
2. Site Plan
3. Existing Traffic Volumes
4. Existing Lane Configurations & Controls
5. Project Trip Distribution & Truck Routes
6. Project Trips
7. Existing Plus Project Traffic Volumes
8. Future Lane Configurations & Controls
9. Future Traffic Volumes
10. Future Plus Project Traffic Volumes

LIST OF APPENDICES

- A. Existing Level of Service Calculations
- B. Moya Boulevard/Industry Circle Intersection Configuration
- C. Existing Plus Project Level of Service Calculations
- D. Future Year Level of Service Calculations



INTRODUCTION

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Reno Stead Airport Industrial project in Reno, Nevada. This study of potential transportation impacts was undertaken for planning purposes and to determine what traffic controls or other mitigations are needed to manage the project traffic.

Project Description

The proposed project includes 1,118,000 square feet of warehouse/industrial space located in the southwest corner of the Reno Stead Airport property. The project site consists of approximately 58 acres and would be accessed via an extension of Moya Boulevard into the airport property. The project location is shown on **Figure 1** and the site plan is shown on **Figure 2**.

Study Area and Evaluated Scenarios

The following intersections (shown on **Figure 1**) are included in the analysis:

- ▶ Moya Boulevard/Echo Avenue
- ▶ Echo Avenue/Mt Anderson Street
- ▶ Moya Boulevard/Lear Boulevard
- ▶ Stead Boulevard/Mt Babcock Street
- ▶ Stead Boulevard/Lear Boulevard
- ▶ Lear Boulevard/Military Road
- ▶ Moya Boulevard/Red Rock Road

This study includes analysis of the weekday AM and PM peak hours as these are the periods of time in which peak traffic is anticipated to occur. The evaluated development scenarios are:

- ▶ Existing Conditions (No Project)
- ▶ Existing Plus Project Conditions
- ▶ Future Year (10 Year Horizon) No Project Conditions
- ▶ Future Year Plus Project Conditions

ANALYSIS METHODOLOGY

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades “A” through “F” with “A” representing optimum conditions and “F” representing breakdown or over capacity flows.



Intersections

Intersection level of service methodology is established in the *Highway Capacity Manual (HCM) 2010*, published by the Transportation Research Board (TRB). The methodology for signalized intersections determines the level of service by comparing the average control delay for the overall intersection to the delay thresholds in **Table 1**. Level of service at unsignalized (side-street stop controlled) intersections is determined by comparing the average control delay for the worst movement/approach to the delay thresholds in **Table 1**.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized Intersections	Unsignalized Intersections
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 20	10 to 15
C	Stable conditions with significant affect from other vehicles.	20 to 35	15 to 25
D	High density traffic conditions still with stable flow.	35 to 55	25 to 35
E	At or near capacity flows.	55 to 80	35 to 50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual (2010), Chapters 18 through 21

Level of service calculations were performed using the Synchro/SimTraffic 9 software package with results reported in accordance with the current *HCM 2010* methodology.

Level of Service Policies

The Regional Transportation Commission's (RTC) *2040 Regional Transportation Plan (RTP)* establishes level of service criteria for regional roadway facilities in the City of Reno, City of Sparks, and Washoe County. The current Level of Service policy is:

- ▶ LOS D - All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon
- ▶ LOS E - All regional roadway facilities projected to carry 27,000 or more ADT at the latest RTP horizon
- ▶ All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting corridors

Where intersections are already experiencing level of service beyond the thresholds, conditions should not be exacerbated. In practice, this is commonly interpreted as not increasing average delay per vehicle by more than 5 seconds, or the volume-to-capacity ratio by more than 0.05 for roundabout intersections.



All of the study roadways are projected to carry less than 27,000 ADT at the furthest RTP horizon, therefore LOS D was used as the threshold for this project.

EXISTING CONDITIONS

Roadway Facilities

A brief description of the key roadways in the study area is provided below.

Moya Boulevard is a three-lane roadway (one lane in each direction and a two-way left-turn lane) from Red Rock Road to Silver Dawn Drive, and a two-lane roadway from Silver Dawn Drive to Industrial Circle. Moya Boulevard is classified as a Low Access Control (LAC) Arterial in the *2040 RTP*. The posted speed limit on Moya Boulevard is 45 miles per hour (mph) for vehicles and 35 mph for trucks. Moya Boulevard is a primary truck route from US 395 to the industrial area on the south side of the airport.

Echo Avenue is an east-west LAC Arterial roadway that intersects Moya Boulevard to the west and Mt Limbo Street to the east. Echo Avenue is a two-lane roadway for its entire length. The posted speed limit on Echo Avenue is 25 mph in the project area. Trucks are prohibited on Echo Avenue east of Mt Anderson Street.

Lear Boulevard is an east-west roadway with four lanes from Moya Boulevard to east of Stead Boulevard, two lanes from east of Stead Boulevard to Military Road, and three lanes (one lane in each direction and a two-way left-turn lane) east of Military Road. The *2040 RTP* classifies Lear Boulevard as a Moderate Access Control (MAC) Arterial. The posted speed limit on Lear Boulevard varies from 45 mph at the west end to 30 mph at the east end. Trucks are prohibited on Lear Boulevard east of Stead Boulevard.

Stead Boulevard is a north-south roadway the connects US 395 to Echo Avenue. The lane configurations on Stead Boulevard vary from five lanes at the south end to four lanes at the north end, with two and three lane sections in the middle. Stead Boulevard is classified as a MAC Arterial in the *2040 RTP*. The posted speed limit on Stead Boulevard is 45 mph for vehicles and 35 mph for trucks. There is also a 15 mph school zone adjacent to Stead Elementary School and O'Brien Middle School at the south end of the roadway. Trucks are prohibited on Stead Boulevard north of Mt Babcock Street. Trucks are also prohibited adjacent to Stead Elementary School and O'Brien Middle School during school pick-up and drop-off times (7:00 AM to 9:00 AM and 1:00 PM to 3:30 PM).

Red Rock Road is generally a north-south roadway with four lanes from US 395 to Moya Boulevard, and two lanes north of Moya Boulevard. The *2040 RTP* classifies Red Rock Road as a MAC Arterial. The posted speed limit on Red Rock Road near Moya Boulevard is 35 to 40 mph.

Mt Anderson Street is a two-lane roadway that connects Echo Avenue to Stead Boulevard. Mt Anderson Street is a designated truck route from Echo Avenue to Mt Babcock Street and has a 35 mph speed limit.



Mt Babcock Street is a north-south roadway that connects Echo Avenue to Stead Boulevard. South of Mt Anderson Street, Mt Babcock Street has two southbound lanes and one northbound lane and is a designated truck route. North of Mt Anderson Street, the roadway has two lanes and trucks are prohibited. The posted speed limit on Mt Babcock Street is 35 mph.

Military Road is a MAC Arterial that connects Echo Avenue to Lemmon Drive. Military Road is a two-lane roadway for the majority of its length with a short four-lane section near Lear Boulevard. The posted speed limit on Military Road is 45 mph.

Bicycle & Pedestrian Facilities

Bicycle and pedestrian facilities exist but are sporadic in the project vicinity. Bicycle lanes are present on all of Moya Boulevard, Military Road, and Stead Boulevard south of Lear Boulevard. Sidewalks are available on portions of all the study area roadways, but do not provide a fully connected network. Bicycle and pedestrian volumes are generally low in the industrial area south of the airport.

Transit Facilities

The RTC provides fixed route bus service (RIDE) throughout the Reno/Sparks area. Route 7 provides service in the immediate project vicinity on Echo Avenue, Moya Boulevard, Lear Boulevard, and Stead Boulevard. **Exhibit 1** shows the route and corresponding bus stop locations. Weekday service is provided on ½ to 1 hour headways from 4:45 AM to 1:50 AM. Saturday service is also provided on ½ to 1 hour headways from 5:15 AM to 1:50 AM. Sunday and holiday service is provided on one hour headways from 5:15 AM to 1:50 AM.

Traffic Volumes

Existing AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak hour traffic volumes were collected at the study intersections in April 2019 with school in regular session. **Figure 3**

shows the existing intersection turning movement counts at the study intersections.

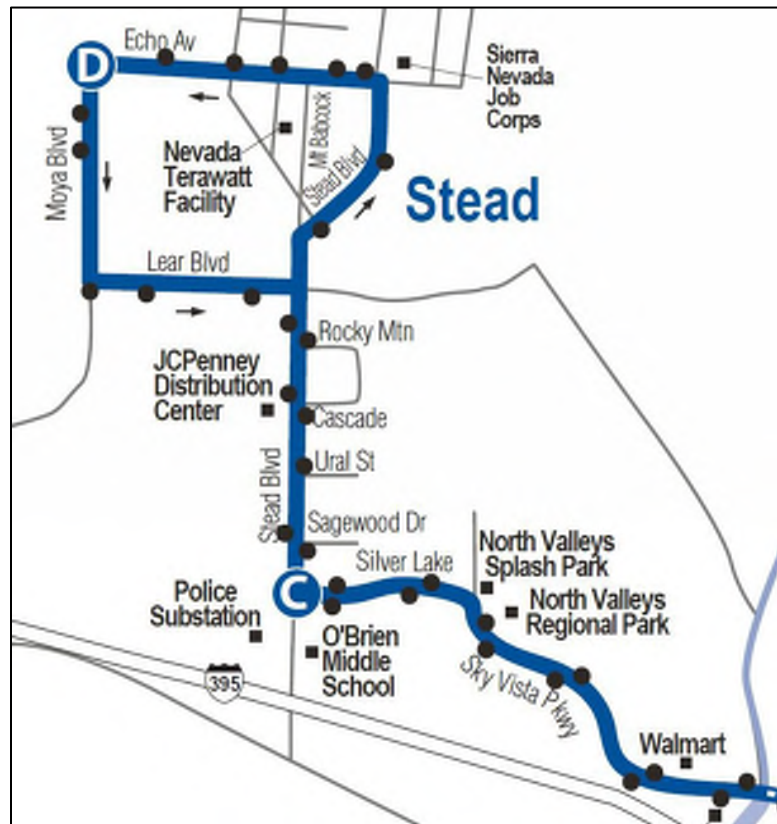


Exhibit 1: RTC RIDE Route 7 Map



Intersection Level of Service Analysis

Existing conditions intersection level of service analysis was performed using Synchro 9 software, with reports based on *HCM 2010* methodology. The Stead Boulevard/Mt Babcock Street and Lear Boulevard/Military Road intersections were analyzed using SimTraffic micro-simulation software, with results also reported based on *HCM 2010* methodology. SimTraffic has the ability to more accurately analyze side-street stop controlled intersections with multi-lane approaches. The peak hour factors (PHF) and heavy vehicle percentages from the existing counts were used in the analysis. **Figure 4** shows the existing intersection lane configurations and controls. The level of service results are presented in **Table 2** and the calculation sheets are provided in **Appendix A**, attached.

Table 2: Existing Intersection Level of Service

Intersection	Control	AM		PM	
		Delay ¹	LOS	Delay ¹	LOS
Moya Blvd/Echo Ave	Side Street Stop				
Eastbound Approach		9.0	A	9.1	A
Westbound Approach		10.2	B	10.2	B
Northbound Left		7.4	A	7.5	A
Southbound Left		8.4	A	7.3	A
Echo Ave/Mt Anderson St	Side Street Stop				
Eastbound Approach		10.4	B	9.9	A
Westbound Approach		10.0	A	10.6	B
Northbound Left		7.7	A	7.7	A
Southbound Left		7.4	A	7.2	A
Moya Blvd/Lear Blvd	Side Street Stop				
Westbound Approach		10.5	B	18.4	C
Southbound Left		8.1	A	8.1	A
Stead Blvd/Mt Babcock St ²	Side Street Stop				
Eastbound Approach		8.6	A	3.5	A
Westbound Approach		9.6	A	7.5	A
Northbound Left		4.1	A	3.5	A
Southbound Left		3.8	A	1.1	A
Stead Blvd/Lear Blvd	Signal				
Overall		6.6	A	6.7	A
Lear Blvd/Military Rd ²	Side Street Stop				
Eastbound Approach		12.3	B	10.3	B
Westbound Approach		8.4	A	9.4	A
Northbound Left		2.4	A	3.0	A
Southbound Left		1.6	A	1.3	A
Red Rock Rd/Moya Blvd	Signal				
Overall		9.5	A	9.4	A

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop controlled intersections.

2. These intersections were analyzed using SimTraffic micro-simulation software.

Source: Headway Transportation, 2019



As shown in the table, the study intersections currently operate at acceptable levels of service during the AM and PM peak hours.

PROJECT CONDITIONS

Project Description

The proposed project includes 1,118,000 square feet of warehouse/industrial space located on approximately 58 acres in the southwest corner of the Reno Stead Airport property. The project location is shown on **Figure 1** and the site plan is shown on **Figure 2**.

Project Access

The project proposes to construct an extension of Moya Boulevard that would serve as the primary access to the project site. The Moya Boulevard extension would ultimately include four lanes north of Echo Avenue. As shown on the project site plan (**Figure 2**), there are six driveways on Moya Boulevard that serve the two project buildings. It is recommended that each driveway approach include one inbound lane, one outbound lane, and 75 foot left-turn pockets on Moya Boulevard into the driveways where medians are provided.

The Moya Boulevard extension would not align directly with the existing segment of Moya Boulevard due to right-of-way constraints. The intersection configurations shown on the exhibits in **Appendix B** are recommended to provide adequate turning radii and spacing to adjacent driveways. As shown on the figure, the southbound left-turn movement from Moya Boulevard to Industry Circle would be prohibited to avoid interference with a necessary driveway to the north. However, this movement has very low volumes and vehicles wanting to turn left could use Echo Avenue to Industry Circle without significant out-of-direction travel. The alignment/extension of Moya Boulevard shall be designed and constructed with appropriate tapers and transition lengths per applicable design standards.

The Moya Boulevard extension would cross over a minor railroad spur line that currently serves the General Motors building to the west of Moya Boulevard. The railroad crossing shall be designed and constructed in accordance with Union Pacific Railroad (UPRR) standards and permit requirements.

Trip Generation

Trip generation estimates for the proposed project were calculated based on average trip rates presented in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 10th Edition*. **Table 3** shows the Daily, AM, and PM peak hour trip generation estimates for the proposed project. As shown in the table, the project is anticipated to generate approximately 1,945 Daily, 190 AM peak hour, and 212 PM peak hour trips.



Table 3: Project Trip Generation Estimates

Land Use (ITE Land Use Code)	Size ¹	Trips ²				
		Daily	AM	AM In/Out	PM	PM In/Out
Warehousing (150)	1,118 ksf	1,945	190	146 / 44	212	57 / 155
Total Trips		1,945	190	146 / 44	212	57 / 155

Notes: 1. ksf = 1,000 square feet

2. Trips calculated based on the following rates:

- Warehousing: Daily – 1.74 trips per ksf; AM – 0.17 trips per ksf (77% in/23% out); PM – 0.19 trips per du (27% in/73% out)

Source: Headway Transportation, 2019

For analysis purposes, it was assumed that approximately 1/3 of the project trips would consist of large trucks, and 2/3 would be personal vehicles (passenger cars) during the peak hours. Note that this is a conservative estimate, as a typical project of this nature has approximately 10 to 20 percent truck trips.

Trip Distribution

Project traffic would consist of large trucks and personal vehicles. The distribution of trips would be different for each type of vehicle due to truck routes and restrictions. As shown on **Figure 5**, trucks are prohibited on some of the roadways near the project site (i.e. Lear Boulevard east of Stead Boulevard, Stead Boulevard north of Mt. Babcock Street, etc.). Additionally, trucks are restricted from using Stead Boulevard adjacent to Stead Elementary School and O'Brien Middle School during school pick-up and drop-off times (7:00 AM to 9:00 AM and 1:00 PM to 3:30 PM). Truck trips were distributed to the roadway network as follows:

- ▶ AM Peak Hour
 - » 100% to/from the south via Moya Boulevard and Red Rock Road
- ▶ PM Peak Hour
 - » 60% to/from the south via Moya Boulevard and Red Rock Road
 - » 40% to/from the south via Stead Boulevard

Employee trips would be made primarily by personal vehicles. Passenger car trips were distributed to the roadway network as follows:

- ▶ 45% to/from the south via Moya Boulevard and Red Rock Road
- ▶ 30% to/from the south via Stead Boulevard
- ▶ 20% to/from the south and east via Military Road
- ▶ 5% to/from the east via Echo Avenue

The project trip distribution is shown on **Figure 5** and the project trip assignment at the study intersections is shown on **Figure 6**.



EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Project generated trips (**Figure 6**) were added to the existing traffic volumes at the study intersections (**Figure 3**) to develop Existing Plus Project conditions traffic volumes (shown on **Figure 7**).

Intersection Level of Service Analysis

Table 4 shows the Existing Plus Project intersection level of service results for the AM and PM peak hours. The technical calculations are provided in **Appendix C**.

