Traffic Impact Analysis

Trans Truck System Truck Facility
San Joaquin County, California

January 14, 2020

Prepared for:

San Joaquin County
Department of Public Works

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EXECUTIVE SUMMARY

This report documents the results of a traffic impact analysis completed for the Trans Truck System Truck Facility project proposed to be located at 707 E. Roth Road in French Camp, San Joaquin County, California (the "proposed project" or "project"). The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the San Joaquin County Public Works Transportation Engineering Division's *Traffic Impact Study Guidelines*.

The project site is proposed to be constructed on 4.5-acres of vacant land on an 8.85-acre parcel. The project site is anticipated to accommodate a maximum of 171 trailers. One driveway is proposed along Roth Road at the southern border of the site and is anticipated to be controlled by a gate. The following intersections are included in this evaluation:

1. Roth Road @ Manthey Road
2. Roth Road @ I-5 SB Ramps
3. Roth Road @ I-5 NB Ramps
4. Roth Road @ Harlan Road
5. Roth Road @ S. McKinley Avenue
6. Roth Road @ S. Airport Way
7. Roth Road @ Project Driveway (Scenarios C and E only)

Per San Joaquin County requirements, a weekday AM and PM peak-hour Level of Service (LOS) analysis was conducted for the following scenarios:

A. Existing (2019) Conditions
B. Existing (2019) plus Approved and Pending Projects Conditions[+]
C. Existing (2019) plus Approved and Pending Projects plus Proposed Project Conditions
D. Cumulative (2040) Conditions[++]
E. Cumulative (2040) plus Proposed Project Conditions

[+] Includes projects identified by the County as well as projects anticipated by the City of Lathrop.
[++] Year 2040 is the forecast year associated with the San Joaquin Council of Governments' (SJCOG) current travel demand model. As a result, although the County guidelines specify Cumulative Year 2025, this analysis contemplates Cumulative Year 2040 conditions.

Significant findings of this study include:

- The proposed Project is estimated to generate 370 total new daily trips, with 33 and 29 trips occurring during the AM and PM peak-hours, respectively.
- As defined by the County, the addition of the proposed Project to does not result in significant impacts to any of the study intersections under Existing (2019) plus Approved and Pending Projects plus Proposed Project Conditions and Cumulative (2040) plus Proposed Project Conditions.
- Based on this analysis, the 95th percentile vehicles queues are not anticipated to exceed available storage for the eastbound movement at the intersection of Roth Road and Harlan Road (Intersection #4).

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INTRODUCTION

This report documents the results of a traffic impact analysis completed for the Trans Truck System Truck Facility project proposed to be located at 707 Roth Road in French Camp, San Joaquin County, California (the "proposed Project" or "project"). The purpose of this impact analysis is to identify potential environmental impacts to transportation facilities as required by the California Environmental Quality Act (CEQA). This study was performed in accordance with the San Joaquin County Public Works Transportation Engineering Division's *Traffic Impact Study Guidelines*[1]. The remaining sections of this report document the proposed Project, analysis methodologies, impacts and mitigation, and general study conclusions.

PROJECT DESCRIPTION

The project site is proposed to be constructed on 4.5-acres of vacant land on an 8.85-acre parcel. The project site is anticipated to accommodate a maximum of 171 trailers. One driveway is proposed along Roth Road at the southern border of the site and is anticipated to be controlled by a gate. The project location is shown in Figure 1, and the proposed Project site plan is shown in Figure 2.

The following intersections are included in this evaluation:

1. Roth Road @ Manthey Road
2. Roth Road @ I-5 SB Ramps
3. Roth Road @ I-5 NB Ramps
4. Roth Road @ Harlan Road
5. Roth Road @ S. McKinley Avenue
6. Roth Road @ S. Airport Way
7. Roth Road @ Project Driveway (Scenarios C and E only)

The following roadway segments are included in this evaluation:

1. Roth Road west of McKinley Avenue
2. Roth Road east of McKinley Avenue

The following freeway facilities are included in this evaluation:

1. I-5 Northbound diverge to Roth Road
2. I-5 Northbound merge from Roth Road
3. I-5 Southbound diverge to Roth Road
4. I-5 Southbound merge from Roth Road

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

PROJECT AREA ROADWAYS

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

Interstate 5 (I-5) is a north-south freeway, with ramps located within a mile from the project site.

Roth Road is an east-west arterial roadway that provides access to Harlan Road via I-5. This roadway connects with both the northbound and southbound on- and off-ramps of I-5 and will act as the main route for travel between the freeway and the project site.

[1] *San Joaquin County Traffic Impact Study Guidelines,* November 2008.

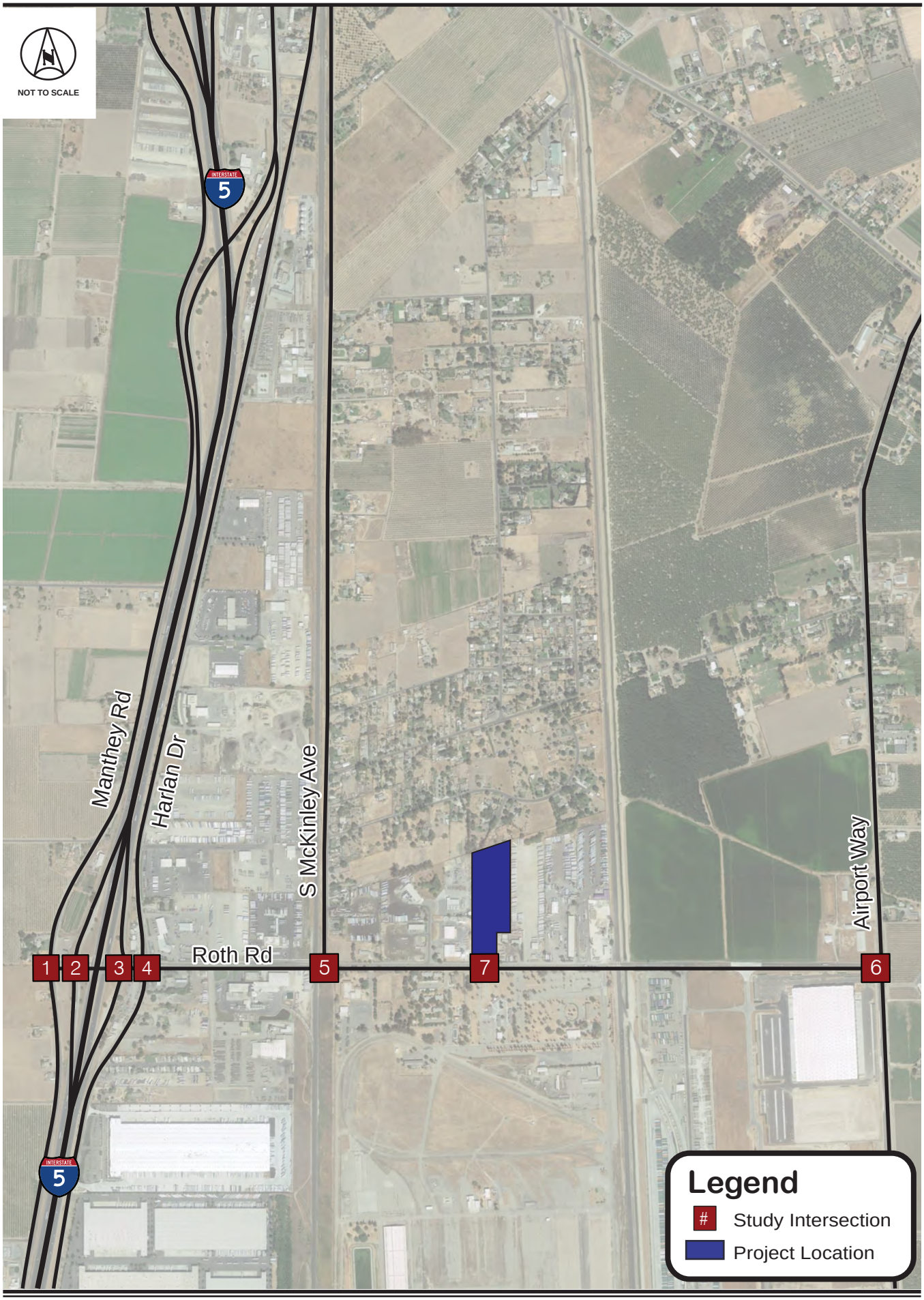

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Figure 1
Project Vicinity Map

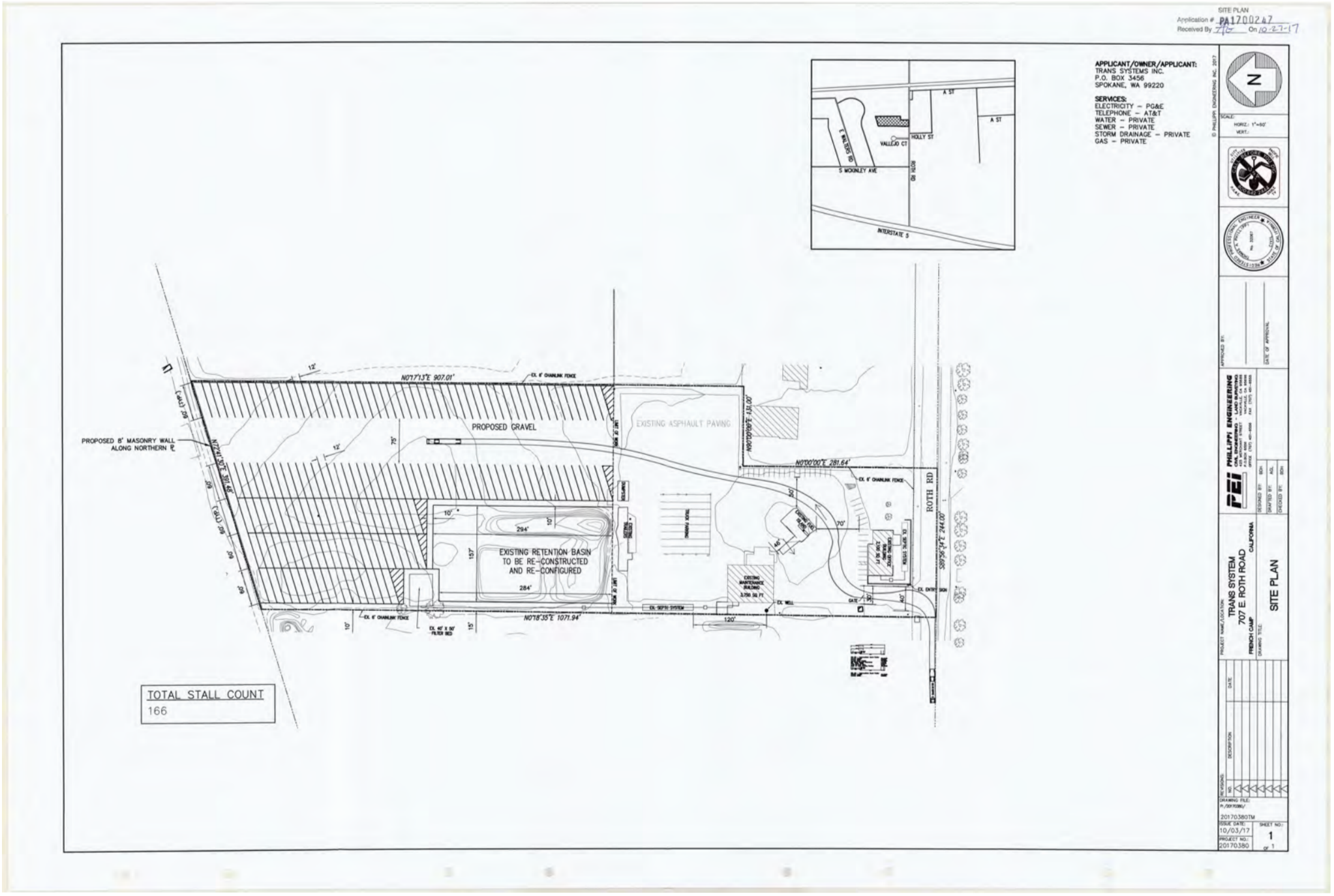

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Figure 2
Project Site Plan

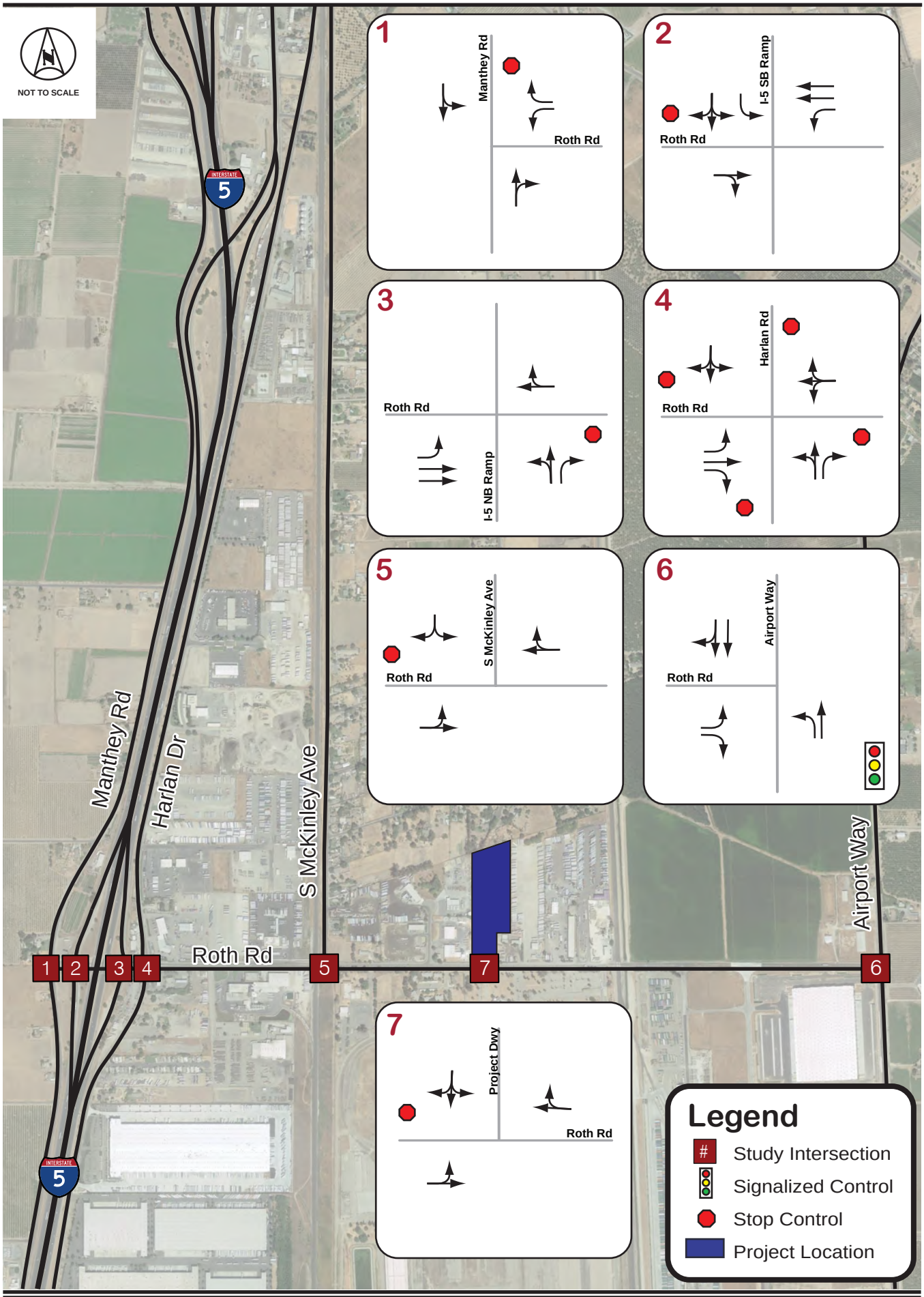

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Figure 3
Study Intersections, Traffic Control, and Lane Geometries