Table 4: Existing Plus Project Intersection Level of Service

Intersection	Control	Existing				Existing Plus Project			
		AM		PM		AM		PM	
		Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS
Moya Blvd/Echo Ave	Side Street Stop								
Eastbound Approach		9.0	A	9.1	A	9.5	A	10.6	B
Westbound Approach		10.2	B	10.2	B	10.9	B	13.6	B
Northbound Left		7.4	A	7.5	A	7.5	A	7.8	A
Southbound Left		8.4	A	7.3	A	7.8	A	7.7	A
Echo Ave/Mt Anderson St	Side Street Stop								
Eastbound Approach		10.4	B	9.9	A	10.7	B	10.4	B
Westbound Approach		10.0	A	10.6	B	10.6	B	11.0	B
Northbound Left		7.7	A	7.7	A	7.6	A	7.8	A
Southbound Left		7.4	A	7.2	A	7.4	A	7.2	A
Moya Blvd/Lear Blvd	Side Street Stop								
Westbound Approach		10.5	B	18.4	C	11.9	B	30.7	D
Southbound Left		8.1	A	8.1	A	8.4	A	8.4	A
Stead Blvd/Mt Babcock St	Side Street Stop								
Eastbound Approach		8.6	A	3.5	A	10.8	B	3.8	A
Westbound Approach		9.6	A	7.5	A	11.6	B	9.9	A
Northbound Left		4.1	A	3.5	A	4.3	A	3.5	A
Southbound Left	3.8	A	1.1	A	3.8	A	2.0	A	
Stead Blvd/Lear Blvd	Signal								
Overall		6.6	A	6.7	A	6.8	A	7.2	A
Lear Blvd/Military Rd	Side Street Stop								
Eastbound Approach		12.3	B	10.3	B	12.6	B	12.5	B
Westbound Approach		8.4	A	9.4	A	9.0	A	10.4	B
Northbound Left		2.4	A	3.0	A	2.6	A	3.0	A
Southbound Left	1.6	A	1.3	A	1.8	A	1.8	A	
Red Rock Rd/Moya Blvd	Signal								
Overall		9.5	A	9.4	A	11.1	B	10.4	B

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop controlled intersections.

Source: Headway Transportation, 2019



Existing Plus Project intersection level of service analysis was performed using Synchro 9 software, with results reported based on *HCM 2010* methodologies. Heavy vehicles percentages were calculated based on existing traffic volumes and the assumption that 1/3 of the project trips are large trucks. The existing peak hour factors, intersection lane configurations, and controls were used for the analysis. As shown in the table, the study intersections are expected to operate at acceptable levels of service under Existing Plus Project conditions.

FUTURE YEAR CONDITIONS – 10 YEAR HORIZON

Planned Regional Roadway Improvements

The *2040 RTP* outlines programmed roadway projects of regional significance. The project list is split into three time periods: 2017 – 2021 (first five years of the plan), 2022 – 2026 (second five years of the plan), and 2027 – 2040 (remaining years of the plan). The following roadway projects are programmed within the project vicinity in the next ten years:

RTP Regional Road Improvements (2017-2021)

- ▶ Lemmon Drive (Sky Vista Parkway to Military Road) – Widen from four lanes to six lanes

RTP Regional Road Improvements (2022-2026)

- ▶ Moya Boulevard (Red Rock Road to Echo Avenue) – Widen from two lanes to four lanes
- ▶ Military Road (Lemmon Drive to Echo Avenue) – Widen from two lanes to four lanes
- ▶ Red Rock Road (Moya Boulevard to Evans Ranch Access) – Widen from two lanes to four lanes

The Future Year study intersection lane configurations are shown on **Figure 8** and include the improvements listed above.

Traffic Volumes

Future Year (10-year horizon) intersection turning movement volumes were developed using outputs from the RTC's regional travel demand model. Base year and future year model volumes were used to develop growth rates for the study area roadways and intersections. The model shows significant growth in the Reno Stead Airport region, including the proposed project area. To avoid double counting project trips, the project land uses and trips were not removed from model outputs. Rather the model outputs and growth rates were used to develop Future Year Plus Project traffic volumes. The Future Year No Project volumes were calculated by removing the project trips from the forecasts based on the project trip generation and distribution. **Figure 9** shows the Future Year No Project traffic volumes at the study intersections, and **Figure 10** shows the Future Year Plus Project traffic volumes.



Intersection Level of Service Analysis

Future Year and Future Year Plus Project intersection level of service analysis was performed for the study intersections using Synchro 9 analysis software, with reporting based on *HCM 2010* methodology. The Stead Boulevard/Mt Babcock Street and Lear Boulevard/Military Road intersections were analyzed using SimTraffic micro-simulation software, with results also reported based on *HCM 2010* methodology. SimTraffic has the ability to more accurately analyze side-street stop controlled intersections with multi-lane approaches. A peak hour factor (PHF) of 0.92 (HCM default value) or the existing peak hour factor (whichever was higher) was used for each study intersection. The Future Year conditions peak hour intersection level of service results are presented in **Table 5** and the calculation sheets are provided in **Appendix D**, attached.

Table 5: Future Year Plus Project Intersection Level of Service

Intersection	Control	Future Year No Project				Future Year Plus Project			
		AM		PM		AM		PM	
		Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS	Delay ¹	LOS
Moya Blvd/Echo Ave	Side Street Stop								
Eastbound Approach		9.3	A	10.2	B	9.9	A	11.4	B
Westbound Approach		11.3	B	11.6	B	12.6	B	13.0	B
Northbound Left		7.5	A	7.7	A	7.6	A	8.1	A
Southbound Left		8.5	A	7.4	A	10.0	A	7.6	A
Echo Ave/Mt Anderson St	Side Street Stop								
Eastbound Approach		17.8	C	13.1	B	19.9	C	13.8	B
Westbound Approach		13.0	B	13.3	B	14.2	B	14.0	B
Northbound Left		8.1	A	8.4	A	8.2	A	8.4	A
Southbound Left		7.8	A	7.3	A	7.8	A	7.3	A
Moya Blvd/Lear Blvd	Side Street Stop								
Westbound Approach		10.7	B	15.4	C	11.7	B	18.9	C
Southbound Left		8.3	A	8.0	A	8.7	A	8.2	A
Stead Blvd/Mt Babcock St	Side Street Stop								
Eastbound Approach		45.2	E	16.5	C	46.5	E	18.9	C
Westbound Approach		17.2	C	15.0	B	20.1	C	15.8	C
Northbound Left		6.8	A	4.8	A	7.0	A	4.9	A
Southbound Left		1.7	A	1.7	A	0.9	A	1.6	A
Stead Blvd/Lear Blvd	Signal								
Overall		7.2	A	7.9	A	7.3	A	8.4	A
Lear Blvd/Military Rd	Side Street Stop								
Eastbound Approach		15.3	C	15.4	C	15.7	C	17.4	C
Westbound Approach		11.0	B	15.6	C	12.3	B	16.4	C
Northbound Left		3.1	A	4.2	A	3.4	A	4.2	A
Southbound Left		2.1	A	1.9	A	2.2	A	1.9	A
Red Rock Rd/Moya Blvd	Signal								
Overall		10.6	B	12.4	B	11.8	B	12.8	B

Notes: 1. Delay is reported in seconds per vehicle for the overall intersection for signalized intersections, and for the worst approach/movement for side street stop controlled intersections.

Source: Headway Transportation, 2019



As shown in the table, the eastbound approach of the Stead Boulevard/Mt Babcock Street intersection is expected to operate at LOS E with and without the project under Future Year conditions; however, the delay would increase by less than 5 seconds with the project. Therefore, the project does not significantly impact the intersection and mitigation is not required. Consideration should be given to implementing a “free” eastbound to southbound right-turn at the Stead Boulevard/Mt Babcock Street intersection with future projects in the Reno Stead Airport area. That change is not justified with this project especially in consideration of the conservative estimate of truck trips.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

- ▶ The proposed project includes approximately 1,118,000 square feet of warehouse/industrial space located on approximately 58 acres in the southwest corner of the Reno Stead Airport property.
- ▶ The project is expected to generate approximately 1,945 Daily, 190 AM peak hour, and 212 PM peak hour trips. It was assumed that approximately 1/3 of the project trips during the peak hours would be large trucks.
- ▶ The study intersections currently operate at acceptable levels of service during the AM and PM peak hours.
- ▶ The study intersections are expected to operate at acceptable levels of service under Existing Plus Project conditions as well.
- ▶ Under Future Year No Project and Future Year Plus Project conditions, the eastbound approach at the Stead Boulevard/Mt Babcock Street intersection is expected to operate at LOS E during AM peak hour; however, the delay at the intersection is expected to increase by less than 5 seconds with the project. Therefore, the project does not significantly impact the intersection and mitigation is not required. Consideration should be given to implementing a “free” eastbound to southbound right-turn with future projects in the Reno Stead Airport area. That change is not justified with this project.
- ▶ The project proposes to construct an extension of Moya Boulevard that would serve as the primary access to the project site. As shown on the project site plan (**Figure 2**), there are six driveways on Moya Boulevard that serve the two project buildings. It is recommended that each driveway approach include one inbound lane, one outbound lane, and 75 foot left-turn pockets on Moya Boulevard into the driveways where medians are provided (see **Appendix B**).
- ▶ The Moya Boulevard extension would not align directly with the existing segment of Moya Boulevard due to right-of-way constraints. The intersection configurations shown on the exhibit in **Appendix B** are recommended to provide adequate turning radii and spacing to adjacent driveways. The alignment/connection of Moya Boulevard shall be designed and constructed with appropriate tapers and transition lengths per applicable design standards.



- ▶ The Moya Boulevard extension would cross over a minor railroad spur line that currently serves the General Motors building to the west of Moya Boulevard. The railroad crossing shall be designed and constructed in accordance with Union Pacific Railroad (UPRR) standards and permit requirements.
- ▶ The project shall pay the appropriate Regional Road Impact Fees (RRIF) based on the Regional Transportation Commission's RRIF Schedule. The estimated fees are approximately \$635,000.
- ▶ It is recommended that the RTC and City of Reno consider reclassifying Moya Boulevard to a Moderate Access Control Arterial. As the Reno Stead Airport Industrial Park develops, the additional vehicle and heavy truck traffic will justify a greater level of access control.





Project Site

Echo Ave

Mt Babcock St

Mt Anderson St

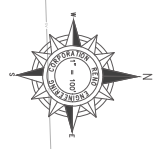
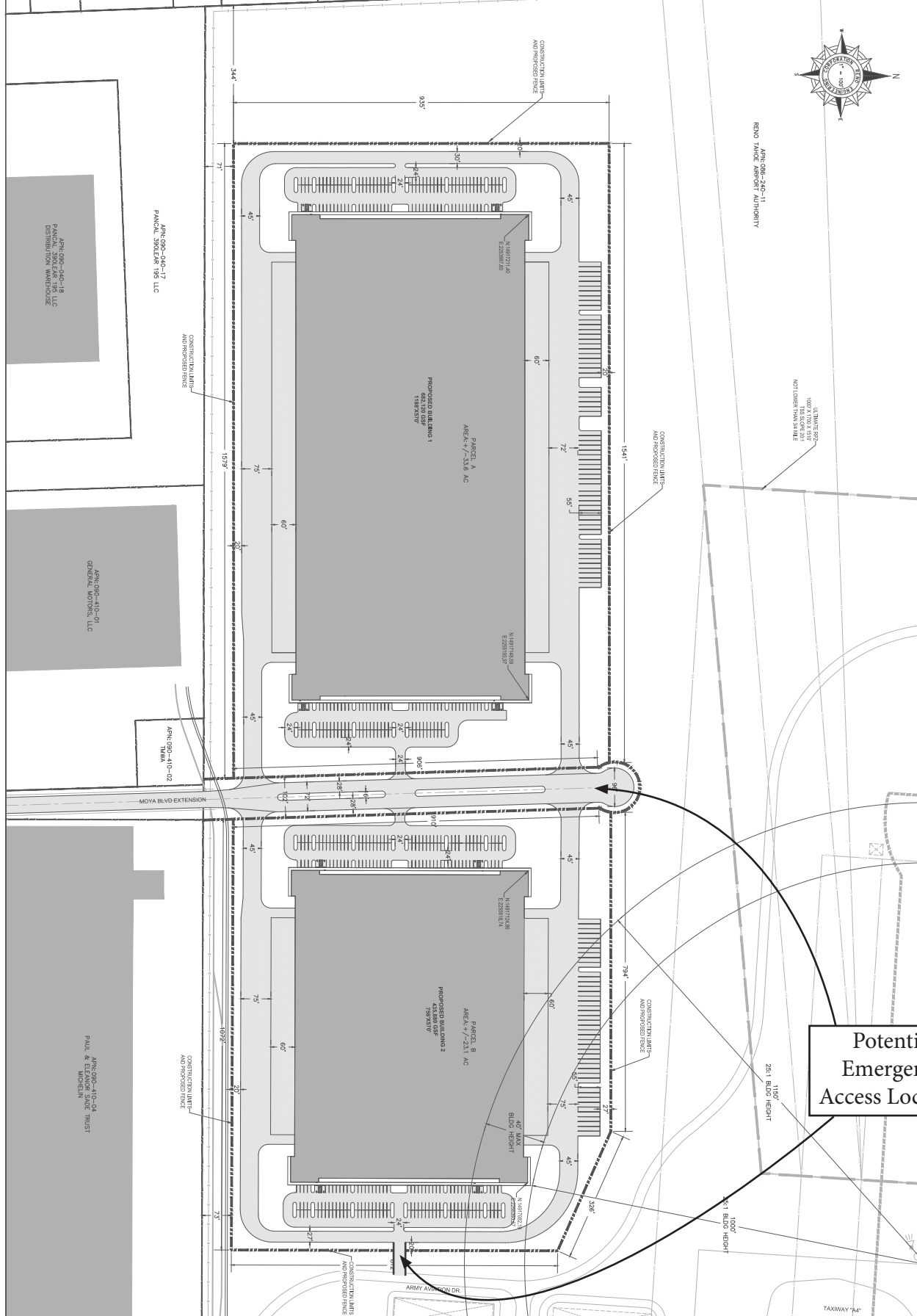
Military Rd

Lear Blvd

Moya Blvd

Stead Blvd

US 395



C1.0

SITE PLAN OVERVIEW



REC
Reno Engineering A Development Services Company

ONE EAST FIRST STREET #1400
RENO, NV 89502
WWW.RECNV.COM

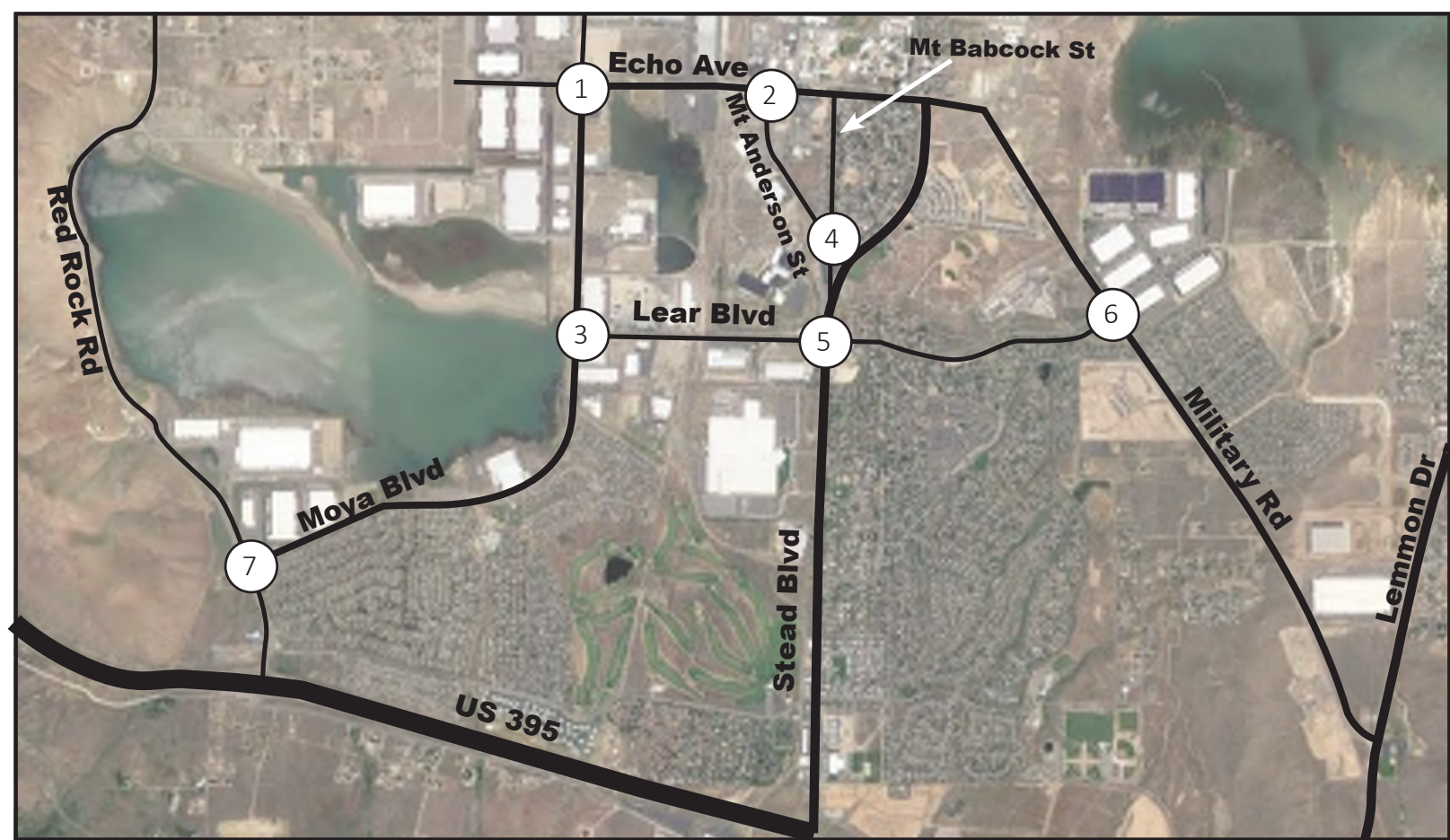
REVISIONS	BY	DATE



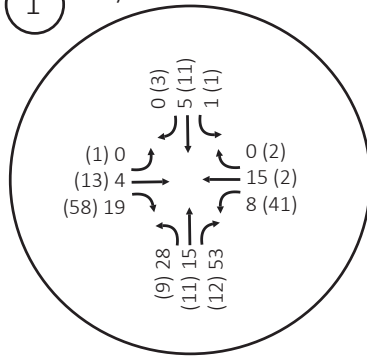
NO SCALE

Figure 2

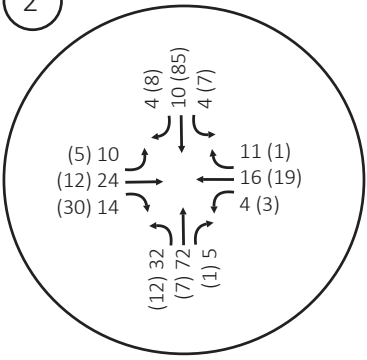
Reno Stead Airport Industrial
Traffic Impact Study
Site Plan