ASSESSMENT OF PROPOSED PROJECT

Proposed Project Trip Generation

The number of trips anticipated to be generated by proposed projects are typically approximated using data included in the *Trip Generation Manual, 9th Edition,* published by the Institute of Transportation Engineers (ITE). This resource provides trip generation information for a Truck Terminal (ITE land use code 30) for AM and PM peak-hours. The trip generation rates for the proposed Project were based on the total number of acres within the project site. The anticipated trip generation for this project is shown in Table 1.

Table 1 – Proposed Project Trip Generation

Land Use (ITE Code)	Size (ksf/ acres)	Daily Trips	AM Peak-Hour					PM Peak-Hour				
			Total Trips	In		Out		Total Trips	In		Out	
				%	Trips	%	Trips		%	Trips	%	Trips
Truck Terminal (30)	4.5 acres	370	33	42%	14	58%	19	29	41%	12	59%	17
New Project Trips		**370**	**33**		**14**		**19**	**29**		**12**		**17**
Source: Trip Generation Manual, 9th Edition												

As shown in Table 1, the proposed Project is estimated to generate 370 new external daily trips, 33 new external trips occurring during the AM peak-hour, and 29 new external trips during the PM peak-hour.

Proposed Project Trip Distribution and Assignment

Project traffic was distributed and assigned to the local roadway network based on local understanding of vehicular patterns in the study area, existing traffic volumes, and engineering judgement. The project trip distribution percentages are illustrated in Figure 4. Based on the trip distribution, the net new external trips generated by the project were assigned to the street network as shown in Figure 5.

Analysis Scenarios

Per San Joaquin County requirements, weekday AM and PM peak-hour Level of Service (LOS) analysis was conducted for the following scenarios:

A. Existing (2019) Conditions
B. Existing (2019) plus Approved and Pending Projects Conditions[+]
C. Existing (2019) plus Approved and Pending Projects plus Proposed Project Conditions
D. Cumulative (2040) Conditions[++]
E. Cumulative (2040) plus Proposed Project Conditions

[+] Includes projects identified by the County as well as projects anticipated by the City of Lathrop.

[++] Year 2040 is the forecast year associated with the San Joaquin Council of Governments' (SJCOG) current travel demand model. As a result, although the County guidelines[1] specify Cumulative Year 2025, this analysis contemplates Cumulative Year 2040 conditions.

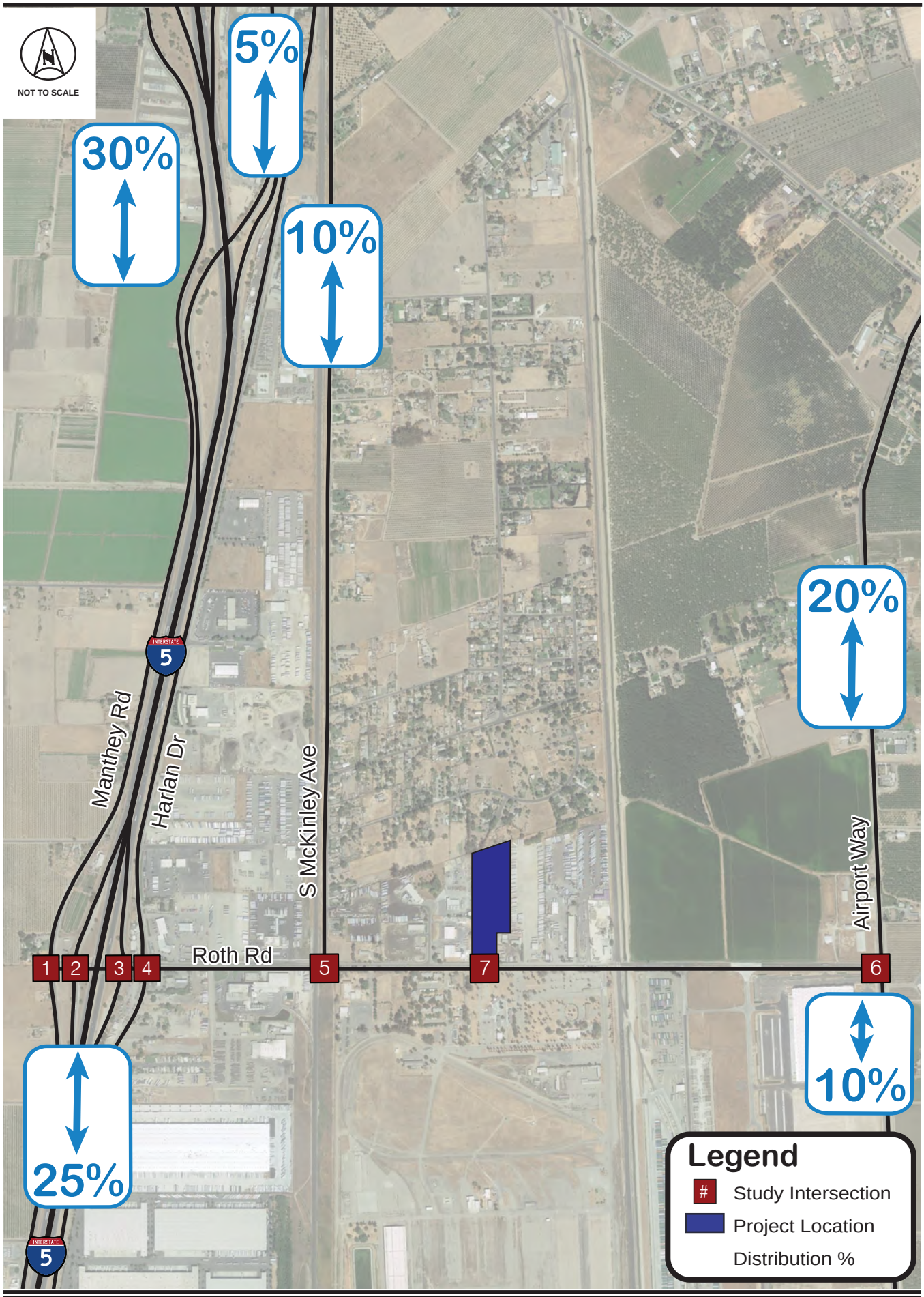

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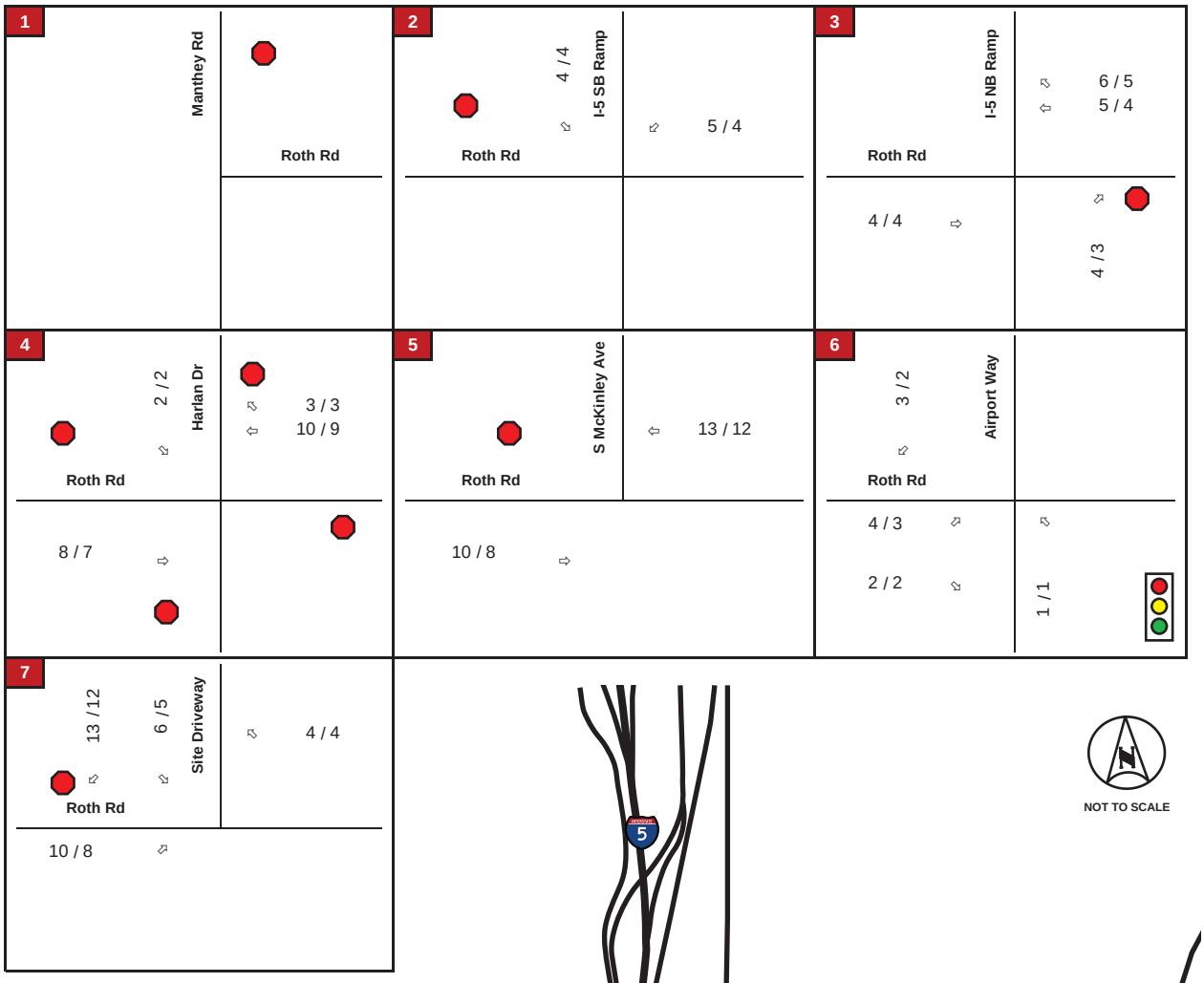
Figure 4
Project Trip Distribution



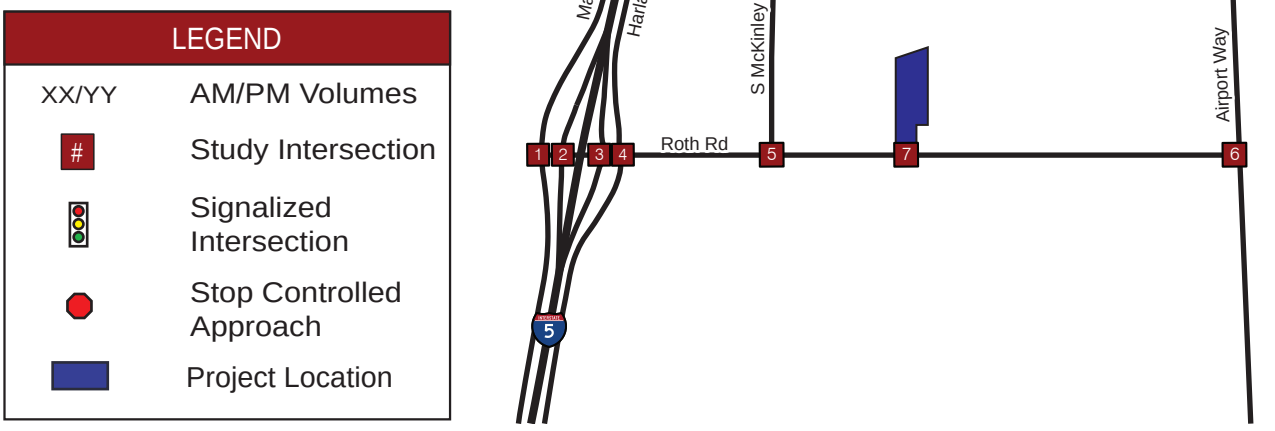


Figure 5
Proposed Project Trip Assignment

LEVEL OF SERVICE METHODOLOGY

Analysis of transportation facility significant environmental impacts is based on the concept of Level of Service (LOS). The LOS of a facility is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 6th Edition (HCM)*.

Intersection Analysis

The *HCM* includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for each minor street approach movement. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. Table 2 presents intersection LOS definitions as defined in the *HCM*.

Table 2 – Intersection Level of Service Criteria

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

Source: Highway Capacity Manual, 6th Edition
* Applied to the worst lane/lane group(s) for SSSC

Peak-hour LOS will be determined for the facilities, time periods and analysis scenarios identified above using *HCM* methodology with the Synchro 10 analysis software.

Roadway Segment Analysis

Roadway segments under Existing (2019) and Existing (2019) plus Approved and Pending Projects with and without the proposed Project were evaluated using the HCM methodology for analyzing two-lane roadway segments, as shown in Table 3. Cumulative (2040) conditions with and without the proposed Project were evaluated by comparing daily traffic volumes to the County's LOS thresholds provided in the *San Joaquin County General Plan*[2].

Table 3 – Two-Lane Roadway Level of Service Criteria

Level of Service (LOS)	Percent Free-Flow Speed (%)
A	> 91.7
B	> 83.3 – 91.7
C	> 75.0 – 83.3
D	> 66.7 – 75.0
E	≤ 66.7

Source: Highway Capacity Manual, 6th Edition

[2] *San Joaquin County General Plan*, Table 4.4, December 2016.

Freeway Facility Analysis

Caltrans' traffic study guidelines[3] specify the use of vehicle density (passenger cars/mile/lane) as the appropriate measure of effectiveness for freeway facilities. The LOS criteria for basic freeway segments and freeway merge/diverge segments are summarized in Table 4.

Table 4 – Freeway Facility Level of Service Criteria

Level of Service (LOS)	Basic Segments Density (pc/mi/ln)	Merge/Diverge Segments Density (pc/mi/ln)
A	≤ 11	≤ 10
B	> 11 – 18	> 10 – 20
C	> 18 – 26	> 20 – 28
D	> 26 – 35	> 28 – 35
E	> 35 – 45	> 35
F*	> 45*	*

Source: Highway Capacity Manual, 6th Edition
* Demand exceeds capacity

EXISTING (2019) CONDITIONS

New weekday AM and PM peak-period intersection turning movement traffic counts were conducted on Tuesday, April 30, 2019, from 6:00-8:00 AM and 5:00-7:00 PM, respectively. New roadway segment daily counts were conducted on Tuesday, April 30 and Wednesday, May 1, 2019. The project driveway along Frontage Road (Intersection #4) does not exist today and, therefore, existing counts were not required.

Existing (2019) peak-hour turning movement volumes are presented in Figure 6, and the traffic count data sheets are provided in Appendix A. Analysis worksheets for this scenario are provided in Appendix B. Table 5 presents the intersection operating conditions, Table 6 presents the roadway operating conditions, and Table 7 presents the freeway operating conditions for this analysis scenario. As shown, the study facilities operate between LOS B and LOS D during the AM and PM peak-hours.

[3] *Guide for the Preparation of Traffic Impact Studies*, Caltrans, December 2002.

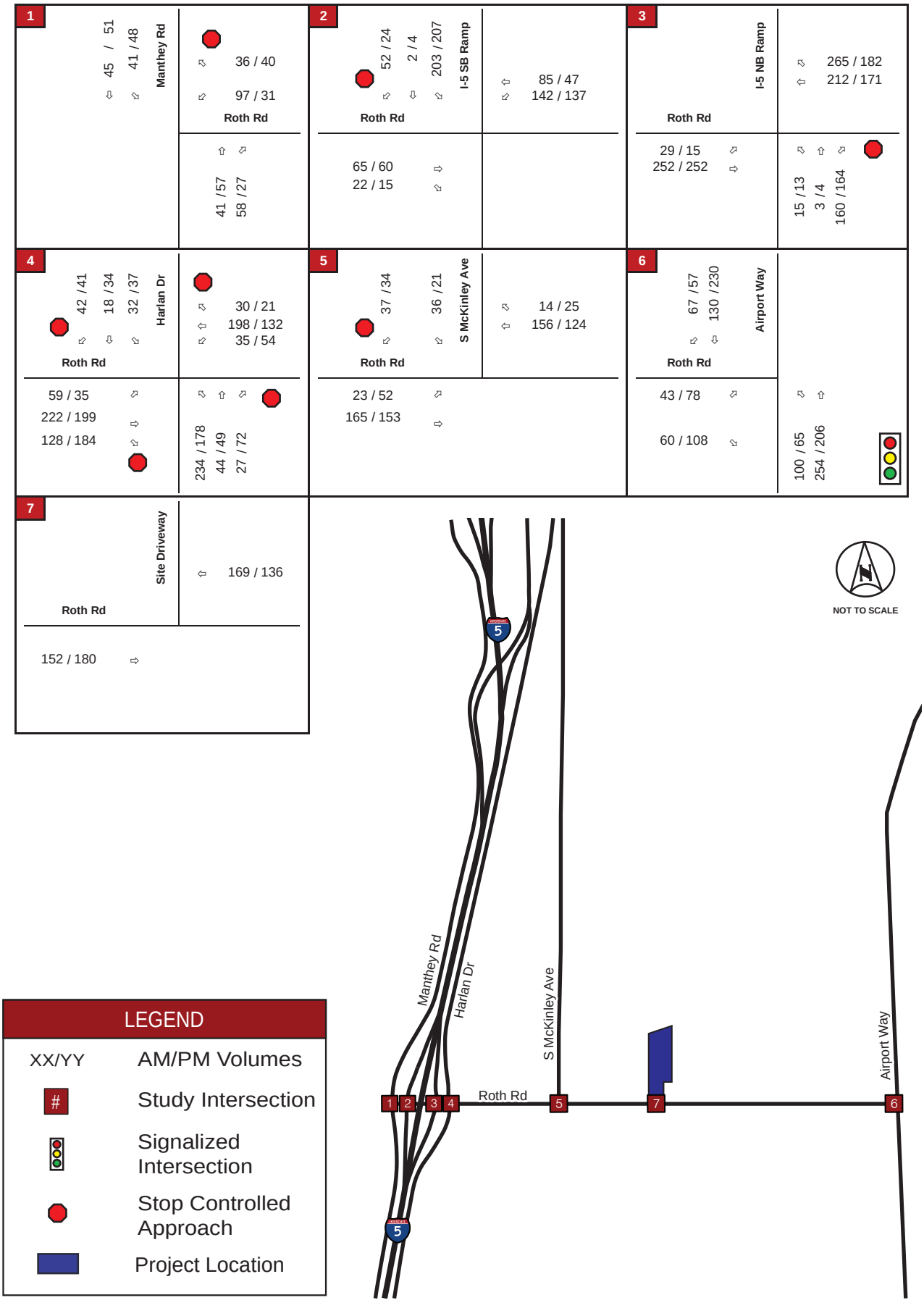


Figure 6
Existing (2019) Peak-Hour Traffic Volumes

Table 5 – Existing (2019) Intersection Levels of Service

ID	Intersection	Control	Threshold	Peak Hour	Existing (2019)	
					Delay (sec)	LOS
1	Roth Road @ Manthey Rd	SSSC	E	AM	12.2 (WBL)	B
				PM	10.5 (WBL)	B
2	Roth Road @ I-5 SB Ramp	SSSC	D	AM	23.2 (SBL)	C
				PM	17.6 (SBL)	C
3	Roth Road @ I-5 NB Ramp	SSSC	D	AM	19.2 (NBL)	C
				PM	15.4 (NBL)	C
4	Roth Road @ Harlan Road	AWSC	D	AM	34.5	D
				PM	20.6	C
5	Roth Road @ McKinley Ave	SSSC	D	AM	11.4 (SBLR)	B
				PM	11 (SBLR)	B
6	Roth Road @ Airport Way	Signal	D	AM	10.8	B
				PM	11.2	B

Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.
Bolded represents unacceptable conditions.

Table 6 – Existing (2019) Roadway Levels of Service

	AM Peak-Hour					
	NB/EB			SB/WB		
Location	PFFS	v/c	LOS	PFFS	v/c	LOS
Roth Rd, west of McKinley Ave	86.4	0.17	B	86.6	0.15	B
Roth Road, east of McKinley Ave	85.7	0.15	B	85.6	0.15	B
	PM Peak-Hour					
	NB/EB			SB/WB		
Location	PFFS	v/c	LOS	PFFS	v/c	LOS
Roth Rd, west of McKinley Ave	85.8	0.19	B	86.3	0.15	B
Roth Road, east of McKinley Ave	85.3	0.17	B	85.3	0.16	B

Table 7 – Existing (2019) Freeway Levels of Service

I-5				Existing (2019)	
Direction	Segment	Type	Peak Hour	Density[a]	LOS
NB	South of Roth Road	Diverge	AM	20.1	C
			PM	23.5	C
	North of Roth Road	Merge	AM	24.5	C
			PM	27.7	C
SB	North of Roth Road	Diverge	AM	21.1	C
			PM	21.0	C
	South of Roth Road	Merge	AM	24.4	C
			PM	24.5	C

Notes:
a- Density measured in passenger cars/lane/mile (pc/ln/mi)
b- **Bold** represents unacceptable operations

EXISTING (2019) PLUS APPROVED AND PENDING PROJECTS

Per County guidance[2], the Existing (2019) plus Approved and Pending Project Conditions included the vehicle trips associated with the JDL Truck Facility project proposed to be located at 75 East Equipment Street in San Joaquin County. The number of trips expected to be generated by the proposed warehouse at the truck parking facility was derived using the ITE Land Use Code 30 (Truck Terminal) and were distributed and assigned to the local roadway network based on existing traffic volumes, knowledge of local traffic patterns, and engineering judgement. In addition, the City of Lathrop's 2018 Traffic Monitoring Program[4] identifies vehicle trips associated with projects anticipated by Year 2022. These projects include approximately 2,100 new single-family units, 350 new apartment units, 7,300,597 square feet of new warehouse/distribution facilities, 388,195 square feet of new commercial, and 196 new hotel rooms. Since these projects are anticipated by the City of Lathrop within the next three years, the Existing (2019) plus Approved and Pending Projects conditions includes the vehicle trips associated with these projects. As directed by the County, the additional trips associated with the approved projected were added to the collected counts.

The peak-hour traffic volumes for Existing (2019) plus Approved and Pending Projects Conditions are shown in Figure 7. The analysis worksheets for this scenario are provided in Appendix C. Table 8 presents the intersection operating conditions, Table 9 presents the roadway operating conditions, and Table 10 presents the freeway operating conditions for this analysis scenario. As shown, the study facilities operate between LOS B and LOS F during the AM and PM peak-hours.

[4] *City of Lathrop 'Traffic Monitoring Program'*, Crane Transportation Group, September 13, 2018.

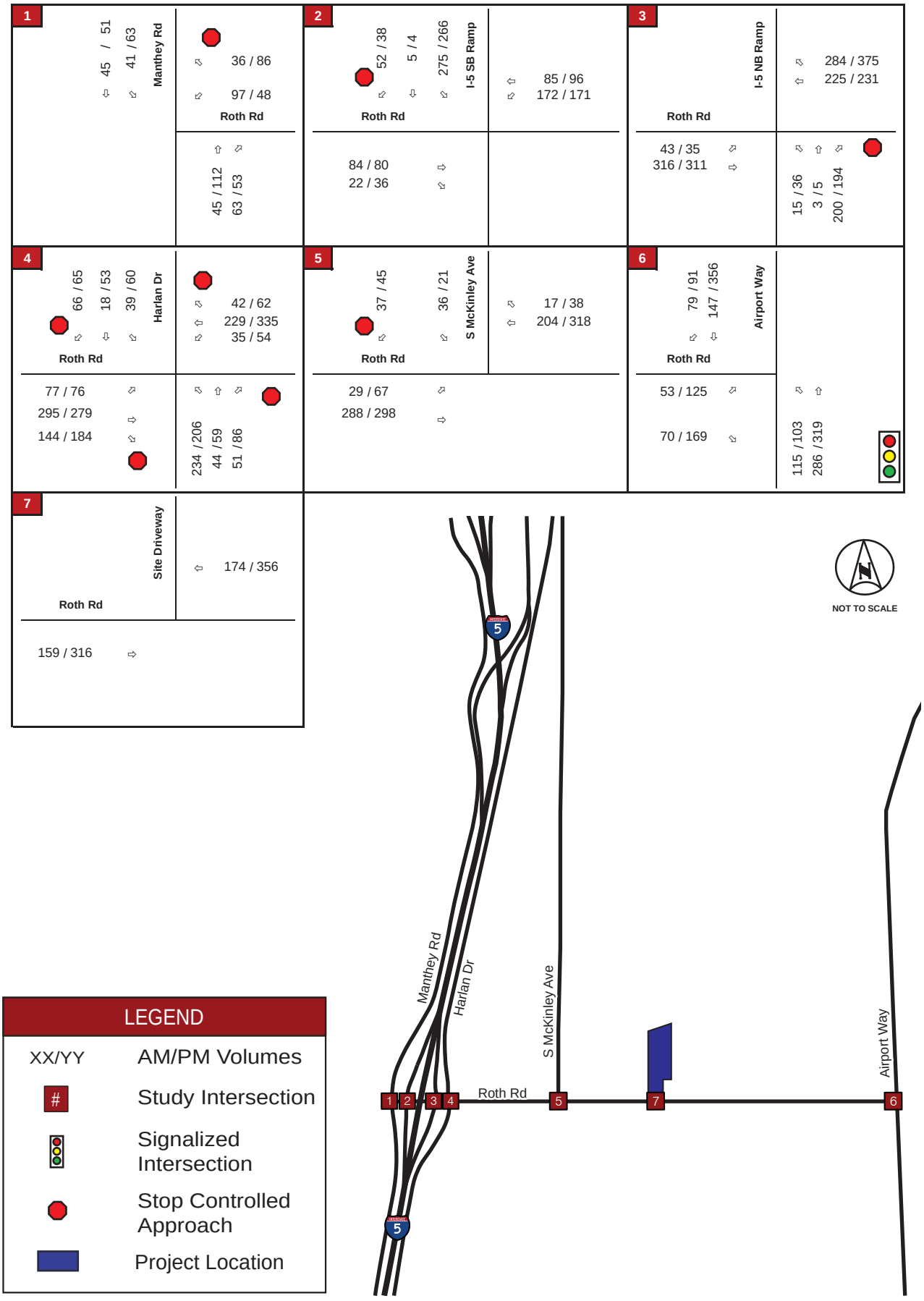


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Figure 7

Existing (2019) plus Approved Projects Peak-Hour Traffic Volumes

Table 8 – Existing (2019) plus Approved and Pending Projects Intersection Levels of Service

ID	Intersection	Control	Threshold	Peak Hour	Existing (2019) plus Approved Projects	
					Delay (sec)	LOS
1	Roth Road @ Manthey Rd	SSSC	E	AM	12.4 (WBL)	B
				PM	11.9 (WBL)	B
2	Roth Road @ I-5 SB Ramp	SSSC	D	AM	**44.8 (SBL)**	**E**
				PM	32.7 (SBL)	D
3	Roth Road @ I-5 NB Ramp	SSSC	D	AM	23.1 (NBL)	C
				PM	25.7 (NBL)	D
4	Roth Road @ Harlan Road	AWSC	D	AM	**57.9**	**F**
				PM	**141.9**	**F**
5	Roth Road @ McKinley Ave	SSSC	D	AM	13.4 (SBLR)	B
				PM	15.9 (SBLR)	C
6	Roth Road @ Airport Way	Signal	D	AM	12.1	B
				PM	14.1	B

Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.
Bolded represents unacceptable conditions.