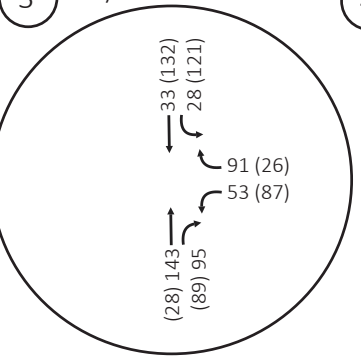
1 Moya Blvd & Echo Ave



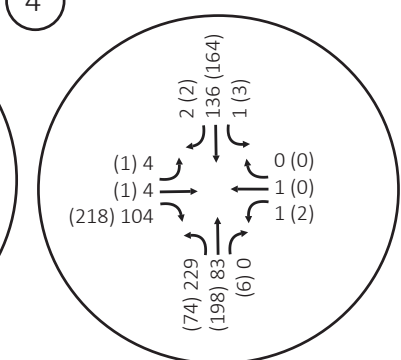
2 Echo Ave & Mt. Anderson St



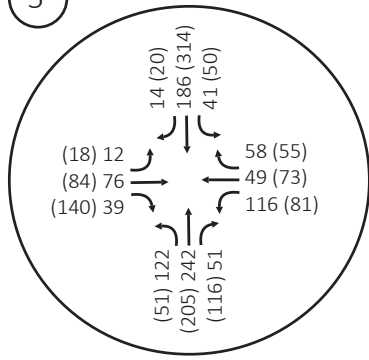
3 Moya Blvd & Lear Blvd



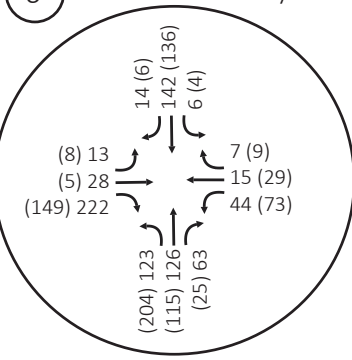
4 Mt. Babcock St & Stead Blvd



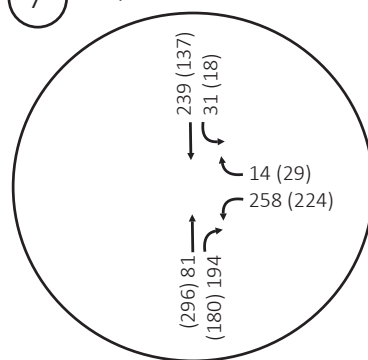
5 Stead Blvd & Lear Blvd

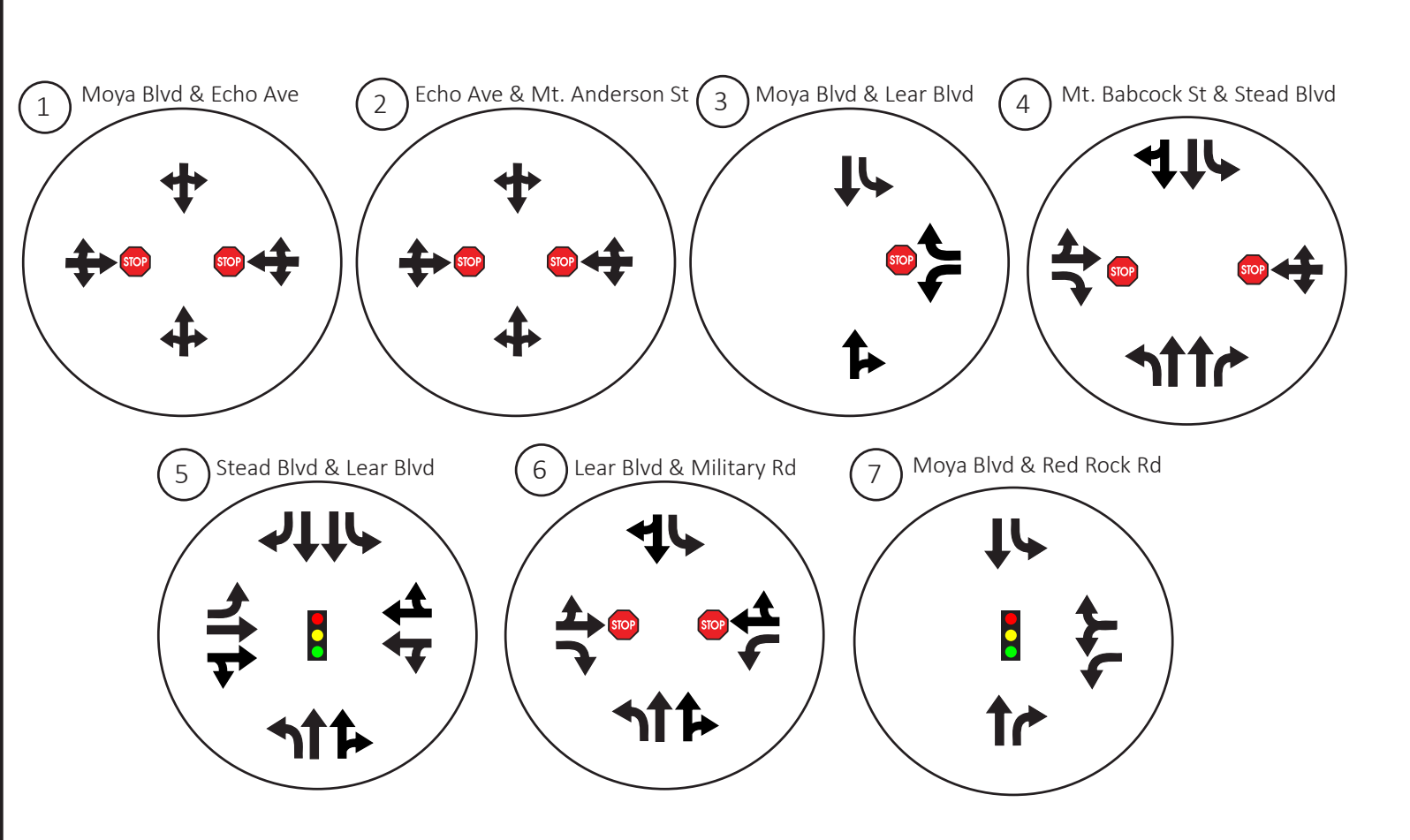


6 Lear Blvd & Military Rd



7 Moya Blvd & Red Rock Rd





- AM & PM Vehicle Trip Distribution
 - AM Truck Trip Distribution
 - PM Truck Trip Distribution



- Project Site
 - Trucks Prohibited
 - Truck Route
 - Restricted Truck Route
 NO SCALE

Figure 5

Reno Stead Airport Industrial
 Traffic Impact Study
Project Trip Distribution & Truck Routes

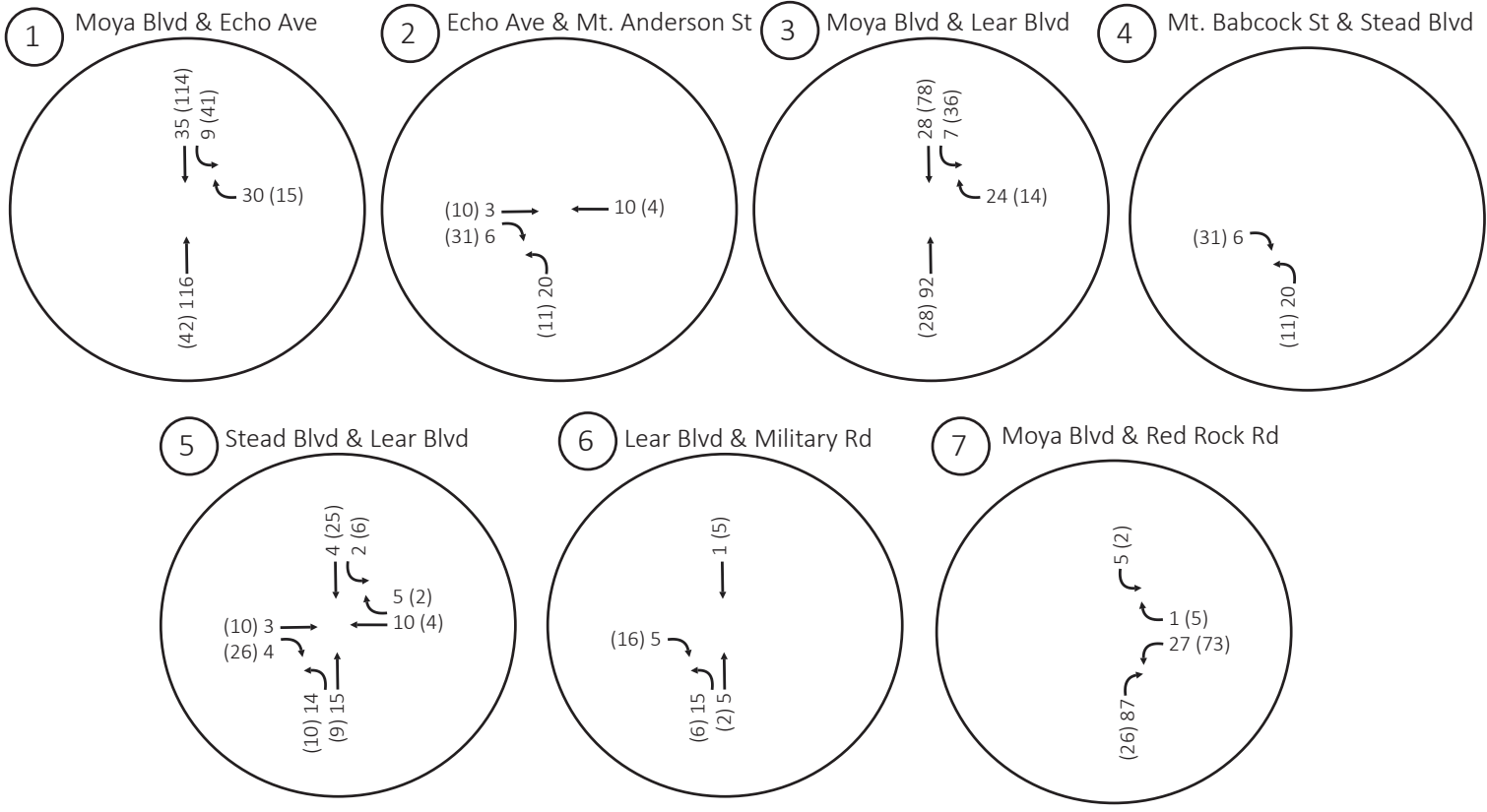
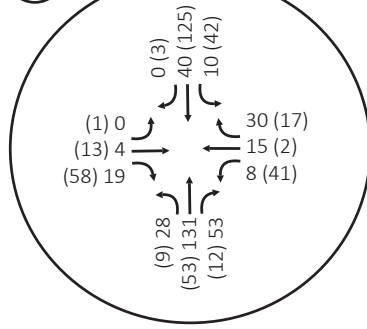


Figure 6

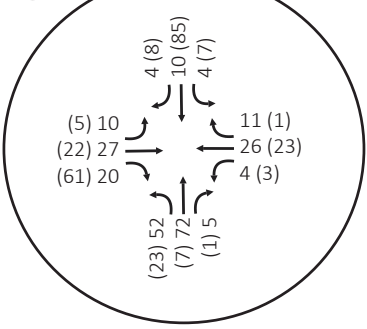
Reno Stead Airport Industrial
Traffic Impact Study
Project Trips



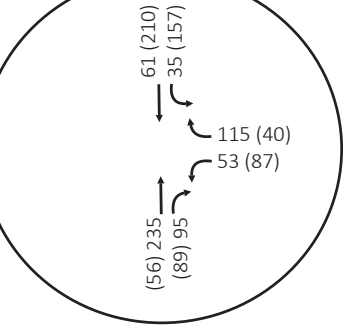
1 Moya Blvd & Echo Ave



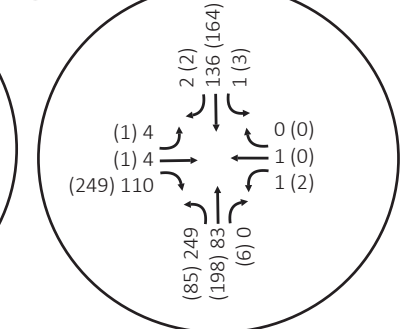
2 Echo Ave & Mt. Anderson St



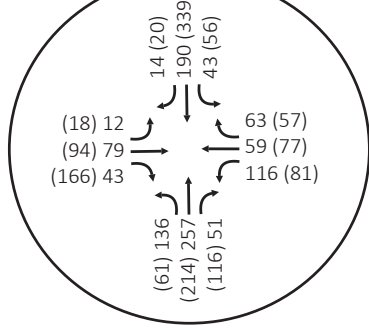
3 Moya Blvd & Lear Blvd



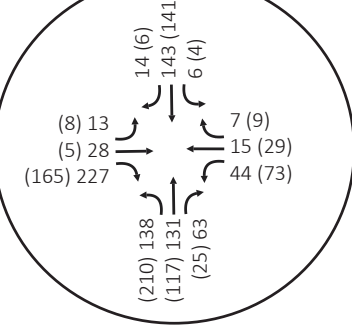
4 Mt. Babcock St & Stead Blvd



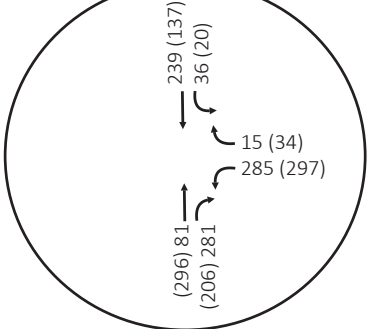
5 Stead Blvd & Lear Blvd

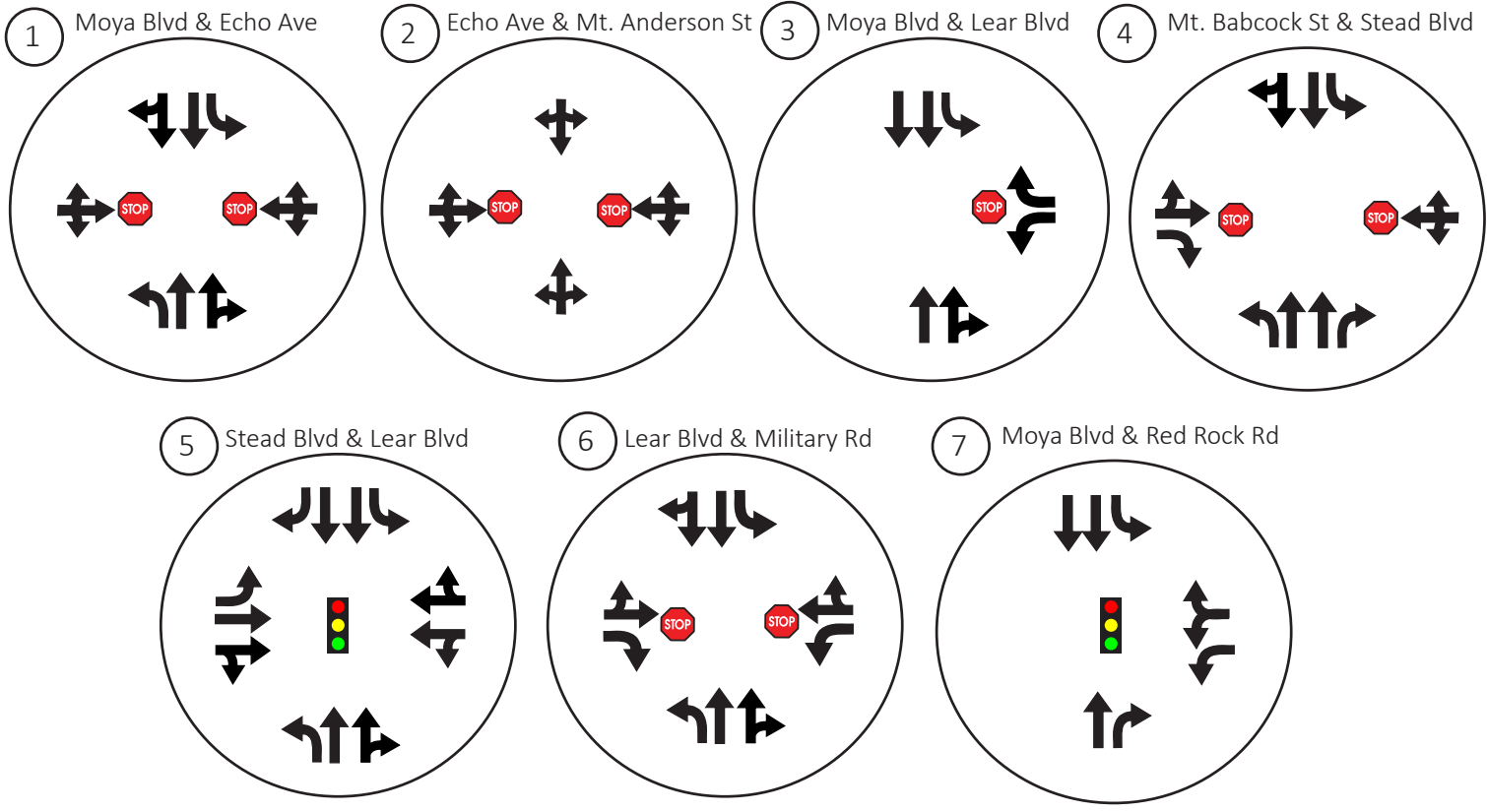


6 Lear Blvd & Military Rd



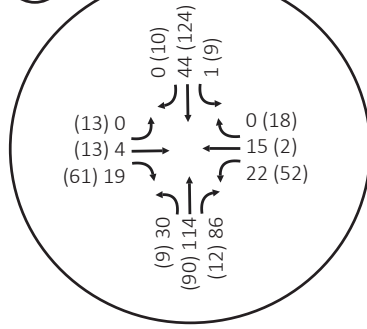
7 Moya Blvd & Red Rock Rd



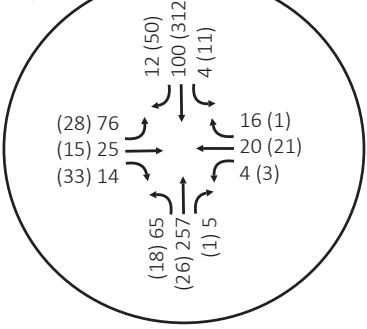




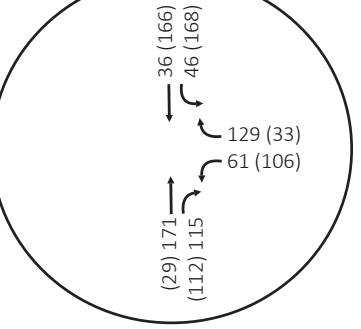
1 Moya Blvd & Echo Ave



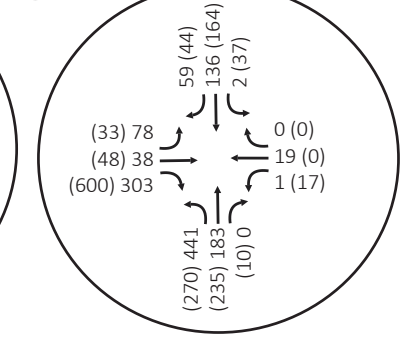
2 Echo Ave & Mt. Anderson St



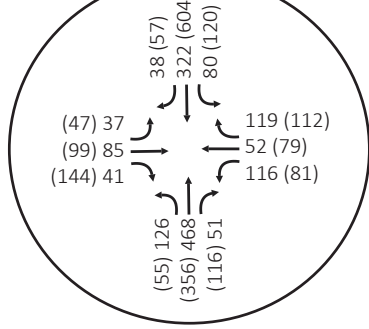
3 Moya Blvd & Lear Blvd



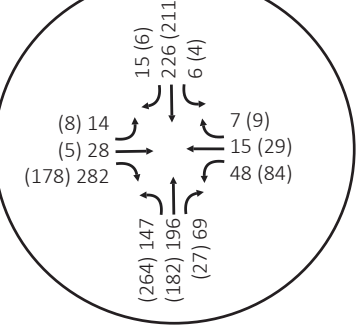
4 Mt. Babcock St & Stead Blvd



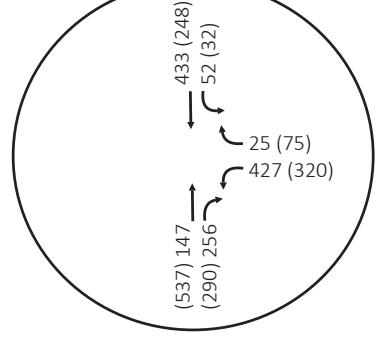
5 Stead Blvd & Lear Blvd



6 Lear Blvd & Military Rd

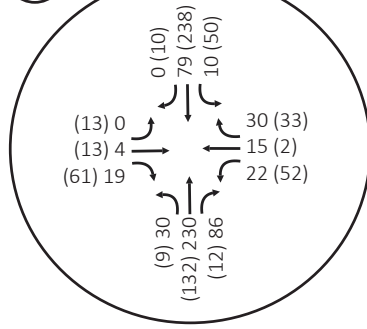


7 Moya Blvd & Red Rock Rd

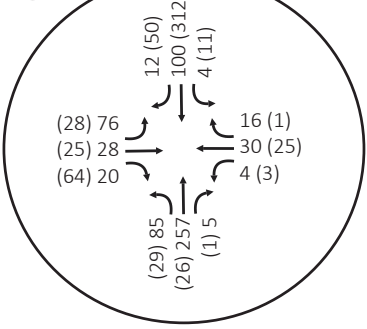




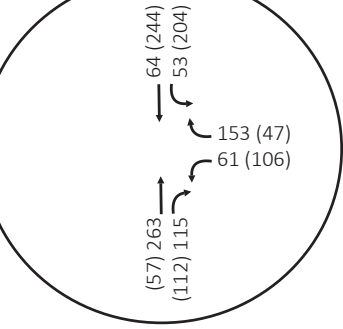
1 Moya Blvd & Echo Ave



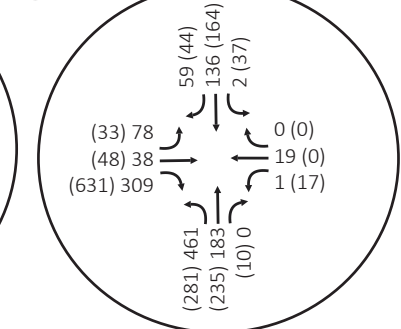
2 Echo Ave & Mt. Anderson St



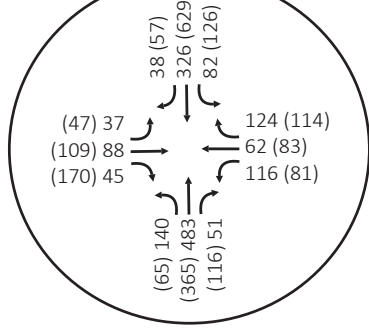
3 Moya Blvd & Lear Blvd



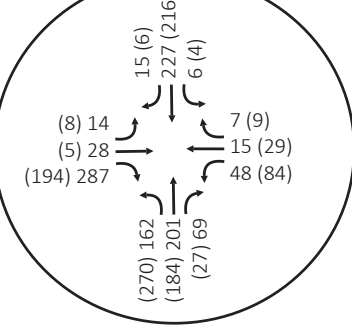
4 Mt. Babcock St & Stead Blvd



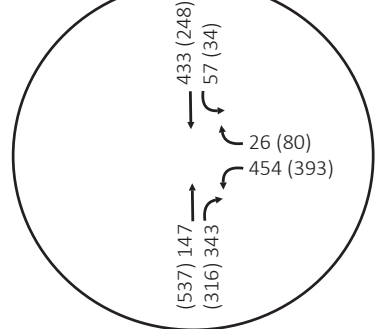
5 Stead Blvd & Lear Blvd



6 Lear Blvd & Military Rd



7 Moya Blvd & Red Rock Rd



Appendix A

Existing LOS Calculations



Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	19	8	15	0	28	15	53	1	5	0
Future Vol, veh/h	0	4	19	8	15	0	28	15	53	1	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	25	26	38	13	0	14	27	9	100	60	0
Mvmt Flow	0	5	24	10	19	0	35	19	66	1	6	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	140	164	6	145	131	52	6	0	0	85	0	0
Stage 1	9	9	-	122	122	-	-	-	-	-	-	-
Stage 2	131	155	-	23	9	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.75	6.46	7.48	6.63	6.2	4.24	-	-	5.1	-	-
Critical Hdwy Stg 1	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.225	3.534	3.842	4.117	3.3	2.326	-	-	3.1	-	-
Pot Cap-1 Maneuver	835	689	1011	748	740	1021	1540	-	-	1068	-	-
Stage 1	1017	844	-	802	774	-	-	-	-	-	-	-
Stage 2	877	728	-	910	867	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	803	672	1011	712	722	1021	1540	-	-	1068	-	-
Mov Cap-2 Maneuver	803	672	-	712	722	-	-	-	-	-	-	-
Stage 1	993	843	-	783	755	-	-	-	-	-	-	-
Stage 2	835	711	-	882	866	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		10.2		2.2		1.4	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1540	-	-	929	718	1068	-	-
HCM Lane V/C Ratio	0.023	-	-	0.031	0.04	0.001	-	-
HCM Control Delay (s)	7.4	0	-	9	10.2	8.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	24	14	4	16	11	32	72	5	4	10	4
Future Vol, veh/h	10	24	14	4	16	11	32	72	5	4	10	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	40	0	57	25	0	0	47	0	20	0	40	75
Mvmt Flow	12	29	17	5	19	13	39	87	6	5	12	5

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	207	194	14	214	194	90	17	0	0	93	0	0
Stage 1	24	24	-	167	167	-	-	-	-	-	-	-
Stage 2	183	170	-	47	27	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.77	7.35	6.5	6.2	4.57	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4	3.813	3.725	4	3.3	2.623	-	-	2.2	-	-
Pot Cap-1 Maneuver	676	705	926	696	705	973	1352	-	-	1514	-	-
Stage 1	905	879	-	784	764	-	-	-	-	-	-	-
Stage 2	738	762	-	911	877	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	636	682	926	645	682	973	1352	-	-	1514	-	-
Mov Cap-2 Maneuver	636	682	-	645	682	-	-	-	-	-	-	-
Stage 1	878	876	-	760	741	-	-	-	-	-	-	-
Stage 2	688	739	-	862	874	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	10	2.3	1.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	727	757	1514	-	-
HCM Lane V/C Ratio	0.029	-	-	0.08	0.049	0.003	-	-
HCM Control Delay (s)	7.7	0	-	10.4	10	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↔		↙	↗
Traffic Vol, veh/h	53	91	143	95	28	33
Future Vol, veh/h	53	91	143	95	28	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	9	4	10	3	18	48
Mvmt Flow	62	107	168	112	33	39

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	329	224	0	0	280	0
Stage 1	224	-	-	-	-	-
Stage 2	105	-	-	-	-	-
Critical Hdwy	6.49	6.24	-	-	4.28	-
Critical Hdwy Stg 1	5.49	-	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-	-
Follow-up Hdwy	3.581	3.336	-	-	2.362	-
Pot Cap-1 Maneuver	651	810	-	-	1196	-
Stage 1	797	-	-	-	-	-
Stage 2	902	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	633	810	-	-	1196	-
Mov Cap-2 Maneuver	633	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	877	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	3.7
HCM LOS	B		





















Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	633	810	1196	-
HCM Lane V/C Ratio	-	-	0.099	0.132	0.028	-
HCM Control Delay (s)	-	-	11.3	10.1	8.1	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.5	0.1	-

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.1	0.1	0.0		0.1	0.1	0.1
Total Del/Veh (s)	8.6	2.2	2.4	3.8	9.6	4.1	1.3		0.3	0.1	2.5
Vehicles Entered	5	18	102	1	2	224	87	0	142	2	583
Vehicles Exited	5	18	102	1	2	224	87	0	142	2	583
Hourly Exit Rate	5	18	102	1	2	224	87	0	142	2	583
Input Volume	4	19	106	1	1	234	90	1	139	2	598
% of Volume	118	96	96	100	200	96	96	0	102	89	97

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Existing Conditions
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	76	39	116	49	58	122	242	51	41	186	14
Future Volume (veh/h)	12	76	39	116	49	58	122	242	51	41	186	14
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	1759	1803	1900	1900	1856	1900	1776	1796	1900	1900	1759	1570
Adj Flow Rate, veh/h	14	90	46	138	58	69	145	288	61	49	221	17
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	3	3	0	0	0	7	7	7	0	8	21
Cap, veh/h	530	612	294	530	206	263	645	1088	227	604	1293	516
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1189	2246	1080	1005	757	967	1084	2812	587	1048	3343	1335
Grp Volume(v), veh/h	14	67	69	157	0	108	145	173	176	49	221	17
Grp Sat Flow(s),veh/h/ln	1189	1713	1613	1210	0	1519	1084	1706	1693	1048	1671	1335
Q Serve(g_s), s	0.2	0.8	0.9	2.3	0.0	1.5	2.7	1.8	1.9	0.9	1.1	0.2
Cycle Q Clear(g_c), s	1.7	0.8	0.9	3.2	0.0	1.5	3.8	1.8	1.9	2.8	1.1	0.2
Prop In Lane	1.00		0.67	0.88		0.64	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	530	467	439	586	0	414	645	660	655	604	1293	516
V/C Ratio(X)	0.03	0.14	0.16	0.27	0.00	0.26	0.22	0.26	0.27	0.08	0.17	0.03
Avail Cap(c_a), veh/h	1331	1622	1527	1459	0	1438	1458	1939	1923	1389	3798	1516
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.2	7.3	7.3	8.3	0.0	7.5	6.6	5.5	5.5	6.5	5.3	5.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.2	0.0	0.3	0.2	0.2	0.2	0.1	0.1	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	0.1	0.4	0.4	1.0	0.0	0.6	0.8	0.9	0.9	0.3	0.5	0.1
LnGrp Delay(d),s/veh	8.2	7.4	7.5	8.5	0.0	7.9	6.7	5.7	5.8	6.5	5.4	5.1
LnGrp LOS	A	A	A	A		A	A	A	A	A	A	A
Approach Vol, veh/h		150			265			494			287	
Approach Delay, s/veh		7.5			8.3			6.0			5.6	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.7		11.7		14.7		11.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		5.8		3.7		4.8		5.2				
Green Ext Time (p_c), s		4.4		2.4		4.4		2.4				
Intersection Summary												
HCM 2010 Ctrl Delay				6.6								
HCM 2010 LOS				A								

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	2.9	0.2	0.2	1.9	0.1	0.1	2.9	0.2	0.2
Total Del/Veh (s)	10.2	12.3	4.9	8.0	8.4	3.5	2.4	0.8	0.6	1.6	1.1	0.3
Vehicles Entered	12	28	232	43	13	8	126	126	60	6	139	15
Vehicles Exited	12	28	232	43	12	8	126	125	61	6	139	14
Hourly Exit Rate	12	28	232	43	12	8	126	125	61	6	139	14
Input Volume	13	28	225	45	15	7	124	128	64	6	144	14
% of Volume	92	99	103	96	80	110	101	98	95	96	97	100

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	3.3
Vehicles Entered	808
Vehicles Exited	806
Hourly Exit Rate	806
Input Volume	814
% of Volume	99

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Existing Conditions
AM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 							
Traffic Volume (veh/h)	258	14	81	194	31	239		
Future Volume (veh/h)	258	14	81	194	31	239		
Number	3	18	2	12	1	6		
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	1720	1900	1667	1681	1845	1863		
Adj Flow Rate, veh/h	335	0	100	240	38	295		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81		
Percent Heavy Veh, %	11	0	14	13	3	2		
Cap, veh/h	582	287	502	431	550	889		
Arrive On Green	0.18	0.00	0.30	0.30	0.04	0.48		
Sat Flow, veh/h	3277	1615	1667	1429	1757	1863		
Grp Volume(v), veh/h	335	0	100	240	38	295		
Grp Sat Flow(s),veh/h/ln	1638	1615	1667	1429	1757	1863		
Q Serve(g_s), s	3.0	0.0	1.4	4.5	0.4	3.2		
Cycle Q Clear(g_c), s	3.0	0.0	1.4	4.5	0.4	3.2		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	582	287	502	431	550	889		
V/C Ratio(X)	0.58	0.00	0.20	0.56	0.07	0.33		
Avail Cap(c_a), veh/h	2038	1005	1814	1556	2127	2028		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.1	0.0	8.3	9.4	6.1	5.2		
Incr Delay (d2), s/veh	0.9	0.0	0.2	1.1	0.0	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	1.4	0.0	0.7	1.9	0.2	1.6		
LnGrp Delay(d),s/veh	13.0	0.0	8.5	10.6	6.1	5.4		
LnGrp LOS	B		A	B	A	A		
Approach Vol, veh/h	335		340			333		
Approach Delay, s/veh	13.0		10.0			5.5		
Approach LOS	B		A			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.7	15.5				21.1		11.0
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.4	6.5				5.2		5.0
Green Ext Time (p_c), s	0.0	3.2				3.2		1.0
Intersection Summary								
HCM 2010 Ctrl Delay			9.5					
HCM 2010 LOS			A					
Notes								
User approved volume balancing among the lanes for turning movement.								