Table 9 – Existing (2019) plus Approved and Pending Projects Roadway Levels of Service

Location	AM Peak-Hour					
	NB/EB			SB/WB		
	PFFS	v/c	LOS	PFFS	v/c	LOS
Roth Rd, west of McKinley Ave	82.6	0.29	C	82.8	0.28	C
Roth Road, east of McKinley Ave	83.4	0.24	B	83.2	0.24	C
Location	**PM Peak-Hour**					
	NB/EB			SB/WB		
	PFFS	v/c	LOS	PFFS	v/c	LOS
Roth Rd, west of McKinley Ave	81.6	0.33	C	82.3	0.28	C
Roth Road, east of McKinley Ave	82.8	0.26	C	82.9	0.25	C

Table 10 – Existing (2019) plus Approved and Pending Projects Freeway Levels of Service

I-5				Existing (2019) plus Approved Projects	
Direction	Segment	Type	Peak Hour	Density[a]	LOS
NB	South of Roth Road	Diverge	AM	20.3	C
			PM	23.8	C
	North of Roth Road	Merge	AM	24.5	C
			PM	29.1	D
SB	North of Roth Road	Diverge	AM	21.5	C
			PM	21.4	C
	South of Roth Road	Merge	AM	24.3	C
			PM	24.6	C

Notes:

a- Density measured in passenger cars/lane/mile (pc/ln/mi)

b- **Bold** represents unacceptable operations

EXISTING (2019) PLUS APPROVED AND PENDING PROJECTS PLUS PROPOSED PROJECT CONDITIONS

Peak-hour traffic associated with the proposed Project was added to the Existing (2019) plus Approved and Pending Projects traffic volumes previously noted, and levels of service were determined at the study intersections. Existing (2019) plus Approved and Pending Projects plus Proposed Project peak-hour traffic volumes are presented in Figure 8. The analysis worksheets for this scenario are provided in Appendix D.

Table 11 provides the intersection operating conditions, Table 12 provides the roadway operating conditions, and Table 13 provides the freeway operating conditions for this analysis scenario. As shown, the study facilities operate from LOS A to LOS F during the AM and PM peak-hours.

Table 11 – Existing (2019) plus Approved and Pending Projects plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Threshold	Peak Hour	Existing (2019) plus Approved Projects		Existing (2019) plus Approved Projects plus Project	
					Delay (sec)	LOS	Delay (sec)	LOS
1	Roth Road @ Manthey Rd	SSSC	E	AM	12.4 (WBL)	B	12.4 (WBL)	B
				PM	11.9 (WBL)	B	11.9 (WBL)	B
2	Roth Road @ I-5 SB Ramp	SSSC	D	AM	**44.8 (SBL)**	**E**	**49.7 (SBL)**	**E**
				PM	32.7 (SBL)	D	34.8 (SBL)	D
3	Roth Road @ I-5 NB Ramp	SSSC	D	AM	23.1 (NBL)	C	23.7 (NBL)	C
				PM	25.7 (NBL)	D	26.2 (NBL)	D
4	Roth Road @ Harlan Road	AWSC	D	AM	**57.9**	**F**	**64.6**	**F**
				PM	**141.9**	**F**	**152.1**	**F**
5	Roth Road @ McKinley Ave	SSSC	D	AM	13.4 (SBLR)	B	13.7 (SBLR)	B
				PM	15.9 (SBLR)	C	16.3 (SBLR)	C
6	Roth Road @ Airport Way	Signal	D	AM	12.1	B	12.2	B
				PM	14.1	B	14.3	B
7	Roth Road @ Site Driveway	SSSC	D	AM	NOT ANALYZED IN THIS SCENARIO		9.9 (SBLR)	A
				PM			11.9 (SBLR)	B

Notes:

Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.

Bolded represents unacceptable conditions.

Shaded represents a significant impact.

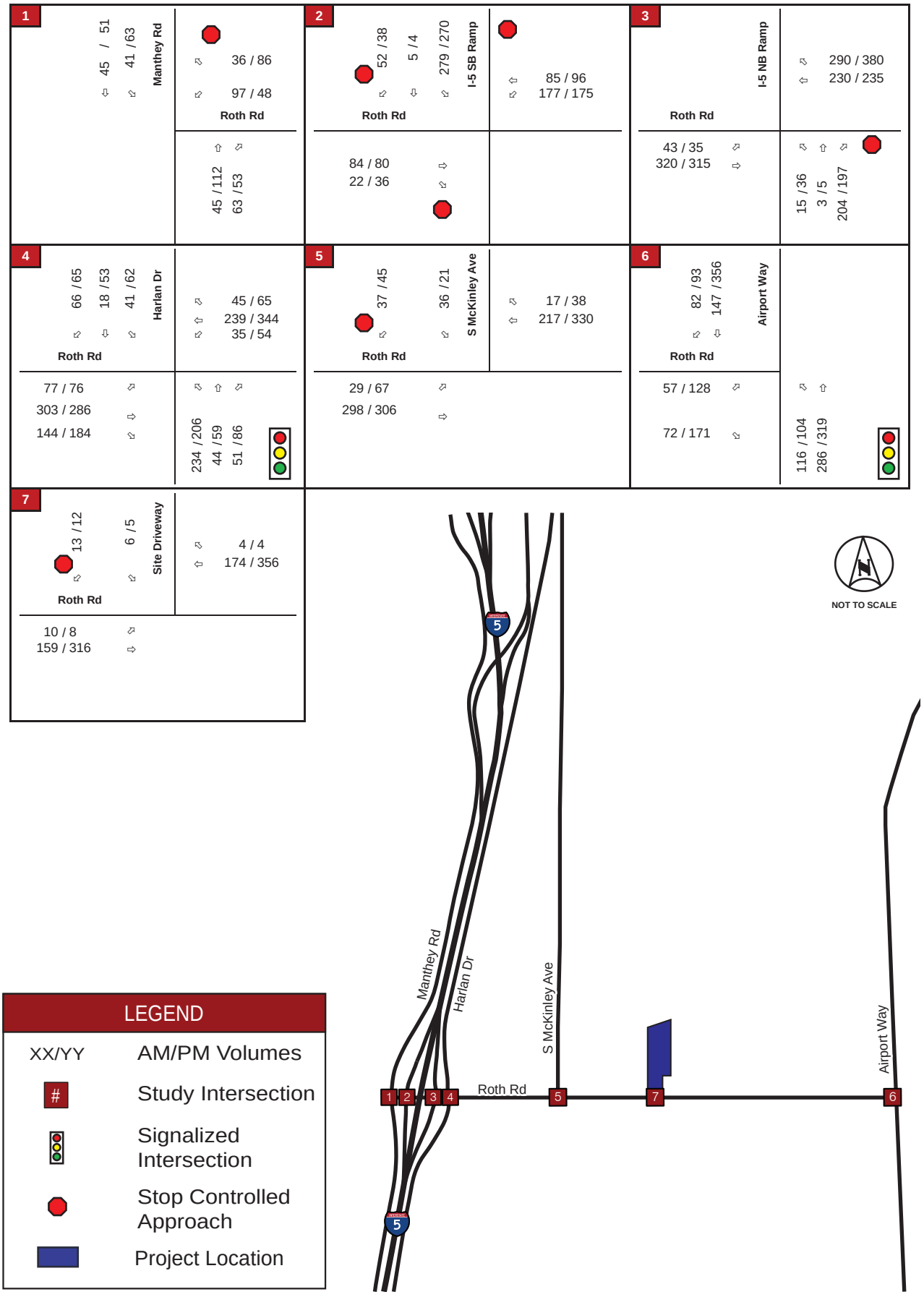

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Figure 8 - Existing (2019) plus Approved Projects plus Proposed Project Peak-Hour Traffic Volumes

Table 12 – Existing (2019) plus Approved and Pending Projects plus Proposed Project Roadway Levels of Service

Location	AM Peak-Hour					
	NB/EB			SB/WB		
	PFFS	v/c	LOS	PFFS	v/c	LOS
Roth Rd, west of McKinley Ave	82.3	0.30	C	82.5	0.29	C
Roth Road, east of McKinley Ave	83.2	0.24	C	82.5	0.25	C
Location	**PM Peak-Hour**					
	NB/EB			**SB/WB**		
	PFFS	**v/c**	**LOS**	**PFFS**	**v/c**	**LOS**
Roth Rd, west of McKinley Ave	81.2	0.34	C	81.9	0.29	C
Roth Road, east of McKinley Ave	82.6	0.27	C	82.6	0.26	C

Table 13 – Existing (2019) plus Approved and Pending Projects plus Proposed Project Freeway Levels of Service

I-5				Existing (2019) plus Approved Projects		Existing (2019) plus Approved Projects plus Proposed Project	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS
NB	South of Roth Road	Diverge	AM	20.3	C	20.4	C
			PM	23.8	C	23.8	C
	North of Roth Road	Merge	AM	24.5	C	28.4	D
			PM	29.1	D	32.5	D
SB	North of Roth Road	Diverge	AM	21.5	C	21.5	C
			PM	21.4	C	21.4	C
	South of Roth Road	Merge	AM	24.3	C	29.4	D
			PM	24.6	C	27.7	C

Notes:

a- Density measured in passenger cars/lane/mile (pc/ln/mi)

b- **Bold** represents unacceptable operations

CUMULATIVE (2040) CONDITIONS

For this study, consistent with the *Guidelines*, Cumulative year traffic volumes were obtained from the regional traffic model maintained by the San Joaquin Council of Governments (SJCOG). The current version of the SJCOG travel demand model is based on year 2040 Cumulative Conditions. To obtain turning movement volumes for Cumulative (2040) Conditions, the forecasted growth from the traffic model, calculated by taking the difference between the base year and the forecast year, was added to the Existing (2019) volumes to develop Cumulative (2040) volumes. The growth between the two model years was calculated using the approach volumes obtained from the AM and PM weekday peak-hour model network. Existing (2019) plus Approved and Pending Project volumes were maintained for any approach where negative growth was calculated. Cumulative (2040) peak-hour turning movement volumes are presented in Figure 9. The analysis worksheets for this scenario are provided in Appendix E.

Table 14 provides the intersection operating conditions, Table 15 provides the roadway operating conditions, and Table 16 provides the freeway operating conditions for this analysis scenario. As shown, the study facilities operate from LOS B to LOS D during the AM and PM peak-hours.

Table 14 – Cumulative (2040) Intersection Levels of Service

ID	Intersection	Control	Threshold	Peak Hour	Cumulative (2040)	
					Delay (sec)	LOS
1	Roth Road @ Manthey Rd	SSSC	E	AM	22.7 (WBL)	C
				PM	15.3 (WBL)	C
2	Roth Road @ I-5 SB Ramp	AWSC	D	AM	16.2	C
				PM	14.1	B
3	Roth Road @ I-5 NB Ramp	AWSC	D	AM	27.4	D
				PM	18.9	C
4	Roth Road @ Harlan Road	Signal	D	AM	46.1	D
				PM	31.7	C
5	Roth Road @ McKinley Ave	SSSC	D	AM	13.7 (SBLR)	B
				PM	18.7 (SBLR)	C
6	Roth Road @ Airport Way	Signal	D	AM	28.4	C
				PM	15.8	B

Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.
Bolded represents unacceptable conditions.