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	13	58	41	2	2	9	11	12	1	11	3
Future Vol, veh/h	1	13	58	41	2	2	9	11	12	1	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	100	0	10	7	50	100	22	73	17	0	45	100
Mvmt Flow	1	18	82	58	3	3	13	15	17	1	15	4

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	72	78	18	119	72	24	20	0	0	32	0	0
Stage 1	20	20	-	49	49	-	-	-	-	-	-	-
Stage 2	52	58	-	70	23	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.3	7.17	7	7.2	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.17	6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.17	6	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.39	3.563	4.45	4.2	2.398	-	-	2.2	-	-
Pot Cap-1 Maneuver	727	816	1038	845	735	828	1475	-	-	1593	-	-
Stage 1	796	883	-	952	768	-	-	-	-	-	-	-
Stage 2	762	851	-	928	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	717	808	1038	759	728	828	1475	-	-	1593	-	-
Mov Cap-2 Maneuver	717	808	-	759	728	-	-	-	-	-	-	-
Stage 1	789	882	-	943	761	-	-	-	-	-	-	-
Stage 2	750	843	-	836	789	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		10.2		2.1		0.5	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1475	-	-	981	760	1593	-	-
HCM Lane V/C Ratio	0.009	-	-	0.103	0.083	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.1	10.2	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	12	30	3	19	1	12	7	1	7	85	8
Future Vol, veh/h	5	12	30	3	19	1	12	7	1	7	85	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	40	0	13	0	16	0	17	0	0	0	2	25
Mvmt Flow	7	17	42	4	27	1	17	10	1	10	120	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	203	190	125	219	195	11	131	0	0	11	0	0
Stage 1	145	145	-	44	44	-	-	-	-	-	-	-
Stage 2	58	45	-	175	151	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.33	7.1	6.66	6.2	4.27	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4	3.417	3.5	4.144	3.3	2.353	-	-	2.2	-	-
Pot Cap-1 Maneuver	680	708	897	741	676	1076	1367	-	-	1621	-	-
Stage 1	775	781	-	975	831	-	-	-	-	-	-	-
Stage 2	866	861	-	832	746	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	648	694	897	682	663	1076	1367	-	-	1621	-	-
Mov Cap-2 Maneuver	648	694	-	682	663	-	-	-	-	-	-	-
Stage 1	765	776	-	962	820	-	-	-	-	-	-	-
Stage 2	826	850	-	770	741	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.9		10.6		4.6		0.5	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1367	-	-	804	677	1621	-	-
HCM Lane V/C Ratio	0.012	-	-	0.082	0.048	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.9	10.6	7.2	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection						
Int Delay, s/veh	6.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↔		↙	↗
Traffic Vol, veh/h	87	26	28	89	121	132
Future Vol, veh/h	87	26	28	89	121	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	3	15	36	1	7	12
Mvmt Flow	134	40	43	137	186	203

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	687	112	0	0	180	0
Stage 1	112	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Critical Hdwy	6.43	6.35	-	-	4.17	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.435	-	-	2.263	-
Pot Cap-1 Maneuver	411	907	-	-	1366	-
Stage 1	910	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	355	907	-	-	1366	-
Mov Cap-2 Maneuver	355	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.4	0	3.9
HCM LOS	C		






















Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	355	907	1366	-
HCM Lane V/C Ratio	-	-	0.377	0.044	0.136	-
HCM Control Delay (s)	-	-	21.1	9.2	8.1	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.1	0.5	-

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)		0.0	0.0	0.1	0.1	0.0	0.1	3.5	0.1	0.1	0.1
Total Del/Veh (s)		1.7	3.5	7.5	3.5	1.2	1.2	1.1	0.2	0.0	2.0
Vehicles Entered	0	4	222	2	74	204	6	3	160	2	677
Vehicles Exited	0	4	222	2	74	204	6	3	160	2	677
Hourly Exit Rate	0	4	222	2	74	204	6	3	160	2	677
Input Volume	1	5	218	2	74	202	6	3	164	2	677
% of Volume	0	84	102	100	100	101	96	100	97	100	100

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Existing Conditions
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	84	140	81	73	55	51	205	116	50	314	20
Future Volume (veh/h)	18	84	140	81	73	55	51	205	116	50	314	20
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	1900	1778	1900	1900	1893	1900	1667	1876	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	92	154	89	80	60	56	225	127	55	345	22
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	1	1	1	14	2	2	0	2	0
Cap, veh/h	572	491	439	420	327	264	546	839	456	584	1331	608
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1269	1689	1511	663	1126	909	904	2231	1213	1045	3539	1615
Grp Volume(v), veh/h	20	92	154	126	0	103	56	178	174	55	345	22
Grp Sat Flow(s),veh/h/ln	1269	1689	1511	1136	0	1563	904	1782	1662	1045	1770	1615
Q Serve(g_s), s	0.3	1.1	2.2	1.0	0.0	1.4	1.2	1.9	2.0	1.0	1.8	0.2
Cycle Q Clear(g_c), s	1.7	1.1	2.2	3.1	0.0	1.4	3.1	1.9	2.0	3.0	1.8	0.2
Prop In Lane	1.00		1.00	0.71		0.58	1.00		0.73	1.00		1.00
Lane Grp Cap(c), veh/h	572	491	439	558	0	454	546	670	625	584	1331	608
V/C Ratio(X)	0.03	0.19	0.35	0.23	0.00	0.23	0.10	0.27	0.28	0.09	0.26	0.04
Avail Cap(c_a), veh/h	1378	1564	1399	1382	0	1447	1211	1980	1847	1352	3932	1794
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.9	7.2	7.6	7.8	0.0	7.3	6.9	5.8	5.9	6.9	5.8	5.3
Incr Delay (d2), s/veh	0.0	0.2	0.5	0.2	0.0	0.3	0.1	0.2	0.2	0.1	0.1	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	0.1	0.5	1.0	0.8	0.0	0.6	0.3	0.9	0.9	0.3	0.9	0.1
LnGrp Delay(d),s/veh	7.9	7.4	8.0	8.0	0.0	7.5	7.0	6.0	6.1	7.0	5.9	5.4
LnGrp LOS	A	A	A	A		A	A	A	A	A	A	A
Approach Vol, veh/h		266			229			408			422	
Approach Delay, s/veh		7.8			7.8			6.2			6.0	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.7		12.3		14.7		12.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		5.1		4.2		5.0		5.1				
Green Ext Time (p_c), s		5.1		2.9		5.1		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									

6: Military Rd & Lear Blvd Performance by movement













Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	2.6	0.3	0.3	1.9	0.1	0.1	2.7	0.2	0.2
Total Del/Veh (s)	10.3	1.9	4.8	9.4	8.4	3.8	3.0	0.9	0.5	1.3	1.0	0.3
Vehicles Entered	6	92	152	70	29	11	200	115	25	3	138	8
Vehicles Exited	6	93	153	70	29	11	200	115	25	3	138	8
Hourly Exit Rate	6	93	153	70	29	11	200	115	25	3	138	8
Input Volume	8	92	149	73	29	9	204	115	25	4	136	6
% of Volume	73	101	103	96	100	119	98	100	100	75	101	128

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	3.3
Vehicles Entered	849
Vehicles Exited	851
Hourly Exit Rate	851
Input Volume	850
% of Volume	100

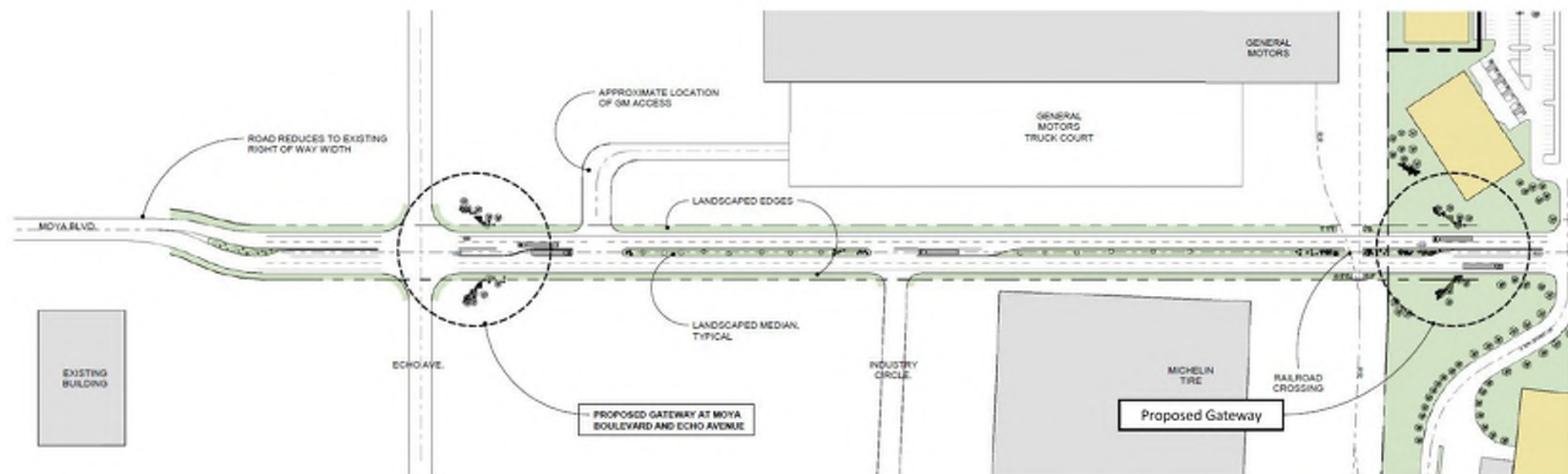
HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Existing Conditions
PM Peak

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations									
Traffic Volume (veh/h)	224	29	296	180	18	137			
Future Volume (veh/h)	224	29	296	180	18	137			
Number	3	18	2	12	1	6			
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	1754	1900	1881	1792	1900	1881			
Adj Flow Rate, veh/h	273	0	322	196	20	149			
Adj No. of Lanes	2	1	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	9	0	1	6	0	1			
Cap, veh/h	503	243	602	488	433	917			
Arrive On Green	0.15	0.00	0.32	0.32	0.02	0.49			
Sat Flow, veh/h	3342	1615	1881	1524	1810	1881			
Grp Volume(v), veh/h	273	0	322	196	20	149			
Grp Sat Flow(s),veh/h/ln	1671	1615	1881	1524	1810	1881			
Q Serve(g_s), s	2.3	0.0	4.3	3.1	0.2	1.4			
Cycle Q Clear(g_c), s	2.3	0.0	4.3	3.1	0.2	1.4			
Prop In Lane	1.00	1.00		1.00	1.00				
Lane Grp Cap(c), veh/h	503	243	602	488	433	917			
V/C Ratio(X)	0.54	0.00	0.53	0.40	0.05	0.16			
Avail Cap(c_a), veh/h	2180	1054	2148	1740	2167	2148			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	12.0	0.0	8.5	8.1	6.1	4.4			
Incr Delay (d2), s/veh	0.9	0.0	0.7	0.5	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.4	1.3	0.1	0.7			
LnGrp Delay(d),s/veh	13.0	0.0	9.3	8.7	6.2	4.5			
LnGrp LOS	B		A	A	A	A			
Approach Vol, veh/h	273		518			169			
Approach Delay, s/veh	13.0		9.1			4.7			
Approach LOS	B		A			A			
Timer	1	2	3	4	5	6	7	8	
Assigned Phs	1	2				6		8	
Phs Duration (G+Y+Rc), s	5.1	15.6				20.7		9.9	
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3	
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0	
Max Q Clear Time (g_c+I1), s	2.2	6.3				3.4		4.3	
Green Ext Time (p_c), s	0.0	3.5				3.6		0.8	
Intersection Summary									
HCM 2010 Ctrl Delay			9.4						
HCM 2010 LOS			A						
Notes									
User approved volume balancing among the lanes for turning movement.									

Appendix B
Moya Blvd/Industry Circle
Intersection Configuration





Appendix C

Existing Plus Project LOS Calculations



Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	19	8	15	30	28	131	53	10	40	0
Future Vol, veh/h	0	4	19	8	15	30	28	131	53	10	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	25	26	38	13	0	14	40	9	10	45	0
Mvmt Flow	0	5	24	10	19	38	35	164	66	13	50	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	370	375	50	356	342	197	50	0	0	230	0	0
Stage 1	75	75	-	267	267	-	-	-	-	-	-	-
Stage 2	295	300	-	89	75	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.75	6.46	7.48	6.63	6.2	4.24	-	-	4.2	-	-
Critical Hdwy Stg 1	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.225	3.534	3.842	4.117	3.3	2.326	-	-	2.29	-	-
Pot Cap-1 Maneuver	590	521	954	538	563	849	1483	-	-	1292	-	-
Stage 1	939	790	-	666	668	-	-	-	-	-	-	-
Stage 2	718	626	-	837	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	534	502	954	506	542	849	1483	-	-	1292	-	-
Mov Cap-2 Maneuver	534	502	-	506	542	-	-	-	-	-	-	-
Stage 1	914	782	-	648	650	-	-	-	-	-	-	-
Stage 2	648	609	-	803	803	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.5		10.9		1		1.6	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1483	-	-	825	672	1292	-	-
HCM Lane V/C Ratio	0.024	-	-	0.035	0.099	0.01	-	-
HCM Control Delay (s)	7.5	0	-	9.5	10.9	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.3	0	-	-

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	27	20	4	26	11	52	72	5	4	10	4
Future Vol, veh/h	10	27	20	4	26	11	52	72	5	4	10	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	40	0	40	25	0	0	29	0	20	0	40	75
Mvmt Flow	12	33	24	5	31	13	63	87	6	5	12	5

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	261	242	14	267	242	90	17	0	0	93	0	0
Stage 1	24	24	-	215	215	-	-	-	-	-	-	-
Stage 2	237	218	-	52	27	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.6	7.35	6.5	6.2	4.39	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4	3.66	3.725	4	3.3	2.461	-	-	2.2	-	-
Pot Cap-1 Maneuver	621	663	966	641	663	973	1441	-	-	1514	-	-
Stage 1	905	879	-	738	729	-	-	-	-	-	-	-
Stage 2	688	726	-	906	877	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	567	631	966	578	631	973	1441	-	-	1514	-	-
Mov Cap-2 Maneuver	567	631	-	578	631	-	-	-	-	-	-	-
Stage 1	863	876	-	704	695	-	-	-	-	-	-	-
Stage 2	618	693	-	848	874	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.7		10.6		3.1		1.6	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1441	-	-	703	690	1514	-	-
HCM Lane V/C Ratio	0.043	-	-	0.098	0.072	0.003	-	-
HCM Control Delay (s)	7.6	0	-	10.7	10.6	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↔		↙	↗
Traffic Vol, veh/h	53	115	235	95	35	61
Future Vol, veh/h	53	115	235	95	35	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	9	4	27	3	18	48
Mvmt Flow	62	135	276	112	41	72

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	486	332	0	0	388
Stage 1	332	-	-	-	-
Stage 2	154	-	-	-	-
Critical Hdwy	6.49	6.24	-	-	4.28
Critical Hdwy Stg 1	5.49	-	-	-	-
Critical Hdwy Stg 2	5.49	-	-	-	-
Follow-up Hdwy	3.581	3.336	-	-	2.362
Pot Cap-1 Maneuver	528	705	-	-	1088
Stage 1	711	-	-	-	-
Stage 2	857	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	508	705	-	-	1088
Mov Cap-2 Maneuver	508	-	-	-	-
Stage 1	711	-	-	-	-
Stage 2	825	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	3.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	508	705	1088
HCM Lane V/C Ratio	-	-	0.123	0.192	0.038
HCM Control Delay (s)	-	-	13.1	11.3	8.4
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.7	0.1





















SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.1	0.1	0.0		0.1	0.1	0.1
Total Del/Veh (s)	10.8	1.5	2.5	3.0	11.6	4.3	1.3		0.3	0.5	2.6
Vehicles Entered	3	17	110	1	1	247	88	0	130	2	599
Vehicles Exited	3	18	110	1	1	247	88	0	130	2	600
Hourly Exit Rate	3	18	110	1	1	247	88	0	130	2	600
Input Volume	4	21	110	1	1	249	90	1	136	2	616
% of Volume	71	87	100	100	100	99	98	0	96	89	97

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Existing Plus Project Conditions
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	79	43	116	59	63	136	257	51	43	190	14
Future Volume (veh/h)	12	79	43	116	59	63	136	257	51	43	190	14
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	1759	1802	1900	1900	1857	1900	1776	1795	1900	1900	1759	1570
Adj Flow Rate, veh/h	14	94	51	138	70	75	162	306	61	51	226	17
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	3	3	0	0	0	7	7	7	0	8	21
Cap, veh/h	512	607	309	504	231	266	643	1131	223	595	1330	531
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1169	2197	1118	958	835	961	1079	2843	559	1031	3343	1335
Grp Volume(v), veh/h	14	72	73	164	0	119	162	182	185	51	226	17
Grp Sat Flow(s),veh/h/ln	1169	1712	1604	1234	0	1520	1079	1705	1697	1031	1671	1335
Q Serve(g_s), s	0.3	0.9	1.0	2.4	0.0	1.7	3.2	2.0	2.0	1.0	1.2	0.2
Cycle Q Clear(g_c), s	2.0	0.9	1.0	3.4	0.0	1.7	4.4	2.0	2.0	3.0	1.2	0.2
Prop In Lane	1.00		0.70	0.84		0.63	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	512	473	443	581	0	420	643	678	675	595	1330	531
V/C Ratio(X)	0.03	0.15	0.16	0.28	0.00	0.28	0.25	0.27	0.27	0.09	0.17	0.03
Avail Cap(c_a), veh/h	1247	1549	1452	1401	0	1375	1386	1852	1843	1305	3630	1450
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	7.5	7.6	8.5	0.0	7.8	6.8	5.6	5.6	6.6	5.4	5.1
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.3	0.0	0.4	0.2	0.2	0.2	0.1	0.1	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	0.1	0.4	0.4	1.1	0.0	0.7	0.9	0.9	1.0	0.3	0.5	0.1
LnGrp Delay(d),s/veh	8.6	7.7	7.8	8.8	0.0	8.2	7.0	5.8	5.8	6.7	5.4	5.1
LnGrp LOS	A	A	A	A		A	A	A	A	A	A	A
Approach Vol, veh/h		159			283			529			294	
Approach Delay, s/veh		7.8			8.6			6.2			5.6	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.5		12.1		15.5		12.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		6.4		4.0		5.0		5.4				
Green Ext Time (p_c), s		4.6		2.6		4.7		2.5				
Intersection Summary												
HCM 2010 Ctrl Delay			6.8									
HCM 2010 LOS			A									

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.2	2.9	0.2	0.2	1.9	0.1	0.1	3.0	0.2	0.2
Total Del/Veh (s)	12.0	12.6	4.9	9.0	8.3	3.1	2.6	0.9	0.5	1.8	1.0	0.4
Vehicles Entered	11	28	230	46	16	8	141	136	61	6	144	16
Vehicles Exited	11	29	231	47	16	9	142	136	61	6	144	16
Hourly Exit Rate	11	29	231	47	16	9	142	136	61	6	144	16
Input Volume	13	28	227	44	15	7	138	131	63	6	143	14
% of Volume	86	105	102	106	108	124	103	104	96	96	101	116

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	3.4
Vehicles Entered	843
Vehicles Exited	848
Hourly Exit Rate	848
Input Volume	829
% of Volume	102

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Existing Plus Project Conditions
AM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 							
Traffic Volume (veh/h)	285	15	81	281	36	239		
Future Volume (veh/h)	285	15	81	281	36	239		
Number	3	18	2	12	1	6		
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	1663	1900	1667	1508	1845	1863		
Adj Flow Rate, veh/h	370	0	100	347	44	295		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81		
Percent Heavy Veh, %	15	0	14	26	3	2		
Cap, veh/h	584	298	626	481	566	987		
Arrive On Green	0.18	0.00	0.38	0.38	0.04	0.53		
Sat Flow, veh/h	3168	1615	1667	1282	1757	1863		
Grp Volume(v), veh/h	370	0	100	347	44	295		
Grp Sat Flow(s),veh/h/ln	1584	1615	1667	1282	1757	1863		
Q Serve(g_s), s	4.2	0.0	1.5	9.0	0.5	3.4		
Cycle Q Clear(g_c), s	4.2	0.0	1.5	9.0	0.5	3.4		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	584	298	626	481	566	987		
V/C Ratio(X)	0.63	0.00	0.16	0.72	0.08	0.30		
Avail Cap(c_a), veh/h	1631	831	1501	1155	1854	1678		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.6	0.0	8.1	10.4	5.9	5.1		
Incr Delay (d2), s/veh	1.1	0.0	0.1	2.1	0.0	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	1.9	0.0	0.7	3.4	0.2	1.8		
LnGrp Delay(d),s/veh	15.8	0.0	8.2	12.5	5.9	5.3		
LnGrp LOS	B		A	B	A	A		
Approach Vol, veh/h	370		447			339		
Approach Delay, s/veh	15.8		11.5			5.3		
Approach LOS	B		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.0	20.4				26.4		12.5
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.5	11.0				5.4		6.2
Green Ext Time (p_c), s	0.0	3.6				3.7		1.1
Intersection Summary								
HCM 2010 Ctrl Delay			11.1					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	13	58	41	2	17	9	53	12	42	125	3
Future Vol, veh/h	1	13	58	41	2	17	9	53	12	42	125	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	100	0	10	7	50	35	22	43	17	24	37	100
Mvmt Flow	1	18	82	58	3	24	13	75	17	59	176	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	418	413	178	454	407	83	180	0	0	92	0	0
Stage 1	296	296	-	108	108	-	-	-	-	-	-	-
Stage 2	122	117	-	346	299	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.3	7.17	7	6.55	4.32	-	-	4.34	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.17	6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.17	6	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.39	3.563	4.45	3.615	2.398	-	-	2.416	-	-
Pot Cap-1 Maneuver	408	532	845	508	467	892	1284	-	-	1375	-	-
Stage 1	544	672	-	885	722	-	-	-	-	-	-	-
Stage 2	692	803	-	659	588	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	377	501	845	426	440	892	1284	-	-	1375	-	-
Mov Cap-2 Maneuver	377	501	-	426	440	-	-	-	-	-	-	-
Stage 1	538	640	-	875	714	-	-	-	-	-	-	-
Stage 2	663	794	-	551	560	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.6		13.6		1		1.9	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1284	-	-	740	501	1375	-	-
HCM Lane V/C Ratio	0.01	-	-	0.137	0.169	0.043	-	-
HCM Control Delay (s)	7.8	0	-	10.6	13.6	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.6	0.1	-	-

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	22	61	3	23	1	23	7	1	7	85	8
Future Vol, veh/h	5	22	61	3	23	1	23	7	1	7	85	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	40	0	23	0	13	0	26	0	0	0	2	25
Mvmt Flow	7	31	86	4	32	1	32	10	1	10	120	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	237	221	125	279	226	11	131	0	0	11	0	0
Stage 1	145	145	-	75	75	-	-	-	-	-	-	-
Stage 2	92	76	-	204	151	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.43	7.1	6.63	6.2	4.36	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.1	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.86	4	3.507	3.5	4.117	3.3	2.434	-	-	2.2	-	-
Pot Cap-1 Maneuver	645	681	872	677	654	1076	1319	-	-	1621	-	-
Stage 1	775	781	-	939	811	-	-	-	-	-	-	-
Stage 2	830	836	-	803	752	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	605	660	872	575	634	1076	1319	-	-	1621	-	-
Mov Cap-2 Maneuver	605	660	-	575	634	-	-	-	-	-	-	-
Stage 1	756	776	-	916	792	-	-	-	-	-	-	-
Stage 2	776	816	-	690	747	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		11		5.8		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1319	-	-	789	636	1621	-	-
HCM Lane V/C Ratio	0.025	-	-	0.157	0.06	0.006	-	-
HCM Control Delay (s)	7.8	0	-	10.4	11	7.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.2	0	-	-

Intersection						
Int Delay, s/veh	8.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↔		↙	↗
Traffic Vol, veh/h	87	40	56	89	157	210
Future Vol, veh/h	87	40	56	89	157	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	3	20	38	1	11	22
Mvmt Flow	134	62	86	137	242	323

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	961	155	0	0	223
Stage 1	155	-	-	-	-
Stage 2	806	-	-	-	-
Critical Hdwy	6.43	6.4	-	-	4.21
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.48	-	-	2.299
Pot Cap-1 Maneuver	283	846	-	-	1294
Stage 1	871	-	-	-	-
Stage 2	438	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	230	846	-	-	1294
Mov Cap-2 Maneuver	230	-	-	-	-
Stage 1	871	-	-	-	-
Stage 2	356	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	30.7	0	3.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	230	846	1294	-
HCM Lane V/C Ratio	-	-	0.582	0.073	0.187	-
HCM Control Delay (s)	-	-	40.4	9.6	8.4	-
HCM Lane LOS	-	-	E	A	A	-
HCM 95th %tile Q(veh)	-	-	3.3	0.2	0.7	-

SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.0	0.1	4.2	0.1	0.1	0.1
Total Del/Veh (s)	3.7	0.9	3.8	9.9	3.5	1.2	1.2	2.0	0.2	0.0	2.1
Vehicles Entered	1	4	248	2	80	204	7	2	164	2	714
Vehicles Exited	1	4	248	2	80	204	7	2	165	2	715
Hourly Exit Rate	1	4	248	2	80	204	7	2	165	2	715
Input Volume	1	5	249	2	85	202	6	3	164	2	720
% of Volume	100	84	99	100	94	101	112	67	100	100	99

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Existing Plus Project Conditions
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	94	166	81	77	57	61	214	116	56	339	20
Future Volume (veh/h)	18	94	166	81	77	57	61	214	116	56	339	20
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	1900	1734	1900	1900	1893	1900	1610	1852	1900	1900	1827	1900
Adj Flow Rate, veh/h	20	103	182	89	85	63	67	235	127	62	373	22
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	1	1	1	18	4	4	0	4	0
Cap, veh/h	567	510	456	397	341	274	509	865	451	566	1341	624
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1259	1647	1474	612	1102	886	852	2238	1168	1036	3471	1615
Grp Volume(v), veh/h	20	103	182	126	0	111	67	183	179	62	373	22
Grp Sat Flow(s),veh/h/ln	1259	1647	1474	1033	0	1566	852	1759	1646	1036	1736	1615
Q Serve(g_s), s	0.4	1.4	2.9	1.2	0.0	1.6	1.7	2.1	2.2	1.3	2.2	0.3
Cycle Q Clear(g_c), s	1.9	1.4	2.9	4.1	0.0	1.6	3.9	2.1	2.2	3.5	2.2	0.3
Prop In Lane	1.00		1.00	0.71		0.57	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	567	510	456	528	0	485	509	680	636	566	1341	624
V/C Ratio(X)	0.04	0.20	0.40	0.24	0.00	0.23	0.13	0.27	0.28	0.11	0.28	0.04
Avail Cap(c_a), veh/h	1240	1391	1245	1202	0	1323	1043	1783	1668	1215	3518	1637
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	7.5	8.0	8.4	0.0	7.6	7.6	6.2	6.3	7.5	6.2	5.7
Incr Delay (d2), s/veh	0.0	0.2	0.6	0.2	0.0	0.2	0.1	0.2	0.2	0.1	0.1	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	0.1	0.6	1.2	0.9	0.0	0.7	0.4	1.1	1.0	0.4	1.1	0.1
LnGrp Delay(d),s/veh	8.3	7.7	8.6	8.6	0.0	7.8	7.7	6.4	6.5	7.5	6.4	5.7
LnGrp LOS	A	A	A	A		A	A	A	A	A	A	A
Approach Vol, veh/h		305			237			429			457	
Approach Delay, s/veh		8.3			8.2			6.7			6.5	
Approach LOS		A			A			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.9		13.7		15.9		13.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		5.9		4.9		5.5		6.1				
Green Ext Time (p_c), s		5.5		3.2		5.5		3.2				
Intersection Summary												
HCM 2010 Ctrl Delay				7.2								
HCM 2010 LOS				A								

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.2	0.3	1.9	0.1	0.2	2.2	0.2	0.2
Total Del/Veh (s)	12.5	2.1	5.0	10.4	8.9	3.2	3.0	0.8	0.5	1.8	1.0	0.4
Vehicles Entered	7	88	165	69	28	11	213	118	28	3	142	6
Vehicles Exited	7	89	165	70	28	11	214	117	28	3	142	6
Hourly Exit Rate	7	89	165	70	28	11	214	117	28	3	142	6
Input Volume	8	92	165	73	29	9	210	117	25	4	141	6
% of Volume	85	96	100	96	97	119	102	100	112	75	101	96

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	3.4
Vehicles Entered	878
Vehicles Exited	880
Hourly Exit Rate	880
Input Volume	880
% of Volume	100

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Existing Plus Project Conditions
PM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 							
Traffic Volume (veh/h)	297	34	296	206	20	137		
Future Volume (veh/h)	297	34	296	206	20	137		
Number	3	18	2	12	1	6		
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	1610	1900	1881	1712	1900	1881		
Adj Flow Rate, veh/h	358	0	322	224	22	149		
Adj No. of Lanes	2	1	1	1	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	20	0	1	11	0	1		
Cap, veh/h	591	311	588	455	407	886		
Arrive On Green	0.19	0.00	0.31	0.31	0.02	0.47		
Sat Flow, veh/h	3066	1615	1881	1455	1810	1881		
Grp Volume(v), veh/h	358	0	322	224	22	149		
Grp Sat Flow(s),veh/h/ln	1533	1615	1881	1455	1810	1881		
Q Serve(g_s), s	3.5	0.0	4.7	4.1	0.2	1.5		
Cycle Q Clear(g_c), s	3.5	0.0	4.7	4.1	0.2	1.5		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	591	311	588	455	407	886		
V/C Ratio(X)	0.61	0.00	0.55	0.49	0.05	0.17		
Avail Cap(c_a), veh/h	1858	979	1995	1543	2012	1995		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.2	0.0	9.4	9.2	6.8	5.0		
Incr Delay (d2), s/veh	1.0	0.0	0.8	0.8	0.0	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.6	0.0	2.5	1.7	0.1	0.8		
LnGrp Delay(d),s/veh	13.2	0.0	10.2	10.0	6.8	5.1		
LnGrp LOS	B		B	B	A	A		
Approach Vol, veh/h	358		546			171		
Approach Delay, s/veh	13.2		10.1			5.3		
Approach LOS	B		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.2	16.1				21.3		11.7
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.2	6.7				3.5		5.5
Green Ext Time (p_c), s	0.0	3.6				3.7		1.1
Intersection Summary								
HCM 2010 Ctrl Delay			10.4					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								

Appendix D

Future Year LOS Calculations



Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	0	4	19	22	15	0	30	114	86	1	44	0
Future Vol, veh/h	0	4	19	22	15	0	30	114	86	1	44	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	25	26	38	13	0	14	27	9	100	60	0
Mvmt Flow	0	4	21	24	16	0	33	124	93	1	48	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	247	239	48	252	239	124	48	0	0	124	0	0
Stage 1	50	50	-	189	189	-	-	-	-	-	-	-
Stage 2	197	189	-	63	50	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.75	6.46	7.48	6.63	6.2	4.24	-	-	5.1	-	-
Critical Hdwy Stg 1	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.75	-	6.48	5.63	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.225	3.534	3.842	4.117	3.3	2.326	-	-	3.1	-	-
Pot Cap-1 Maneuver	711	624	957	633	644	932	1485	-	-	1027	-	-
Stage 1	968	810	-	736	724	-	-	-	-	-	-	-
Stage 2	809	703	-	865	832	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	683	607	957	603	627	932	1485	-	-	1027	-	-
Mov Cap-2 Maneuver	683	607	-	603	627	-	-	-	-	-	-	-
Stage 1	943	809	-	717	705	-	-	-	-	-	-	-
Stage 2	770	685	-	841	831	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.3		11.3		1		0.2	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1485	-	-	870	613	1027	-	-
HCM Lane V/C Ratio	0.022	-	-	0.029	0.066	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.3	11.3	8.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.2	0	-	-

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	25	14	4	20	16	65	257	5	4	100	12
Future Vol, veh/h	76	25	14	4	20	16	65	257	5	4	100	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	15	0	57	25	0	0	47	0	20	0	15	75
Mvmt Flow	83	27	15	4	22	17	71	279	5	4	109	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	567	550	115	568	553	282	122	0	0	285	0	0
Stage 1	124	124	-	423	423	-	-	-	-	-	-	-
Stage 2	443	426	-	145	130	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.5	6.77	7.35	6.5	6.2	4.57	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4	3.813	3.725	4	3.3	2.623	-	-	2.2	-	-
Pot Cap-1 Maneuver	415	446	808	401	444	762	1229	-	-	1289	-	-
Stage 1	850	797	-	566	591	-	-	-	-	-	-	-
Stage 2	569	589	-	806	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	368	414	808	353	412	762	1229	-	-	1289	-	-
Mov Cap-2 Maneuver	368	414	-	353	412	-	-	-	-	-	-	-
Stage 1	791	795	-	527	550	-	-	-	-	-	-	-
Stage 2	497	548	-	761	790	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.8		13		1.6		0.3	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	405	495	1289	-	-
HCM Lane V/C Ratio	0.057	-	-	0.309	0.088	0.003	-	-
HCM Control Delay (s)	8.1	0	-	17.8	13	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.3	0.3	0	-	-

Intersection						
Int Delay, s/veh	4.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕		↘	↕
Traffic Vol, veh/h	61	129	171	115	46	36
Future Vol, veh/h	61	129	171	115	46	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	4	10	3	18	48
Mvmt Flow	66	140	186	125	50	39

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	368	155	0	0	311	0
Stage 1	248	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.98	6.98	-	-	4.46	-
Critical Hdwy Stg 1	5.98	-	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-	-
Follow-up Hdwy	3.59	3.34	-	-	2.38	-
Pot Cap-1 Maneuver	587	857	-	-	1138	-
Stage 1	750	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	561	857	-	-	1138	-
Mov Cap-2 Maneuver	561	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	561	857	1138	-
HCM Lane V/C Ratio	-	-	0.118	0.164	0.044	-
HCM Control Delay (s)	-	-	12.3	10	8.3	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.6	0.1	-





















SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	4.0	0.1	0.1	0.0
Total Del/Veh (s)	45.2	29.6	4.1	17.2	15.6	6.8	1.7	1.7	0.7	0.3	7.9
Vehicles Entered	79	49	300	1	20	448	185	2	130	60	1274
Vehicles Exited	78	49	300	1	20	448	185	2	130	60	1273
Hourly Exit Rate	78	49	300	1	20	448	185	2	130	60	1273
Input Volume	78	49	303	1	19	441	187	2	136	59	1274
% of Volume	100	101	99	100	107	102	99	100	96	102	100