Table 15 – Cumulative (2040) Roadway Level of Service

Location	Daily Capacity*	Daily Volume	LOS
Roth Rd, west of McKinley Ave	35,000	12,730	A
Roth Road, east of McKinley Ave	35,000	13,890	A

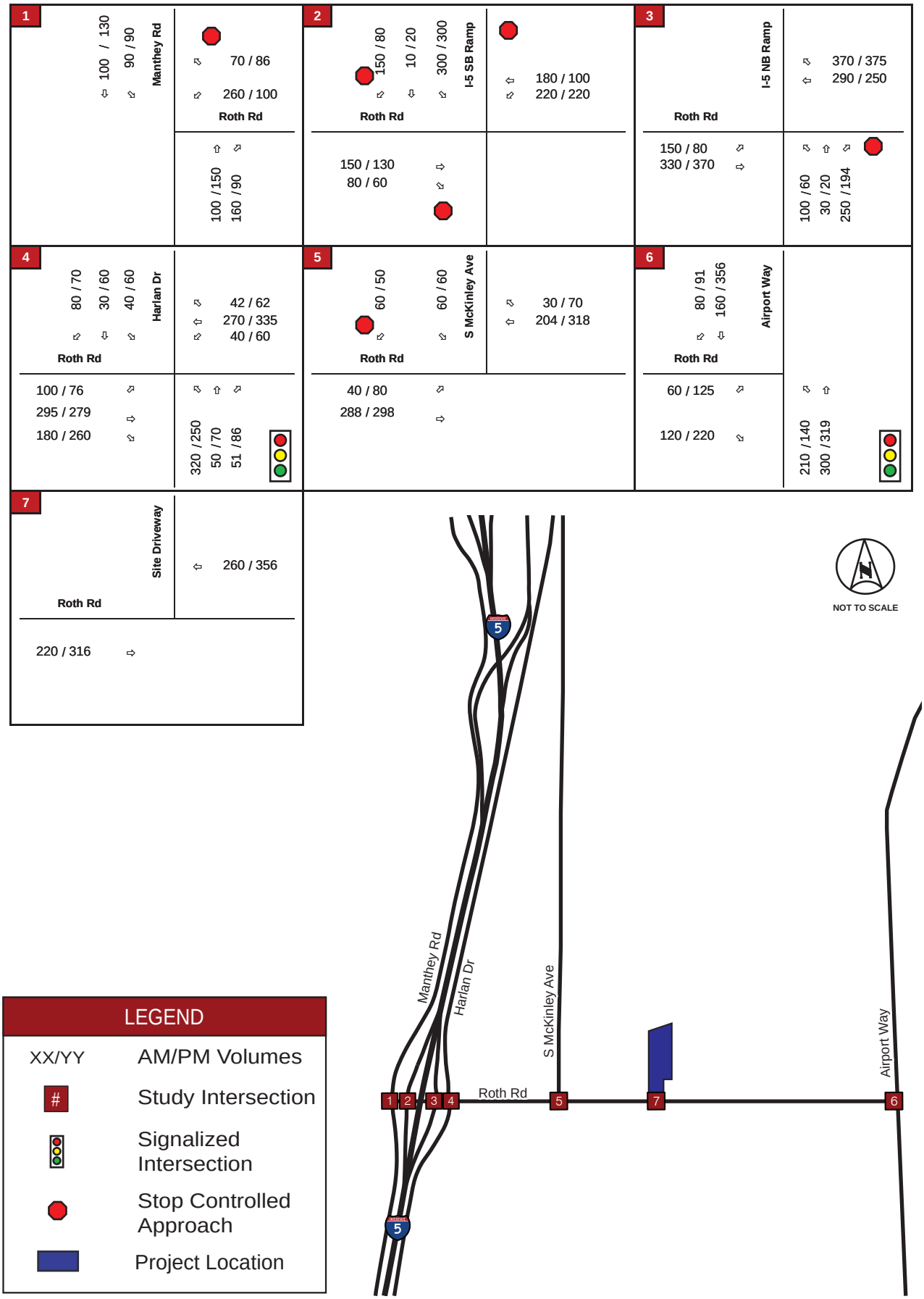


Figure 9
Cumulative (2040) Peak-Hour Traffic Volumes

Table 16 – Cumulative (2040) Freeway Level of Service

I-5				Cumulative (2040)	
Direction	Segment	Type	Peak Hour	Density[a]	LOS
NB	South of Roth Road	Diverge	AM	23.6	C
			PM	26.5	C
	North of Roth Road	Merge	AM	28.4	D
			PM	32.5	D
SB	North of Roth Road	Diverge	AM	26.2	C
			PM	24.3	C
	South of Roth Road	Merge	AM	29.4	D
			PM	27.7	C

Notes:

a- Density measured in passenger cars/lane/mile (pc/ln/mi)

b- **Bold** represents unacceptable operations

CUMULATIVE (2040) PLUS PROPOSED PROJECT CONDITIONS

Peak-hour traffic associated with the proposed Project was added to the Cumulative (2040) traffic volumes previously noted, and levels of service were determined at the study intersections. Cumulative (2040) plus Proposed Project peak-hour turning movement volumes are presented in Figure 10. Analysis worksheets for this scenario are provided in Appendix F.

Table 17 provides the intersection operating conditions, Table 18 provides the roadway operating conditions, and Table 19 provides the freeway operating conditions for this analysis scenario. As shown, the study facilities operate from LOS B to LOS D during the AM and PM peak-hours.

Table 17 – Cumulative (2040) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Threshold	Peak Hour	Cumulative (2040)		Cumulative (2040) plus Project	
					Delay (sec)	LOS	Delay (sec)	LOS
1	Roth Road @ Manthey Rd	SSSC	E	AM	22.7 (WBL)	C	22.7 (WBL)	C
				PM	15.3 (WBL)	C	15.3 (WBL)	C
2	Roth Road @ I-5 SB Ramp	AWSC	D	AM	16.2	C	16.5	C
				PM	14.1	B	14.2	B
3	Roth Road @ I-5 NB Ramp	AWSC	D	AM	27.4	D	28.8	D
				PM	18.9	C	19.4	C
4	Roth Road @ Harlan Road	Signal	D	AM	46.1	D	48.6	D
				PM	31.7	C	32.7	C
5	Roth Road @ McKinley Ave	SSSC	D	AM	13.7 (SBLR)	B	14 (SBLR)	B
				PM	18.7 (SBLR)	C	19.3 (SBLR)	C
6	Roth Road @ Airport Way	Signal	D	AM	28.4	C	29.0	C
				PM	15.8	B	15.9	B
7	Roth Road @ Site Driveway	SSSC	D	AM	NOT ANALYZED IN THIS SCENARIO		10.7 (SBLR)	B
				PM			11.9 (SBLR)	B

Notes:

Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.

Bolded represents unacceptable conditions.

Shaded represents a significant impact.

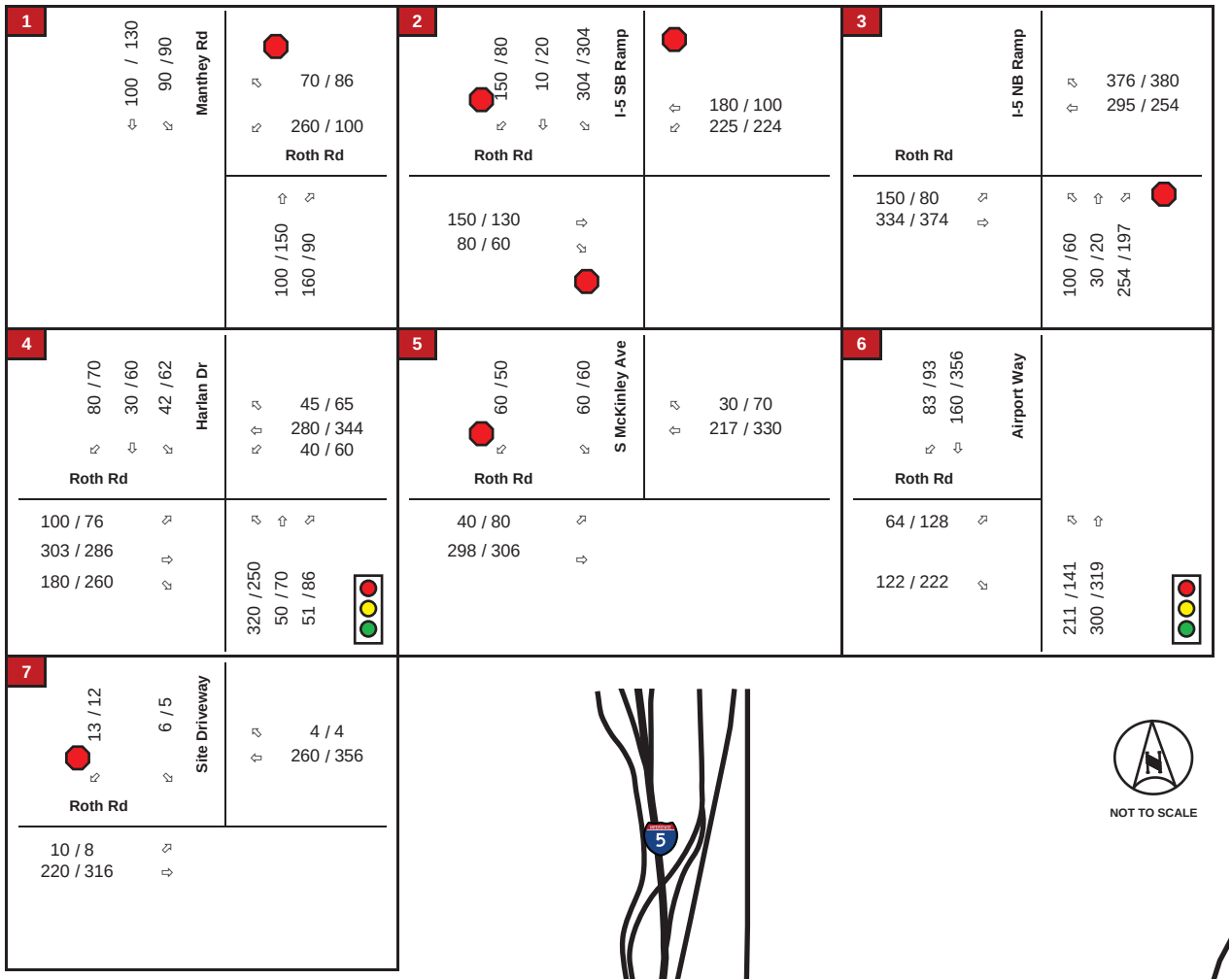


Figure 10

Cumulative (2040) plus Proposed Project Peak-Hour Traffic Volumes

Table 18 – Cumulative (2040) plus Proposed Project Roadway Level of Service

Location	Daily Capacity*	Daily Volume	LOS
Roth Rd, west of McKinley Ave	35,000	12,860	A
Roth Road, east of McKinley Ave	35,000	14,020	A

Table 19 – Cumulative (2040) plus Proposed Project Freeway Level of Service

I-5				Cumulative (2040)		Cumulative (2040) plus Proposed Project	
Direction	Segment	Type	Peak Hour	Density[a]	LOS	Density[a]	LOS
NB	South of Roth Road	Diverge	AM	23.6	C	23.6	C
			PM	26.5	C	26.6	C
	North of Roth Road	Merge	AM	28.4	D	28.4	D
			PM	32.5	D	32.5	D
SB	North of Roth Road	Diverge	AM	26.2	C	26.2	C
			PM	24.3	C	24.3	C
	South of Roth Road	Merge	AM	29.4	D	29.4	D
			PM	27.7	C	27.7	C

Notes:

a- Density measured in passenger cars/lane/mile (pc/ln/mi)

b- **Bold** represents unacceptable operations

IMPACTS AND MITIGATION

Standards of Significance

Project impacts were determined by comparing conditions with the proposed Project to those without the project. Impacts are created when traffic from the proposed Project forces the LOS to fall below a specific threshold. The proposed Project study facilities are under the jurisdiction of San Joaquin County, the City of Lathrop, Caltrans, or the City of Manteca. The County standards specify the following:

> "As defined in the San Joaquin County 2010 General Plan, adopted in 1992, all County roadways shall operate at a LOS of C or better (except in a City sphere of influence where the City had adopted LOS D); intersections shall operate at an overall LOS D or better on minor arterials and roadways of higher classification; and LOS C on all other roads; all freeways and State highways shall operate at a LOS D. The methods contained in the 'Transportation Research Board, 1997 Highway Capacity Manual' (or latest edition) shall be used to determine LOS…
>
> If the LOS for conditions at a given location is already at an unacceptable LOS, then the impacts must be assessed in terms of…delay (for intersection approaches)…If the delay at a given intersection approach under the 'Existing plus Approved Projects plus Proposed Project' conditions or the "Cumulative plus Proposed Project' conditions exceeds the delay for the same intersection approach under 'Existing plus Approved Projects Conditions' or 'Cumulative Conditions', then mitigation measures that would return the delay to the 'Existing' or 'Cumulative' level must be identified."

Table 20 presents the significance threshold criteria for each jurisdiction.

Table 20 – Significance Criteria

Jurisdiction	Signalized Intersections	Side-Street Stop Control	All-Way Stop Control	Roadway Segment	Delay Threshold for Intersections with Unacceptable "No Project" LOS
San Joaquin County	LOS D	LOS D	LOS D	LOS C	N/A
City of Lathrop	LOS D	LOS E	LOS D	LOS D	≥ 3.0 seconds
Caltrans	LOS D	LOS D	LOS D	N/A	≥ 0.1 seconds
City of Manteca	LOS D	LOS D	LOS D	LOS D	≥ 3.0 seconds

Source: *Sunrise Trucking Parking Lot*, San Joaquin County Public Works Department, MRO Engineers, Inc., November 21, 2013.

Impacts and Mitigation

Existing (2019) plus Approved and Pending Project plus Proposed Project Conditions

As reflected in Table 11 and Table 13, the addition of the proposed Project results in two (2) significant impact. The following is a discussion of the impacts and their associated mitigations. Analysis worksheets for this scenario are provided in Appendix G.