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Future Year Conditions
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	85	41	116	52	119	126	468	51	80	322	38
Future Volume (veh/h)	37	85	41	116	52	119	126	468	51	80	322	38
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	1759	1804	1900	1900	1839	1900	1776	1787	1900	1900	1759	1570
Adj Flow Rate, veh/h	40	92	45	126	57	129	137	509	55	87	350	41
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	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, %	8	3	3	0	0	0	7	7	7	0	8	21
Cap, veh/h	426	584	269	403	148	356	603	1440	155	532	1556	621
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1126	2281	1052	834	579	1392	943	3093	333	860	3343	1335
Grp Volume(v), veh/h	40	68	69	180	0	132	137	279	285	87	350	41
Grp Sat Flow(s),veh/h/ln	1126	1714	1619	1377	0	1428	943	1698	1728	860	1671	1335
Q Serve(g_s), s	1.0	1.0	1.1	2.5	0.0	2.5	3.3	3.4	3.4	2.3	2.0	0.5
Cycle Q Clear(g_c), s	3.4	1.0	1.1	3.6	0.0	2.5	5.3	3.4	3.4	5.7	2.0	0.5
Prop In Lane	1.00		0.65	0.70		0.97	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	426	439	414	542	0	365	603	790	804	532	1556	621
V/C Ratio(X)	0.09	0.15	0.17	0.33	0.00	0.36	0.23	0.35	0.35	0.16	0.22	0.07
Avail Cap(c_a), veh/h	1009	1327	1253	1250	0	1106	1040	1577	1606	931	3105	1240
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	9.3	9.3	10.2	0.0	9.9	6.7	5.5	5.5	7.4	5.2	4.8
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.4	0.0	0.6	0.2	0.3	0.3	0.1	0.1	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	0.3	0.5	0.5	1.4	0.0	1.0	0.9	1.6	1.6	0.6	0.9	0.2
LnGrp Delay(d),s/veh	11.4	9.5	9.5	10.6	0.0	10.5	6.9	5.8	5.8	7.5	5.2	4.8
LnGrp LOS	B	A	A	B		B	A	A	A	A	A	A
Approach Vol, veh/h		177			312			701			478	
Approach Delay, s/veh		9.9			10.5			6.0			5.6	
Approach LOS		A			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.5		12.8		19.5		12.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		7.3		5.4		7.7		5.6				
Green Ext Time (p_c), s		7.3		2.8		7.3		2.8				
Intersection Summary												
HCM 2010 Ctrl Delay				7.2								
HCM 2010 LOS				A								

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	3.0	0.3	0.1	1.8	0.1	0.2	2.6	0.1	0.1
Total Del/Veh (s)	13.4	15.3	5.6	11.0	10.1	3.1	3.1	1.1	0.6	2.1	0.8	0.2
Vehicles Entered	14	26	279	47	16	8	142	202	67	5	221	18
Vehicles Exited	14	26	278	47	16	8	142	201	67	5	221	18
Hourly Exit Rate	14	26	278	47	16	8	142	201	67	5	221	18
Input Volume	14	28	282	48	15	7	147	196	69	6	226	15
% of Volume	98	94	98	97	105	110	96	103	97	80	98	118

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	3.6
Vehicles Entered	1045
Vehicles Exited	1043
Hourly Exit Rate	1043
Input Volume	1054
% of Volume	99

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Future Year Conditions
AM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 					 		
Traffic Volume (veh/h)	427	25	147	256	52	433		
Future Volume (veh/h)	427	25	147	256	52	433		
Number	3	18	2	12	1	6		
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	1721	1900	1667	1681	1845	1863		
Adj Flow Rate, veh/h	489	0	160	278	57	471		
Adj No. of Lanes	2	1	1	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	11	0	14	13	3	2		
Cap, veh/h	729	359	566	485	516	1768		
Arrive On Green	0.22	0.00	0.34	0.34	0.05	0.50		
Sat Flow, veh/h	3278	1615	1667	1429	1757	3632		
Grp Volume(v), veh/h	489	0	160	278	57	471		
Grp Sat Flow(s),veh/h/ln	1639	1615	1667	1429	1757	1770		
Q Serve(g_s), s	5.4	0.0	2.8	6.4	0.8	3.1		
Cycle Q Clear(g_c), s	5.4	0.0	2.8	6.4	0.8	3.1		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	729	359	566	485	516	1768		
V/C Ratio(X)	0.67	0.00	0.28	0.57	0.11	0.27		
Avail Cap(c_a), veh/h	1644	810	1463	1254	1755	3106		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	14.2	0.0	9.6	10.8	6.8	5.8		
Incr Delay (d2), s/veh	1.1	0.0	0.3	1.1	0.0	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.3	2.6	0.4	1.5		
LnGrp Delay(d),s/veh	15.3	0.0	9.9	11.9	6.9	5.8		
LnGrp LOS	B		A	B	A	A		
Approach Vol, veh/h	489		438			528		
Approach Delay, s/veh	15.3		11.1			6.0		
Approach LOS	B		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.4	19.3				25.7		14.2
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.8	8.4				5.1		7.4
Green Ext Time (p_c), s	0.1	5.2				5.3		1.5
Intersection Summary								
HCM 2010 Ctrl Delay			10.6					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	13	13	61	52	2	18	9	90	12	9	124	10
Future Vol, veh/h	13	13	61	52	2	18	9	90	12	9	124	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	0	10	7	50	15	22	10	17	0	8	40
Mvmt Flow	14	14	66	57	2	20	10	98	13	10	135	11

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	288	277	140	317	282	98	146	0	0	98	0	0
Stage 1	160	160	-	117	117	-	-	-	-	-	-	-
Stage 2	128	117	-	200	165	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.5	6.3	7.17	7	6.35	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	6.18	5.5	-	6.17	6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.5	-	6.17	6	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4	3.39	3.563	4.45	3.435	2.398	-	-	2.2	-	-
Pot Cap-1 Maneuver	652	634	887	626	554	924	1322	-	-	1508	-	-
Stage 1	828	769	-	876	715	-	-	-	-	-	-	-
Stage 2	861	803	-	790	679	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	629	625	887	563	546	924	1322	-	-	1508	-	-
Mov Cap-2 Maneuver	629	625	-	563	546	-	-	-	-	-	-	-
Stage 1	821	764	-	869	709	-	-	-	-	-	-	-
Stage 2	833	797	-	712	674	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.2		11.6		0.6		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	789	623	1508	-	-
HCM Lane V/C Ratio	0.007	-	-	0.12	0.126	0.006	-	-
HCM Control Delay (s)	7.7	0	-	10.2	11.6	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0	-	-

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	15	33	3	21	1	18	26	1	11	312	50
Future Vol, veh/h	28	15	33	3	21	1	18	26	1	11	312	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	20	0	13	0	16	0	17	0	0	0	2	10
Mvmt Flow	30	16	36	3	23	1	20	28	1	12	339	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	470	458	366	484	485	29	393	0	0	29	0	0
Stage 1	390	390	-	68	68	-	-	-	-	-	-	-
Stage 2	80	68	-	416	417	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.33	7.1	6.66	6.2	4.27	-	-	4.1	-	-
Critical Hdwy Stg 1	6.3	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.417	3.5	4.144	3.3	2.353	-	-	2.2	-	-
Pot Cap-1 Maneuver	475	502	655	496	462	1052	1088	-	-	1597	-	-
Stage 1	599	611	-	947	812	-	-	-	-	-	-	-
Stage 2	886	842	-	618	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	446	488	655	447	449	1052	1088	-	-	1597	-	-
Mov Cap-2 Maneuver	446	488	-	447	449	-	-	-	-	-	-	-
Stage 1	588	605	-	929	797	-	-	-	-	-	-	-
Stage 2	843	826	-	563	562	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.1		13.3		3.3		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1088	-	-	528	459	1597	-	-
HCM Lane V/C Ratio	0.018	-	-	0.156	0.059	0.007	-	-
HCM Control Delay (s)	8.4	0	-	13.1	13.3	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.2	0	-	-

Intersection						
Int Delay, s/veh	5.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕		↘	↕
Traffic Vol, veh/h	106	33	29	112	168	166
Future Vol, veh/h	106	33	29	112	168	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	15	36	1	7	12
Mvmt Flow	115	36	32	122	183	180

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	547	77	0	0	153	0
Stage 1	92	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Critical Hdwy	6.86	7.2	-	-	4.24	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.45	-	-	2.27	-
Pot Cap-1 Maneuver	465	928	-	-	1389	-
Stage 1	918	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	404	928	-	-	1389	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	404	928	1389	-
HCM Lane V/C Ratio	-	-	0.285	0.039	0.131	-
HCM Control Delay (s)	-	-	17.4	9	8	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	0.5	-

SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	3.7	0.1	0.1	0.1
Total Del/Veh (s)	16.4	16.5	9.5	15.0	4.8	1.5	1.2	1.7	0.6	0.2	6.2
Vehicles Entered	32	48	604	15	270	237	9	35	163	48	1461
Vehicles Exited	32	47	606	15	272	238	9	35	163	48	1465
Hourly Exit Rate	32	47	606	15	272	238	9	35	163	48	1465
Input Volume	33	50	600	17	270	241	10	37	164	44	1466
% of Volume	97	95	101	87	101	99	88	95	100	108	100

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Future Year Conditions
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	99	144	81	79	112	55	356	116	120	604	57
Future Volume (veh/h)	47	99	144	81	79	112	55	356	116	120	604	57
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	1900	1784	1900	1900	1894	1900	1667	1872	1900	1900	1863	1900
Adj Flow Rate, veh/h	51	108	157	88	86	122	60	387	126	130	657	62
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	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, %	0	0	0	1	1	1	14	2	2	0	2	0
Cap, veh/h	427	460	411	293	240	357	435	1294	416	552	1730	789
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1192	1695	1516	529	885	1316	653	2648	852	901	3539	1615
Grp Volume(v), veh/h	51	108	157	158	0	138	60	258	255	130	657	62
Grp Sat Flow(s),veh/h/ln	1192	1695	1516	1238	0	1492	653	1778	1721	901	1770	1615
Q Serve(g_s), s	1.3	1.9	3.2	1.5	0.0	2.8	2.4	3.3	3.3	3.8	4.4	0.8
Cycle Q Clear(g_c), s	4.1	1.9	3.2	4.7	0.0	2.8	6.8	3.3	3.3	7.1	4.4	0.8
Prop In Lane	1.00		1.00	0.56		0.88	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	427	460	411	486	0	405	435	869	841	552	1730	789
V/C Ratio(X)	0.12	0.23	0.38	0.32	0.00	0.34	0.14	0.30	0.30	0.24	0.38	0.08
Avail Cap(c_a), veh/h	898	1129	1010	1028	0	994	638	1422	1376	833	2830	1291
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	10.6	11.1	11.4	0.0	11.0	8.1	5.7	5.8	7.9	6.0	5.1
Incr Delay (d2), s/veh	0.1	0.3	0.6	0.4	0.0	0.5	0.1	0.2	0.2	0.2	0.1	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	0.5	0.9	1.4	1.4	0.0	1.2	0.4	1.6	1.6	1.0	2.1	0.3
LnGrp Delay(d),s/veh	12.8	10.9	11.7	11.8	0.0	11.5	8.3	5.9	6.0	8.1	6.2	5.1
LnGrp LOS	B	B	B	B		B	A	A	A	A	A	A
Approach Vol, veh/h		316			296			573			849	
Approach Delay, s/veh		11.6			11.7			6.2			6.4	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.8		14.7		22.8		14.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		8.8		6.1		9.1		6.7				
Green Ext Time (p_c), s		9.3		3.6		9.2		3.5				
Intersection Summary												
HCM 2010 Ctrl Delay				7.9								
HCM 2010 LOS				A								

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	0.3	0.3	1.8	0.2	0.2	2.7	0.1	0.1
Total Del/Veh (s)	15.4	2.3	5.6	15.6	10.6	4.2	4.2	1.2	0.5	1.9	1.0	0.1
Vehicles Entered	7	148	177	82	31	11	259	182	28	3	207	6
Vehicles Exited	8	148	178	83	30	11	258	182	28	2	207	6
Hourly Exit Rate	8	148	178	83	30	11	258	182	28	2	207	6
Input Volume	8	149	178	84	29	9	264	182	27	4	211	6
% of Volume	97	99	100	99	103	119	98	100	105	50	98	96

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	4.1
Vehicles Entered	1141
Vehicles Exited	1141
Hourly Exit Rate	1141
Input Volume	1152
% of Volume	99

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Future Year Conditions
PM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 					 		
Traffic Volume (veh/h)	320	75	537	290	32	248		
Future Volume (veh/h)	320	75	537	290	32	248		
Number	3	18	2	12	1	6		
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	1762	1900	1881	1792	1900	1881		
Adj Flow Rate, veh/h	215	224	584	315	35	270		
Adj No. of Lanes	1	1	1	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	9	0	1	6	0	1		
Cap, veh/h	328	316	828	670	329	2028		
Arrive On Green	0.20	0.20	0.44	0.44	0.03	0.57		
Sat Flow, veh/h	1678	1615	1881	1524	1810	3668		
Grp Volume(v), veh/h	215	224	584	315	35	270		
Grp Sat Flow(s),veh/h/ln	1678	1615	1881	1524	1810	1787		
Q Serve(g_s), s	5.5	6.1	11.8	6.8	0.4	1.7		
Cycle Q Clear(g_c), s	5.5	6.1	11.8	6.8	0.4	1.7		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	328	316	828	670	329	2028		
V/C Ratio(X)	0.66	0.71	0.71	0.47	0.11	0.13		
Avail Cap(c_a), veh/h	717	690	1407	1139	1432	2673		
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	17.4	17.6	10.6	9.2	7.8	4.7		
Incr Delay (d2), s/veh	2.2	2.9	1.1	0.5	0.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.8	2.9	6.3	2.9	0.2	0.8		
LnGrp Delay(d),s/veh	19.6	20.5	11.8	9.8	7.8	4.8		
LnGrp LOS	B	C	B	A	A	A		
Approach Vol, veh/h	439		899			305		
Approach Delay, s/veh	20.1		11.1			5.1		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.0	26.4				32.4		14.4
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.4	13.8				3.7		8.1
Green Ext Time (p_c), s	0.0	6.8				7.6		1.1
Intersection Summary								
HCM 2010 Ctrl Delay			12.4					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	4	19	22	15	30	30	230	86	10	79	0
Future Vol, veh/h	0	4	19	22	15	30	30	230	86	10	79	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	25	26	38	13	0	14	27	9	100	60	0
Mvmt Flow	0	4	21	24	16	33	33	250	93	11	86	0

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	306	517	43	429	470	172	86	0	0	343	0	0
Stage 1	108	108	-	362	362	-	-	-	-	-	-	-
Stage 2	198	409	-	67	108	-	-	-	-	-	-	-
Critical Hdwy	7.5	7	7.42	8.26	6.76	6.9	4.38	-	-	6.1	-	-
Critical Hdwy Stg 1	6.5	6	-	7.26	5.76	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	6	-	7.26	5.76	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.25	3.56	3.88	4.13	3.3	2.34	-	-	3.2	-	-
Pot Cap-1 Maneuver	629	414	945	433	467	848	1425	-	-	730	-	-
Stage 1	892	754	-	540	597	-	-	-	-	-	-	-
Stage 2	791	540	-	840	780	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	568	396	945	406	446	848	1425	-	-	730	-	-
Mov Cap-2 Maneuver	568	396	-	406	446	-	-	-	-	-	-	-
Stage 1	866	742	-	524	580	-	-	-	-	-	-	-
Stage 2	718	524	-	804	768	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB		
HCM Control Delay, s	9.9		12.6			0.7		1.2		
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1425	-	-	761	544	730	-	-
HCM Lane V/C Ratio	0.023	-	-	0.033	0.134	0.015	-	-
HCM Control Delay (s)	7.6	0.1	-	9.9	12.6	10	0.1	-
HCM Lane LOS	A	A	-	A	B	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.5	0	-	-

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	76	28	20	4	30	16	85	257	5	4	100	12
Future Vol, veh/h	76	28	20	4	30	16	85	257	5	4	100	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	15	0	57	25	0	0	47	0	20	0	15	75
Mvmt Flow	83	30	22	4	33	17	92	279	5	4	109	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	616	594	115	617	597	282	122	0	0	285	0	0
Stage 1	124	124	-	467	467	-	-	-	-	-	-	-
Stage 2	492	470	-	150	130	-	-	-	-	-	-	-
Critical Hdwy	7.25	6.5	6.77	7.35	6.5	6.2	4.57	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.25	5.5	-	6.35	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.635	4	3.813	3.725	4	3.3	2.623	-	-	2.2	-	-
Pot Cap-1 Maneuver	385	421	808	371	419	762	1229	-	-	1289	-	-
Stage 1	850	797	-	535	565	-	-	-	-	-	-	-
Stage 2	535	563	-	801	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	327	382	808	316	381	762	1229	-	-	1289	-	-
Mov Cap-2 Maneuver	327	382	-	316	381	-	-	-	-	-	-	-
Stage 1	774	795	-	487	515	-	-	-	-	-	-	-
Stage 2	446	513	-	747	790	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.9		14.2		2		0.3	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	375	445	1289	-	-
HCM Lane V/C Ratio	0.075	-	-	0.359	0.122	0.003	-	-
HCM Control Delay (s)	8.2	0	-	19.9	14.2	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	0.4	0	-	-

Intersection						
Int Delay, s/veh	4.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕		↘	↕
Traffic Vol, veh/h	61	153	263	115	53	64
Future Vol, veh/h	61	153	263	115	53	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	9	4	10	3	18	48
Mvmt Flow	66	166	286	125	58	70

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	498	205	0	0	411
Stage 1	348	-	-	-	-
Stage 2	150	-	-	-	-
Critical Hdwy	6.98	6.98	-	-	4.46
Critical Hdwy Stg 1	5.98	-	-	-	-
Critical Hdwy Stg 2	5.98	-	-	-	-
Follow-up Hdwy	3.59	3.34	-	-	2.38
Pot Cap-1 Maneuver	484	795	-	-	1038
Stage 1	666	-	-	-	-
Stage 2	842	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	457	795	-	-	1038
Mov Cap-2 Maneuver	457	-	-	-	-
Stage 1	666	-	-	-	-
Stage 2	795	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	457	795	1038	-
HCM Lane V/C Ratio	-	-	0.145	0.209	0.055	-
HCM Control Delay (s)	-	-	14.2	10.7	8.7	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.8	0.2	-





















SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0		0.1	0.0	0.0	2.6	0.1	0.1	0.0
Total Del/Veh (s)	46.5	34.1	4.2		20.1	7.0	1.8	0.9	0.7	0.3	8.2
Vehicles Entered	77	48	300	0	19	466	196	2	134	58	1300
Vehicles Exited	77	49	299	0	19	468	196	2	135	58	1303
Hourly Exit Rate	77	49	299	0	19	468	196	2	135	58	1303
Input Volume	78	48	309	1	19	461	187	2	136	59	1300
% of Volume	98	102	97	0	101	101	105	100	99	99	100

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Future Year Plus Project Conditions
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	88	45	116	62	124	140	483	51	82	326	38
Future Volume (veh/h)	37	88	45	116	62	124	140	483	51	82	326	38
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	1759	1803	1900	1900	1840	1900	1776	1787	1900	1900	1759	1570
Adj Flow Rate, veh/h	40	96	49	126	67	135	152	525	55	89	354	41
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	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, %	8	3	3	0	0	0	7	7	7	0	8	21
Cap, veh/h	415	583	280	389	169	356	599	1458	152	523	1570	627
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1110	2246	1080	799	653	1373	939	3103	324	847	3343	1335
Grp Volume(v), veh/h	40	72	73	187	0	141	152	287	293	89	354	41
Grp Sat Flow(s),veh/h/ln	1110	1713	1613	1392	0	1432	939	1697	1730	847	1671	1335
Q Serve(g_s), s	1.0	1.1	1.2	2.6	0.0	2.7	3.8	3.6	3.6	2.5	2.1	0.6
Cycle Q Clear(g_c), s	3.7	1.1	1.2	3.7	0.0	2.7	5.9	3.6	3.6	6.1	2.1	0.6
Prop In Lane	1.00		0.67	0.67		0.96	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	415	445	419	543	0	372	599	797	812	523	1570	627
V/C Ratio(X)	0.10	0.16	0.17	0.34	0.00	0.38	0.25	0.36	0.36	0.17	0.23	0.07
Avail Cap(c_a), veh/h	962	1288	1213	1219	0	1077	1005	1532	1561	890	3017	1205
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.6	9.5	9.5	10.4	0.0	10.1	7.0	5.6	5.6	7.6	5.2	4.8
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.4	0.0	0.6	0.2	0.3	0.3	0.2	0.1	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	0.3	0.5	0.5	1.5	0.0	1.1	1.0	1.7	1.8	0.6	0.9	0.2
LnGrp Delay(d),s/veh	11.7	9.7	9.7	10.8	0.0	10.7	7.2	5.9	5.9	7.7	5.3	4.9
LnGrp LOS	B	A	A	B		B	A	A	A	A	A	A
Approach Vol, veh/h		185			328			732			484	
Approach Delay, s/veh		10.1			10.8			6.2			5.7	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.1		13.1		20.1		13.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		7.9		5.7		8.1		5.7				
Green Ext Time (p_c), s		7.5		3.0		7.5		3.0				
Intersection Summary												
HCM 2010 Ctrl Delay				7.3								
HCM 2010 LOS				A								

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.1	0.2	3.0	0.3	0.2	1.9	0.1	0.2	2.7	0.1	0.1
Total Del/Veh (s)	14.3	15.7	5.8	12.3	10.0	3.2	3.4	1.0	0.6	2.2	0.9	0.3
Vehicles Entered	12	26	292	48	14	7	165	204	70	5	224	17
Vehicles Exited	13	26	291	48	14	7	164	204	70	5	223	18
Hourly Exit Rate	13	26	291	48	14	7	164	204	70	5	223	18
Input Volume	14	28	287	48	15	7	162	201	69	6	227	15
% of Volume	91	94	101	99	92	97	101	102	101	80	98	118

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	3.8
Vehicles Entered	1084
Vehicles Exited	1083
Hourly Exit Rate	1083
Input Volume	1080
% of Volume	100

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Future Year Plus Project Conditions
AM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	 					 		
Traffic Volume (veh/h)	454	26	147	343	57	433		
Future Volume (veh/h)	454	26	147	343	57	433		
Number	3	18	2	12	1	6		
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	1721	1900	1667	1681	1845	1863		
Adj Flow Rate, veh/h	519	0	160	373	62	471		
Adj No. of Lanes	2	1	1	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	11	0	14	13	3	2		
Cap, veh/h	732	361	639	548	517	1878		
Arrive On Green	0.22	0.00	0.38	0.38	0.05	0.53		
Sat Flow, veh/h	3278	1615	1667	1429	1757	3632		
Grp Volume(v), veh/h	519	0	160	373	62	471		
Grp Sat Flow(s),veh/h/ln	1639	1615	1667	1429	1757	1770		
Q Serve(g_s), s	6.6	0.0	3.0	9.8	0.9	3.3		
Cycle Q Clear(g_c), s	6.6	0.0	3.0	9.8	0.9	3.3		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	732	361	639	548	517	1878		
V/C Ratio(X)	0.71	0.00	0.25	0.68	0.12	0.25		
Avail Cap(c_a), veh/h	1452	715	1292	1108	1600	2743		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	16.2	0.0	9.5	11.6	6.7	5.7		
Incr Delay (d2), s/veh	1.3	0.0	0.2	1.5	0.0	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.1	0.0	1.4	4.1	0.4	1.6		
LnGrp Delay(d),s/veh	17.5	0.0	9.7	13.1	6.8	5.8		
LnGrp LOS	B		A	B	A	A		
Approach Vol, veh/h	519		533			533		
Approach Delay, s/veh	17.5		12.1			5.9		
Approach LOS	B		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.7	23.1				29.8		15.4
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	11.8				5.3		8.6
Green Ext Time (p_c), s	0.1	5.5				5.8		1.5
Intersection Summary								
HCM 2010 Ctrl Delay			11.8					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	13	13	61	52	2	33	9	132	12	50	238	10
Future Vol, veh/h	13	13	61	52	2	33	9	132	12	50	238	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	8	0	10	7	50	15	22	10	17	0	8	40
Mvmt Flow	14	14	66	57	2	36	10	143	13	54	259	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	465	549	135	415	548	78	270	0	0	157	0	0
Stage 1	373	373	-	170	170	-	-	-	-	-	-	-
Stage 2	92	176	-	245	378	-	-	-	-	-	-	-
Critical Hdwy	7.66	6.5	7.1	7.64	7.5	7.2	4.54	-	-	4.1	-	-
Critical Hdwy Stg 1	6.66	5.5	-	6.64	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.66	5.5	-	6.64	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.58	4	3.4	3.57	4.5	3.45	2.42	-	-	2.2	-	-
Pot Cap-1 Maneuver	467	446	864	510	353	927	1157	-	-	1435	-	-
Stage 1	604	622	-	801	653	-	-	-	-	-	-	-
Stage 2	888	757	-	723	507	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	429	423	864	441	334	927	1157	-	-	1435	-	-
Mov Cap-2 Maneuver	429	423	-	441	334	-	-	-	-	-	-	-
Stage 1	599	595	-	794	647	-	-	-	-	-	-	-
Stage 2	843	750	-	623	485	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.4		13		0.5		1.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1157	-	-	661	545	1435	-	-
HCM Lane V/C Ratio	0.008	-	-	0.143	0.174	0.038	-	-
HCM Control Delay (s)	8.1	0	-	11.4	13	7.6	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.6	0.1	-	-

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	28	25	64	3	25	1	29	26	1	11	312	50
Future Vol, veh/h	28	25	64	3	25	1	29	26	1	11	312	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	20	0	13	0	16	0	17	0	0	0	2	10
Mvmt Flow	30	27	70	3	27	1	32	28	1	12	339	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	496	482	366	531	509	29	393	0	0	29	0	0
Stage 1	390	390	-	92	92	-	-	-	-	-	-	-
Stage 2	106	92	-	439	417	-	-	-	-	-	-	-
Critical Hdwy	7.3	6.5	6.33	7.1	6.66	6.2	4.27	-	-	4.1	-	-
Critical Hdwy Stg 1	6.3	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.3	5.5	-	6.1	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4	3.417	3.5	4.144	3.3	2.353	-	-	2.2	-	-
Pot Cap-1 Maneuver	456	487	655	462	448	1052	1088	-	-	1597	-	-
Stage 1	599	611	-	920	792	-	-	-	-	-	-	-
Stage 2	857	823	-	601	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	421	468	655	383	430	1052	1088	-	-	1597	-	-
Mov Cap-2 Maneuver	421	468	-	383	430	-	-	-	-	-	-	-
Stage 1	581	605	-	892	768	-	-	-	-	-	-	-
Stage 2	801	798	-	508	562	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.8		14		4.4		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1088	-	-	538	433	1597	-	-
HCM Lane V/C Ratio	0.029	-	-	0.236	0.073	0.007	-	-
HCM Control Delay (s)	8.4	0	-	13.8	14	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.2	0	-	-

Intersection						
Int Delay, s/veh	5.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↕		↘	↕
Traffic Vol, veh/h	106	47	57	112	204	244
Future Vol, veh/h	106	47	57	112	204	244
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	15	36	1	7	12
Mvmt Flow	115	51	62	122	222	265

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	699	92	0	0	184
Stage 1	123	-	-	-	-
Stage 2	576	-	-	-	-
Critical Hdwy	6.86	7.2	-	-	4.24
Critical Hdwy Stg 1	5.86	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-
Follow-up Hdwy	3.53	3.45	-	-	2.27
Pot Cap-1 Maneuver	372	907	-	-	1352
Stage 1	886	-	-	-	-
Stage 2	523	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	311	907	-	-	1352
Mov Cap-2 Maneuver	311	-	-	-	-
Stage 1	886	-	-	-	-
Stage 2	437	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.9	0	3.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	311	907	1352
HCM Lane V/C Ratio	-	-	0.37	0.056	0.164
HCM Control Delay (s)	-	-	23.2	9.2	8.2
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.2	0.6

SimTraffic Performance Report

4: Stead Blvd & Mt Babcock St Performance by movement

Movement	EBL	EBT	EBR	WBL	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	3.7	0.1	0.1	0.1
Total Del/Veh (s)	18.9	16.8	9.7	15.8	4.9	1.5	1.3	1.6	0.6	0.2	6.5
Vehicles Entered	31	49	646	19	283	234	10	40	166	39	1517
Vehicles Exited	31	50	645	20	283	234	10	40	166	39	1518
Hourly Exit Rate	31	50	645	20	283	234	10	40	166	39	1518
Input Volume	33	49	631	17	281	241	10	37	164	44	1508
% of Volume	94	102	102	116	101	97	98	108	101	88	101

HCM 2010 Signalized Intersection Summary
5: Stead Blvd & Lear Blvd

Future Year Plus Project Conditions
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	109	170	81	83	114	65	365	116	126	629	57
Future Volume (veh/h)	47	109	170	81	83	114	65	365	116	126	629	57
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	1900	1780	1900	1900	1894	1900	1667	1872	1900	1900	1863	1900
Adj Flow Rate, veh/h	51	118	185	88	90	124	71	397	126	137	684	62
Adj No. of Lanes	1	2	0	0	2	0	1	2	0	1	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, %	0	0	0	1	1	1	14	2	2	0	2	0
Cap, veh/h	430	487	435	282	247	368	412	1300	408	534	1726	788
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1186	1691	1513	493	859	1277	637	2666	836	893	3539	1615
Grp Volume(v), veh/h	51	118	185	157	0	145	71	263	260	137	684	62
Grp Sat Flow(s),veh/h/ln	1186	1691	1513	1131	0	1498	637	1778	1724	893	1770	1615
Q Serve(g_s), s	1.4	2.1	4.0	1.8	0.0	3.1	3.2	3.6	3.6	4.4	4.9	0.8
Cycle Q Clear(g_c), s	4.5	2.1	4.0	5.8	0.0	3.1	8.1	3.6	3.6	8.0	4.9	0.8
Prop In Lane	1.00		1.00	0.56		0.85	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	430	487	435	466	0	431	412	867	841	534	1726	788
V/C Ratio(X)	0.12	0.24	0.42	0.34	0.00	0.34	0.17	0.30	0.31	0.26	0.40	0.08
Avail Cap(c_a), veh/h	829	1055	944	916	0	935	578	1331	1291	767	2649	1209
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	10.9	11.6	12.0	0.0	11.3	9.1	6.2	6.2	8.6	6.5	5.5
Incr Delay (d2), s/veh	0.1	0.3	0.7	0.4	0.0	0.5	0.2	0.2	0.2	0.3	0.1	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	0.5	1.0	1.7	1.5	0.0	1.3	0.6	1.8	1.8	1.1	2.4	0.4
LnGrp Delay(d),s/veh	13.2	11.2	12.2	12.4	0.0	11.7	9.3	6.4	6.4	8.9	6.7	5.5
LnGrp LOS	B	B	B	B		B	A	A	A	A	A	A
Approach Vol, veh/h		354			302			594			883	
Approach Delay, s/veh		12.0			12.1			6.7			6.9	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.0		16.0		24.0		16.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		30.0		25.0		30.0		25.0				
Max Q Clear Time (g_c+I1), s		10.1		6.5		10.0		7.8				
Green Ext Time (p_c), s		9.4		3.8		9.5		3.7				
Intersection Summary												
HCM 2010 Ctrl Delay				8.4								
HCM 2010 LOS				A								

SimTraffic Performance Report

6: Military Rd & Lear Blvd Performance by movement














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	2.9	0.3	0.3	1.8	0.2	0.2	3.0	0.1	0.1
Total Del/Veh (s)	17.4	2.2	5.8	16.4	11.3	4.0	4.2	1.2	0.6	1.0	1.0	0.2
Vehicles Entered	8	157	197	83	32	11	269	181	29	3	214	6
Vehicles Exited	8	157	198	83	32	11	271	180	29	3	215	6
Hourly Exit Rate	8	157	198	83	32	11	271	180	29	3	215	6
Input Volume	8	149	194	84	29	9	270	184	27	4	216	6
% of Volume	97	105	102	99	110	119	100	98	108	75	99	96

6: Military Rd & Lear Blvd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	4.2
Vehicles Entered	1190
Vehicles Exited	1193
Hourly Exit Rate	1193
Input Volume	1181
% of Volume	101

HCM 2010 Signalized Intersection Summary
7: Red Rock Rd & Moya Blvd

Future Year Plus Project Conditions
PM Peak

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	393	80	537	316	34	248		
Future Volume (veh/h)	393	80	537	316	34	248		
Number	3	18	2	12	1	6		
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	1760	1900	1881	1792	1900	1881		
Adj Flow Rate, veh/h	508	0	584	343	37	270		
Adj No. of Lanes	2	1	1	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	9	0	1	6	0	1		
Cap, veh/h	709	342	820	664	318	2004		
Arrive On Green	0.21	0.00	0.44	0.44	0.03	0.56		
Sat Flow, veh/h	3351	1615	1881	1524	1810	3668		
Grp Volume(v), veh/h	508	0	584	343	37	270		
Grp Sat Flow(s),veh/h/ln	1676	1615	1881	1524	1810	1787		
Q Serve(g_s), s	6.9	0.0	12.4	8.0	0.5	1.7		
Cycle Q Clear(g_c), s	6.9	0.0	12.4	8.0	0.5	1.7		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	709	342	820	664	318	2004		
V/C Ratio(X)	0.72	0.00	0.71	0.52	0.12	0.13		
Avail Cap(c_a), veh/h	1376	663	1352	1095	1374	2569		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.8	0.0	11.2	10.0	8.2	5.1		
Incr Delay (d2), s/veh	1.4	0.0	1.2	0.6	0.1	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.3	0.0	6.6	3.4	0.2	0.9		
LnGrp Delay(d),s/veh	19.2	0.0	12.4	10.6	8.3	5.1		
LnGrp LOS	B		B	B	A	A		
Approach Vol, veh/h	508		927			307		
Approach Delay, s/veh	19.2		11.7			5.5		
Approach LOS	B		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.1	27.0				33.1		15.6
Change Period (Y+Rc), s	4.5	* 5.8				5.8		5.3
Max Green Setting (Gmax), s	30.0	* 35				35.0		20.0
Max Q Clear Time (g_c+I1), s	2.5	14.4				3.7		8.9
Green Ext Time (p_c), s	0.0	6.9				7.8		1.5
Intersection Summary								
HCM 2010 Ctrl Delay			12.8					
HCM 2010 LOS			B					
Notes								
User approved volume balancing among the lanes for turning movement.								