Impacts:

Intersections

I1. Intersection #2, Roth Road @ I-5 SB Ramp

As shown in Table 5 and Table 8, this intersection operates at an unacceptable LOS under Existing (2019) plus Approved and Pending Projects conditions and the addition of the project causes operations at the intersection to worsen. As shown in Table 11, the proposed Project increases the delay during both the AM peak-hour. ***This is a significant impact.***

I2. Intersection #4, Roth Road @ Harlan Road

As shown in Table 5 and Table 8, this intersection operates at an unacceptable LOS under Existing (2019) plus Approved and Pending Projects conditions and the addition of the project causes operations at the intersection to worsen. As shown in Table 11, the proposed Project increases the delay during both the AM and PM peak-hours. ***This is a significant impact.***

Mitigations:

Intersections

M1. Intersection #2, Roth Road @ I-5 SB Ramp

The significant impact at this intersection during the AM peak-hour can be mitigated by converting the intersection to all-way stop control. This mitigation is consistent with improvements identified in the City of Lathrop's *2018 Traffic Monitoring Program*[4] which identifies the need for conversion to all-way stop control under Existing (2019) plus Approved and Pending Projects conditions. The implementation of this mitigation results in acceptable LOS B in both the AM PM peak-hours (Table 21). With this improvement, this impact would be ***less than significant.***

M2. Intersection #4, Roth Road @ Harlan Road

The significant impact at this intersection during the AM and PM peak-hours can be mitigated by converting the intersection to a traffic signal. This mitigation is consistent with improvements identified in the City of Lathrop's *2018 Traffic Monitoring Program*[4], which identifies the need to move the Roth Road intersection with Harlan Road at least 600-feet to the east and signalize the new intersection under Year 2020 conditions. The implementation of this mitigation results in acceptable LOS D in the AM and PM peak-hours (Table 21). With this improvement, this impact would be ***less than significant.***

Table 21 – Intersection Levels of Service – Existing plus Approved and Pending Projects plus Proposed Project Mitigated Conditions

ID	Intersection	Control	Peak Hour	Existing (2019) plus Approved Projects plus Project		Existing (2019) plus Approved Projects plus Project - Mitigated	
				Delay (sec)	LOS	Delay (sec)	LOS
2	Roth Road @ I-5 SB Ramp	SSSC	AM	**49.7 (SBL)**	**E**	13.7	B
			PM	34.8 (SBL)	D	12.3	B
4	Roth Road @ Harlan Road	AWSC	AM	**64.6**	**F**	38.3	D
			PM	**152.1**	**F**	35.6	D

Notes:
Side Street Stop Controlled (SSSC) intersection LOS corresponds to the worst approach.
Bolded represents unacceptable conditions.
Shaded represents a significant impact.

Cumulative (2040) plus Proposed Project Conditions

As reflected in Table 17, Table 18, and Table 19, the addition of the proposed Project does not result in significant impacts as defined by the County. Accordingly, ***no mitigations are required*** for this scenario.

OTHER CONSIDERATIONS

95th Percentile Queues

Vehicle queuing for critical movements at the study intersections was evaluated for the eastbound movements along Roth Road at the intersection of Roth Road and Harlan Road (Intersection #4). The City of Lathrop's 2018 *Traffic Monitoring Program*[4] identifies the need to move the Roth Road @ Harlan Road intersection at least 600-feet to the east and signalize the new intersection under Year 2020 conditions. The 95th percentile queues represent a worst-case condition, as 95-percent of the time, vehicle queues are anticipated to less than the calculated lengths. Table 22 compares the calculated 95th percentile queues to available vehicle storage lengths. Analysis worksheets are provided in Appendix B-F.

As shown in Table 22, the calculated 95th percentile queues are not anticipated to exceed available storage capacity.

Access

The site plan for the proposed Project (Figure 2) was qualitatively reviewed for general access and on-site circulation. According to the site plan, access to the site will be provided from Roth Road via one project driveway. The proposed Project access will be restricted by a gate.

Table 22 – 95th Percentile Queues

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#4, Roth Road @ Harlan Road	**EBL**				
Existing (2019)		100	15	100	8
Existing (2019) plus Approved/Pending Project			20		25
Existing (2019) plus Approved/Pending Project plus proposed			20		**25**
Cumulative (2040)		700	152	700	**126**
Cumulative (2040) plus proposed Project			152		**126**
#4, Roth Road @ Harlan Road	**EBR**				
Existing (2019)		100	30	100	53
Existing (2019) plus Approved/Pending Project			40		73
Existing (2019) plus Approved/Pending Project plus proposed			40		**73**
Cumulative (2040)		700	47	700	**54**
Cumulative (2040) plus proposed Project			47		**54**

Source: *Highway Capacity Manual (HCM) 2010* methodology per Synchro© v10.

CONCLUSIONS

Based upon the analysis documented in this report, the following conclusions are offered:

- The proposed Project is estimated to generate 370 new external daily trips, 33 new external trips occurring during the AM peak-hour, and 29 new external trips during the PM peak-hour.
- As defined by the County, the addition of the proposed Project results in two (2) significant impacts to the Roth Road intersections with the I-5 SB Ramps and Harlan Road (Intersection #2 and Intersection #4) under Existing (2019) plus Approved and Pending Projects plus Proposed Project Conditions. These two impacts can be mitigated to be ***less than significant***.
- As defined by the County, the addition of the proposed Project to does not result in significant impacts to any of the study intersections under Cumulative (2040) plus Proposed Project Conditions.
- Based on this analysis, the 95th percentile vehicles queues are not anticipated to exceed available storage for the eastbound movement at the intersection of Roth Road and Harlan Road (Intersection #4).

Appendix A

Traffic Count Data Sheets

Prepared by National Data & Surveying Services

Manthey Rd & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-001
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS		COUNT PERIODS
AM	06:45 AM - 07:45 AM	AM 06:00 AM - 08:00 AM
NOON	NONE	NOON NONE
PM	05:00 PM - 06:00 PM	PM 05:00 PM - 07:00 PM

Manthey Rd — SOUTHBOUND

AM	0	45	41	0	77	AM
NOON	0	0	0	0	0	NOON
PM	0	51	48	0	97	PM

EASTBOUND (Roth Rd)

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (Roth Rd)

PM	NOON	AM	
40	0	36	1
0	0	0	1
31	0	97	0
0	0	0	0
75	0	99	
PM	NOON	AM	

CONTROL

1-Way Stop(WB)

TEV	318	0	254
	AM	NOON	PM
PHF	0.62		0.88

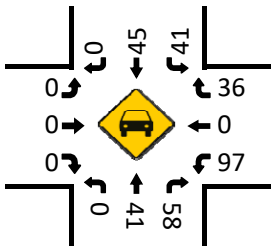
NORTHBOUND — Manthey Rd

PM	82	0	0	57	27	PM
NOON	0	0	0	0	0	NOON
AM	142	0	0	41	58	AM

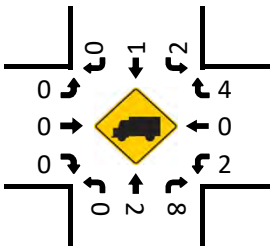
0 0 1 0

0 1 0 0

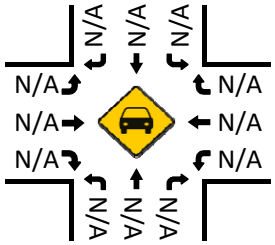
Total Vehicles (AM)



HT (AM)



Total Vehicles (Noon)



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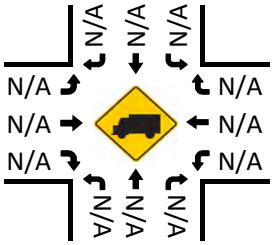
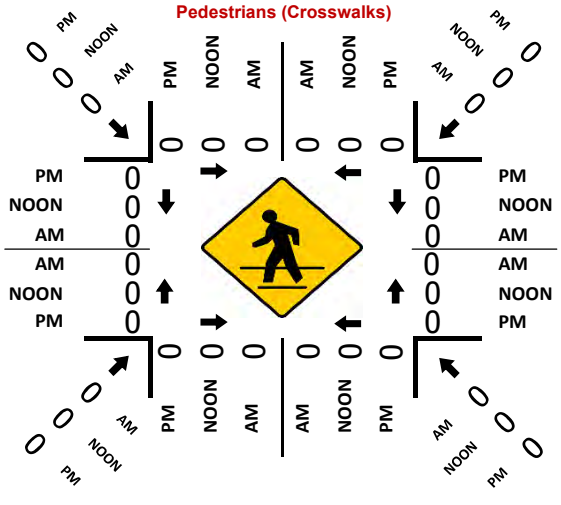
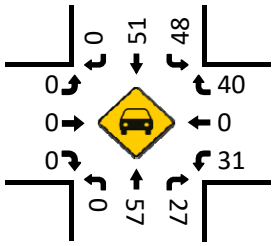


Pedestrians (Crosswalks)



Total Vehicles (PM)



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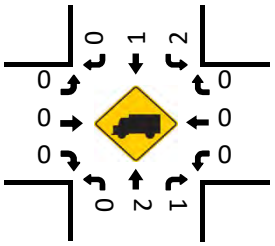


Prepared by National Data & Surveying Services

I-5 SB Ramps & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-002
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS

AM: 06:30 AM - 07:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 06:00 AM - 08:00 AM
NOON: NONE
PM: 05:00 PM - 07:00 PM

I-5 SB Ramps — SOUTHBOUND

AM	52	2	203	0	0	AM
NOON	0	0	0	0	0	NOON
PM	24	4	207	0	0	PM
	0.5	0.5	1	0		

EASTBOUND — Roth Rd

AM	NOON	PM	
137	0	71	
0	0	0	0
0	0	0	0
65	0	60	1
22	0	15	0
AM	NOON	PM	

WESTBOUND — Roth Rd

PM	NOON	AM	
0	0	0	0
47	0	85	1
137	0	142	0
0	0	0	0
267	0	268	
PM	NOON	AM	

CONTROL

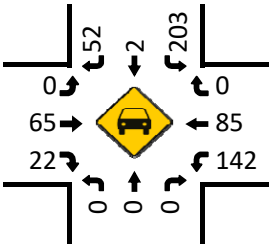
1-Way Stop(SB)

TEV	571	0	494
	AM	NOON	PM
PHF	0.84		0.84

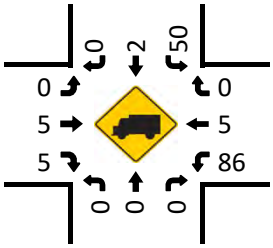
NORTHBOUND — I-5 SB Ramps

PM	156	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	166	0	0	0	0	AM
		0	0	0	0	

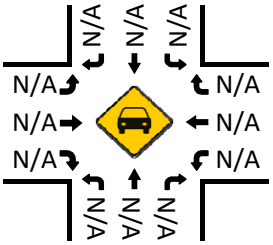
Total Vehicles (AM)



HT (AM)



Total Vehicles (Noon)



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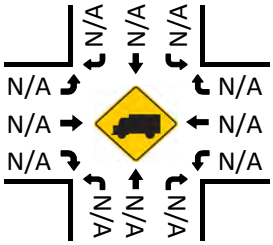
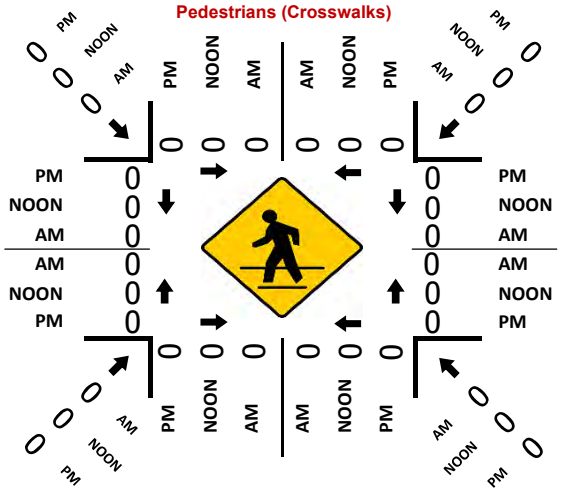
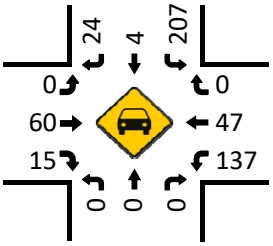


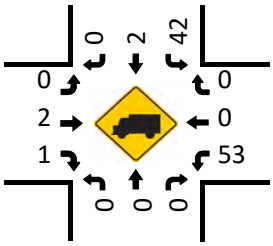
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

I-5 NB Ramps & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-003
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	06:00 AM - 08:00 AM
NONE	NONE
05:00 PM - 06:00 PM	05:00 PM - 07:00 PM

I-5 NB Ramps — SOUTHBOUND

AM	0	0	0	0	297	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	201	PM

EASTBOUND — Roth Rd

AM	NOON	PM	
227	0	184	⇦
0	0	0	0 ↶
29	0	15	1 ↱
252	0	252	2 →
0	0	0	0 ↷

WESTBOUND — Roth Rd

PM	NOON	AM	
182	0	265	0 ↶
171	0	212	1 ←
0	0	0	0 ↷
1	0	0	0 ↷
417	0	412	⇨

CONTROL

1-Way Stop(NB)

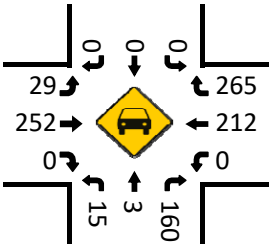
TEV	936 AM	0 NOON	802 PM
PHF	0.88		0.84

NORTHBOUND — I-5 NB Ramps

PM	0	0	13	4	164	PM
NOON	0	0	0	0	0	NOON
AM	0	0	15	3	160	AM

0 0 0 0 — 0 0.5 0.5 1

Total Vehicles (AM)



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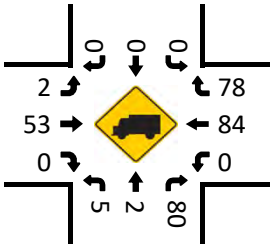
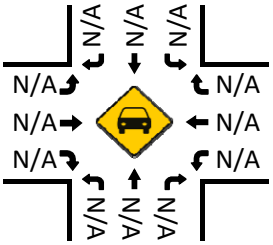
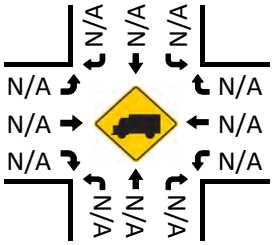


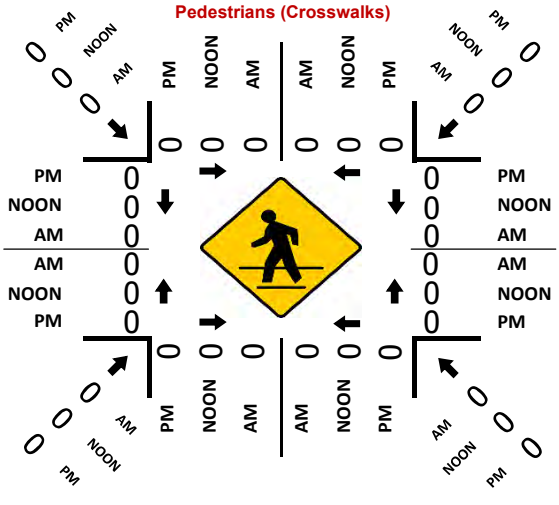
Total Vehicles (Noon)



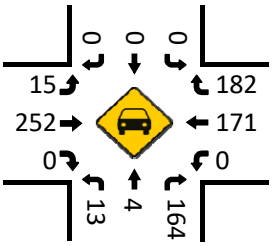
HT (NOON)



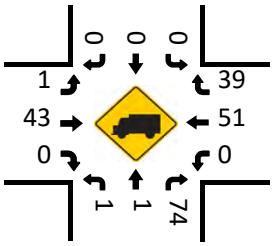
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

Harlan Rd & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-004
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS		COUNT PERIODS
07:00 AM - 08:00 AM		06:00 AM - 08:00 AM
NONE		NONE
05:00 PM - 06:00 PM		05:00 PM - 07:00 PM

Harlan Rd — SOUTHBOUND

AM	42	18	32	0	133	AM
NOON	0	0	0	0	0	NOON
PM	41	34	37	0	105	PM

Roth Rd — EASTBOUND

AM	NOON	PM	
474	0	351	
0	0	0	0
59	0	35	1
222	0	199	1
128	0	184	1

Roth Rd — WESTBOUND

PM	NOON	AM	
21	0	30	0
132	0	198	1
54	0	35	0
0	0	0	0
308	0	281	

Harlan Rd — NORTHBOUND

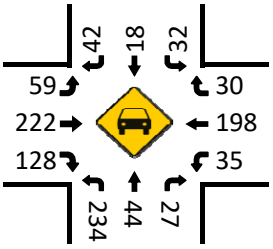
PM	273	1	178	49	72	PM
NOON	0	0	0	0	0	NOON
AM	181	0	234	44	27	AM

	0	1	0	0
	0	0.5	0.5	1

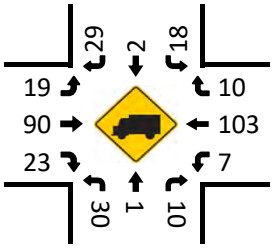
CONTROL: 4-Way Stop

TEV	1069 AM	0 NOON	1037 PM
PHF	0.92		0.85

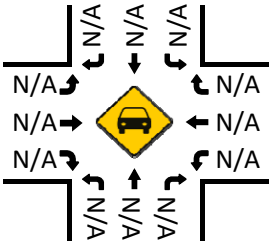
Total Vehicles (AM)



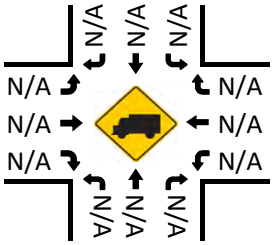
HT (AM)



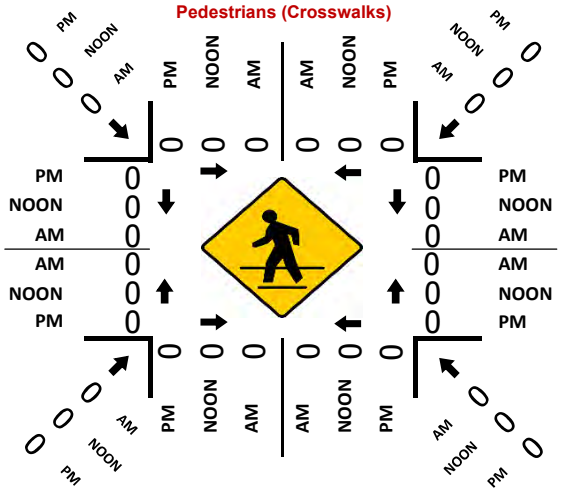
Total Vehicles (Noon)



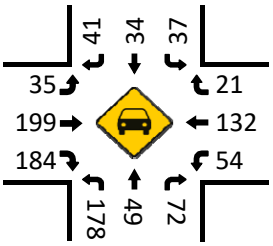
HT (NOON)



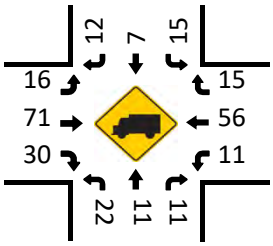
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

S Mc Kinley Ave & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-005
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

	PEAK HOURS	COUNT PERIODS
AM	06:45 AM - 07:45 AM	06:00 AM - 08:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	05:00 PM - 07:00 PM

S Mc Kinley Ave — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	37	0	36	0	37
NOON	0	0	0	0	0
PM	34	0	21	0	77
Lanes	0.5	0.5	0	0	

Roth Rd — EASTBOUND

	AM	NOON	PM	Lanes
Departing	193	0	158	
U-Turn	0	0	0	0
Left	23	0	52	0
Thru	165	0	153	1
Right	0	0	0	0

Roth Rd — WESTBOUND

	PM	NOON	AM	Lanes
Right	25	0	14	0
Thru	124	0	156	1
Left	0	0	0	0
U-Turn	0	0	0	0
Departing	174	0	201	

S Mc Kinley Ave — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

1-Way Stop(SB)

	AM	NOON	PM
TEV	431	0	409
PHF	0.92		0.82

Total Vehicles (AM)

Approach	Left	Thru	Right
Southbound	36	0	37
Eastbound	23	165	0
Westbound	0	156	14
Northbound	0	0	0

HT (AM)

Approach	Left	Thru	Right
Southbound	1	0	3
Eastbound	3	60	0
Westbound	0	66	0
Northbound	0	0	0

Total Vehicles (Noon)

Approach	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

HT (NOON)

Approach	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (PM)

Approach	Left	Thru	Right
Southbound	21	0	34
Eastbound	52	153	0
Westbound	0	124	25
Northbound	0	0	0

HT (PM)

Approach	Left	Thru	Right
Southbound	1	0	3
Eastbound	4	47	0
Westbound	0	47	2
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	Eastbound	0	0	0
North	Westbound	1	0	0
West	Southbound	0	0	0
West	Northbound	0	0	0
East	Southbound	0	0	0
East	Northbound	0	0	0
South	Eastbound	0	0	0
South	Westbound	0	0	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

S Airport Way & Roth Rd

Peak Hour Turning Movement Count

ID: 19-07159-006
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS		COUNT PERIODS
AM	06:45 AM - 07:45 AM	AM 06:00 AM - 08:00 AM
NOON	NONE	NOON NONE
PM	05:00 PM - 06:00 PM	PM 05:00 PM - 07:00 PM

S Airport Way — SOUTHBOUND

	U-Turn	Left	Thru	Right	Total	
AM	67	130	0	0	297	AM
NOON	0	0	0	0	0	NOON
PM	57	230	0	0	284	PM
	0.5	1.5	0	0		

Roth Rd — EASTBOUND

AM	NOON	PM	
167	0	122	
0	0	0	0
43	0	78	1
0	0	0	0
60	0	108	1
AM	NOON	PM	

CONTROL

Signalized

TEV	654 AM	0 NOON	744 PM
PHF	0.93		0.82

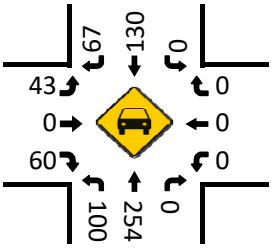
WESTBOUND — Roth Rd

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

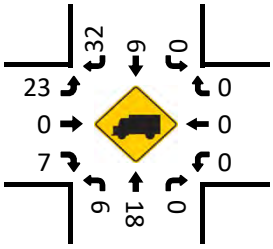
S Airport Way — NORTHBOUND

	U-Turn	Left	Thru	Right	Total	
PM	338	0	65	206	0	PM
NOON	0	0	0	0	0	NOON
AM	190	0	100	254	0	AM
	0	1	1	0		

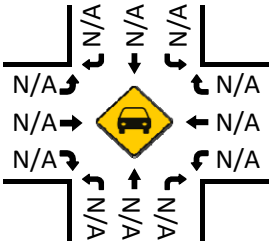
Total Vehicles (AM)



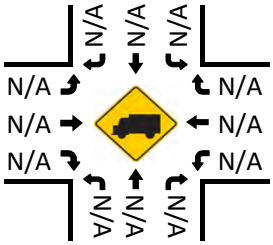
HT (AM)



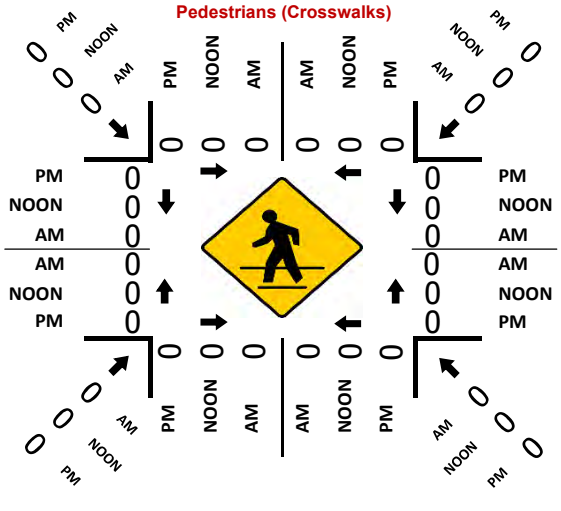
Total Vehicles (Noon)



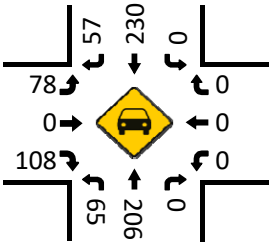
HT (NOON)



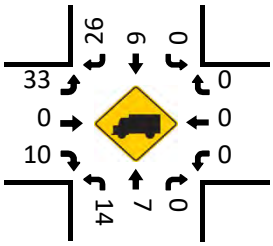
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by National Data & Surveying Services

Harlan Rd & Sunstate Equipment Dwy

Peak Hour Turning Movement Count

ID: 19-07159-007
City: San Joaquin County

Day: Tuesday
Date: 04/30/2019

PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	06:00 AM - 08:00 AM
NONE	NONE
05:00 PM - 06:00 PM	05:00 PM - 07:00 PM

Harlan Rd — SOUTHBOUND

AM	0	90	5	0	64	AM
NOON	0	0	0	0	0	NOON
PM	0	52	0	0	92	PM

Sunstate Equipment Dwy — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Sunstate Equipment Dwy — WESTBOUND

	PM	NOON	AM
0.5	3	0	3
0.5	0	0	0
0	9	0	5
0	0	0	0
	3	0	14

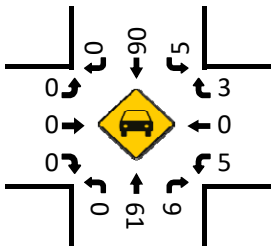
Harlan Rd — NORTHBOUND

PM	61	0	0	89	3	PM
NOON	0	0	0	0	0	NOON
AM	95	0	0	61	9	AM

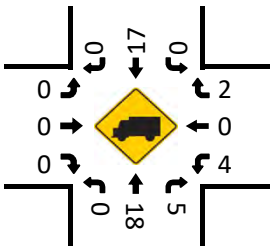
0	1	0	0
0	0	2	0

CONTROL			
1-Way Stop(WB)			
TEV	173 AM	0 NOON	156 PM
PHF	0.79		0.83

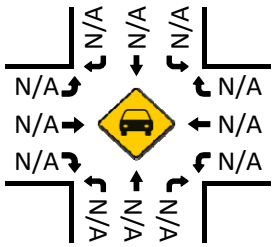
Total Vehicles (AM)



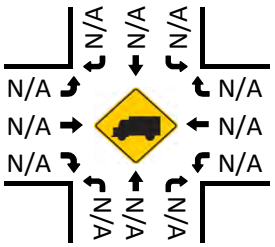
HT (AM)



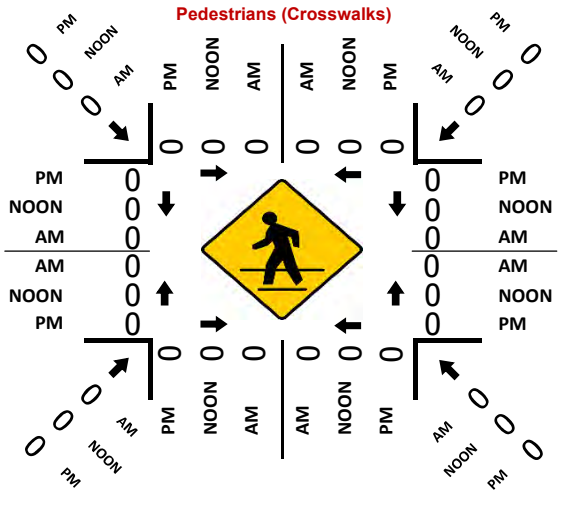
Total Vehicles (Noon)



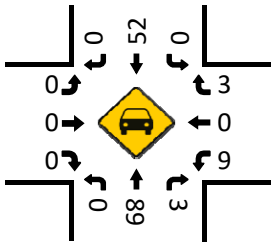
HT (NOON)



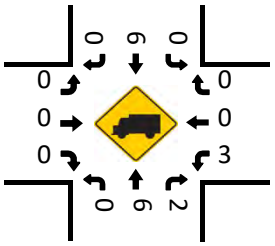
Pedestrians (Crosswalks)



Total Vehicles (PM)



HT (PM)



Prepared by NDS/ATD

VOLUME

Harlan Rd Bet. Roth Rd & Equipment St

Day: Tuesday
Date: 4/30/2019

City: French Camp
Project #: CA19_7160_001

DAILY TOTALS	NB	SB	EB	WB	Total
	1,413	1,246	0	0	2,659

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	2		5				7		12:00	22		29				51	
00:15	2		4				6		12:15	37		22				59	
00:30	1		3				4		12:30	29		23				52	
00:45	3	8	3	15			6	23	12:45	19	107	26	100			45	207
01:00	2		4				6		13:00	18		18				36	
01:15	1		5				6		13:15	27		24				51	
01:30	3		1				4		13:30	23		24				47	
01:45	4	10	1	11			5	21	13:45	19	87	21	87			40	174
02:00	3		1				4		14:00	26		18				44	
02:15	9		4				13		14:15	32		22				54	
02:30	2		5				7		14:30	22		25				47	
02:45	6	20	3	13			9	33	14:45	25	105	16	81			41	186
03:00	3		1				4		15:00	24		15				39	
03:15	3		2				5		15:15	24		25				49	
03:30	12		5				17		15:30	30		26				56	
03:45	2	20	8	16			10	36	15:45	36	114	19	85			55	199
04:00	2		6				8		16:00	34		36				70	
04:15	4		7				11		16:15	31		23				54	
04:30	4		9				13		16:30	20		20				40	
04:45	5	15	6	28			11	43	16:45	16	101	19	98			35	199
05:00	7		6				13		17:00	24		25				49	
05:15	13		8				21		17:15	17		27				44	
05:30	12		7				19		17:30	20		9				29	
05:45	12	44	10	31			22	75	17:45	16	77	11	72			27	149
06:00	13		8				21		18:00	18		12				30	
06:15	9		10				19		18:15	15		19				34	
06:30	10		14				24		18:30	15		18				33	
06:45	20	52	13	45			33	97	18:45	11	59	12	61			23	120
07:00	28		12				40		19:00	15		8				23	
07:15	14		18				32		19:15	13		8				21	
07:30	30		16				46		19:30	16		14				30	
07:45	27	99	21	67			48	166	19:45	14	58	12	42			26	100
08:00	20		16				36		20:00	10		3				13	
08:15	16		18				34		20:15	8		8				16	
08:30	21		12				33		20:30	10		3				13	
08:45	17	74	18	64			35	138	20:45	7	35	2	16			9	51
09:00	16		20				36		21:00	4		6				10	
09:15	22		17				39		21:15	8		7				15	
09:30	16		15				31		21:30	11		7				18	
09:45	25	79	20	72			45	151	21:45	4	27	4	24			8	51
10:00	18		20				38		22:00	6		11				17	
10:15	22		31				53		22:15	4		4				8	
10:30	27		21				48		22:30	5		5				10	
10:45	20	87	15	87			35	174	22:45	6	21	5	25			11	46
11:00	24		22				46		23:00	6		2				8	
11:15	20		24				44		23:15	5		7				12	
11:30	30		20				50		23:30	7		3				10	
11:45	19	93	26	92			45	185	23:45	3	21	2	14			5	35
TOTALS		601		541				1142	TOTALS		812		705				1517
SPLIT %		52.6%		47.4%				42.9%	SPLIT %		53.5%		46.5%				57.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,413	1,246	0	0	2,659

AM Peak Hour	11:30	11:45			11:45	PM Peak Hour	15:30	15:15			15:30
AM Pk Volume	108	100			207	PM Pk Volume	131	106			235
Pk Hr Factor	0.730	0.862			0.877	Pk Hr Factor	0.910	0.736			0.839
7 - 9 Volume	173	131	0	0	304	4 - 6 Volume	178	170	0	0	348
7 - 9 Peak Hour	07:00	07:15			07:00	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	99	71	0	0	166	4 - 6 Pk Volume	101	98	0	0	199
Pk Hr Factor	0.825	0.845	0.000	0.000	0.865	Pk Hr Factor	0.743	0.681	0.000	0.000	0.711

Prepared by NDS/ATD

VOLUME

Harlan Rd Bet. Roth Rd & Equipment St

Day: Wednesday
Date: 5/1/2019

City: French Camp
Project #: CA19_7160_001

DAILY TOTALS	NB	SB	EB	WB	Total
	1,638	1,348	0	0	2,986

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	2		2				4		12:00	24		34				58	
00:15	3		4				7		12:15	27		25				52	
00:30	1		2				3		12:30	22		30				52	
00:45	3	9	4	12			7	21	12:45	23	96	25	114			48	210
01:00	1		1				2		13:00	29		22				51	
01:15	2		2				4		13:15	26		18				44	
01:30	1		1				2		13:30	22		31				53	
01:45	4	8	1	5			5	13	13:45	26	103	16	87			42	190
02:00	3		4				7		14:00	26		23				49	
02:15	6		3				9		14:15	25		24				49	
02:30	11		1				12		14:30	38		14				52	
02:45	7	27	3	11			10	38	14:45	20	109	18	79			38	188
03:00	3		4				7		15:00	17		17				34	
03:15	4		2				6		15:15	32		26				58	
03:30	3		8				11		15:30	31		25				56	
03:45	5	15	3	17			8	32	15:45	31	111	14	82			45	193
04:00	4		5				9		16:00	51		27				78	
04:15	8		9				17		16:15	33		23				56	
04:30	8		8				16		16:30	28		29				57	
04:45	6	26	7	29			13	55	16:45	28	140	21	100			49	240
05:00	7		5				12		17:00	42		28				70	
05:15	11		6				17		17:15	18		22				40	
05:30	8		6				14		17:30	15		22				37	
05:45	14	40	15	32			29	72	17:45	11	86	18	90			29	176
06:00	18		6				24		18:00	20		18				38	
06:15	12		6				18		18:15	15		18				33	
06:30	15		9				24		18:30	14		11				25	
06:45	26	71	8	29			34	100	18:45	14	63	9	56			23	119
07:00	15		13				28		19:00	6		12				18	
07:15	18		17				35		19:15	8		6				14	
07:30	26		8				34		19:30	8		11				19	
07:45	30	89	12	50			42	139	19:45	6	28	10	39			16	67
08:00	22		20				42		20:00	10		4				14	
08:15	19		17				36		20:15	9		5				14	
08:30	29		25				54		20:30	7		10				17	
08:45	16	86	18	80			34	166	20:45	5	31	13	32			18	63
09:00	26		11				37		21:00	15		10				25	
09:15	28		17				45		21:15	20		8				28	
09:30	21		20				41		21:30	22		10				32	
09:45	34	109	14	62			48	171	21:45	17	74	7	35			24	109
10:00	13		19				32		22:00	18		7				25	
10:15	38		24				62		22:15	15		10				25	
10:30	14		26				40		22:30	21		18				39	
10:45	19	84	19	88			38	172	22:45	24	78	14	49			38	127
11:00	20		28				48		23:00	21		16				37	
11:15	32		30				62		23:15	12		8				20	
11:30	22		30				52		23:30	16		6				22	
11:45	20	94	44	132			64	226	23:45	12	61	8	38			20	99
TOTALS		658		547				1205	TOTALS		980		801				1781
SPLIT %		54.6%		45.4%				40.4%	SPLIT %		55.0%		45.0%				59.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,638	1,348	0	0	2,986

AM Peak Hour	09:00	11:15			11:15	PM Peak Hour	15:30	12:00			16:00
AM Pk Volume	109	138			236	PM Pk Volume	146	114			240
Pk Hr Factor	0.801	0.784			0.922	Pk Hr Factor	0.716	0.838			0.769
7 - 9 Volume	175	130	0	0	305	4 - 6 Volume	226	190	0	0	416
7 - 9 Peak Hour	07:45	08:00			07:45	4 - 6 Peak Hour	16:00	16:15			16:00
7 - 9 Pk Volume	100	80	0	0	174	4 - 6 Pk Volume	140	101	0	0	240
Pk Hr Factor	0.833	0.800	0.000	0.000	0.806	Pk Hr Factor	0.686	0.871	0.000	0.000	0.769

Prepared by NDS/ATD

VOLUME

Roth Rd W/O Mc Kinley Ave

Day: Tuesday
Date: 4/30/2019

City: Lathrop
Project #: CA19_7160_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,622	3,350	6,972

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			12		20		32		12:00			65		51		116	
00:15			7		7		14		12:15			55		44		99	
00:30			14		4		18		12:30			70		55		125	
00:45			7	40	4	35	11	75	12:45			56	246	49	199	105	445
01:00			13		6		19		13:00			60		49		109	
01:15			5		12		17		13:15			68		59		127	
01:30			10		12		22		13:30			80		58		138	
01:45			19	47	15	45	34	92	13:45			63	271	53	219	116	490
02:00			10		9		19		14:00			73		61		134	
02:15			5		14		19		14:15			57		58		115	
02:30			9		14		23		14:30			61		59		120	
02:45			12	36	15	52	27	88	14:45			74	265	53	231	127	496
03:00			10		8		18		15:00			62		59		121	
03:15			9		11		20		15:15			50		52		102	
03:30			17		31		48		15:30			85		59		144	
03:45			13	49	13	63	26	112	15:45			86	283	50	220	136	503
04:00			8		26		34		16:00			62		46		108	
04:15			7		22		29		16:15			75		44		119	
04:30			15		25		40		16:30			67		63		130	
04:45			10	40	16	89	26	129	16:45			58	262	45	198	103	460
05:00			12		33		45		17:00			63		29		92	
05:15			21		27		48		17:15			53		48		101	
05:30			23		44		67		17:30			56		47		103	
05:45			24	80	45	149	69	229	17:45			41	213	27	151	68	364
06:00			13		39		52		18:00			53		41		94	
06:15			29		46		75		18:15			46		36		82	
06:30			46		42		88		18:30			57		41		98	
06:45			52	140	38	165	90	305	18:45			37	193	23	141	60	334
07:00			46		49		95		19:00			43		20		63	
07:15			41		68		109		19:15			25		23		48	
07:30			46		51		97		19:30			28		26		54	
07:45			48	181	42	210	90	391	19:45			36	132	25	94	61	226
08:00			37		66		103		20:00			22		24		46	
08:15			53		37		90		20:15			22		28		50	
08:30			68		69		137		20:30			29		13		42	
08:45			57	215	43	215	100	430	20:45			23	96	17	82	40	178
09:00			41		40		81		21:00			26		26		52	
09:15			59		49		108		21:15			24		16		40	
09:30			68		40		108		21:30			13		22		35	
09:45			52	220	43	172	95	392	21:45			17	80	11	75	28	155
10:00			46		53		99		22:00			12		6		18	
10:15			68		58		126		22:15			13		14		27	
10:30			41		46		87		22:30			12		11		23	
10:45			57	212	51	208	108	420	22:45			18	55	20	51	38	106
11:00			46		50		96		23:00			12		12		24	
11:15			51		55		106		23:15			16		16		32	
11:30			49		85		134		23:30			13		9		22	
11:45			69	215	50	240	119	455	23:45			10	51	9	46	19	97
TOTALS				1475		1643		3118	TOTALS				2147		1707		3854
SPLIT %				47.3%		52.7%		44.7%	SPLIT %				55.7%		44.3%		55.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,622	3,350	6,972

AM Peak Hour			11:45	10:45	11:15	PM Peak Hour			15:30	13:15	13:15
AM Pk Volume			259	241	475	PM Pk Volume			308	231	515
Pk Hr Factor			0.925	0.709	0.886	Pk Hr Factor			0.895	0.947	0.933
7 - 9 Volume	0	0	396	425	821	4 - 6 Volume	0	0	475	349	824
7 - 9 Peak Hour			08:00	07:15	08:00	4 - 6 Peak Hour			16:15	16:00	16:00
7 - 9 Pk Volume	0	0	215	227	430	4 - 6 Pk Volume	0	0	263	198	460
Pk Hr Factor	0.000	0.000	0.790	0.835	0.785	Pk Hr Factor	0.000	0.000	0.877	0.786	0.885

Prepared by NDS/ATD

VOLUME

Roth Rd W/O Mc Kinley Ave

Day: Wednesday
Date: 5/1/2019

City: Lathrop
Project #: CA19_7160_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,508	3,145	6,653

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			10		12		22		12:00			66		38		104	
00:15			9		4		13		12:15			46		70		116	
00:30			6		7		13		12:30			71		46		117	
00:45			6	31	3	26	9	57	12:45			62	245	54	208	116	453
01:00			3		20		23		13:00			68		51		119	
01:15			6		9		15		13:15			68		44		112	
01:30			5		12		17		13:30			79		57		136	
01:45			10	24	3	44	13	68	13:45			65	280	39	191	104	471
02:00			11		7		18		14:00			64		54		118	
02:15			8		7		15		14:15			58		43		101	
02:30			6		13		19		14:30			72		50		122	
02:45			10	35	20	47	30	82	14:45			48	242	39	186	87	428
03:00			11		10		21		15:00			65		49		114	
03:15			15		14		29		15:15			51		45		96	
03:30			11		19		30		15:30			91		63		154	
03:45			10	47	13	56	23	103	15:45			61	268	40	197	101	465
04:00			9		27		36		16:00			65		46		111	
04:15			14		28		42		16:15			55		45		100	
04:30			23		27		50		16:30			64		38		102	
04:45			8	54	23	105	31	159	16:45			48	232	46	175	94	407
05:00			12		29		41		17:00			62		44		106	
05:15			13		20		33		17:15			53		41		94	
05:30			31		29		60		17:30			56		38		94	
05:45			23	79	44	122	67	201	17:45			44	215	43	166	87	381
06:00			13		49		62		18:00			36		25		61	
06:15			23		34		57		18:15			51		24		75	
06:30			33		34		67		18:30			41		24		65	
06:45			51	120	32	149	83	269	18:45			32	160	21	94	53	254
07:00			27		53		80		19:00			41		23		64	
07:15			46		50		96		19:15			28		23		51	
07:30			39		51		90		19:30			25		19		44	
07:45			48	160	47	201	95	361	19:45			28	122	19	84	47	206
08:00			37		43		80		20:00			25		31		56	
08:15			47		46		93		20:15			22		18		40	
08:30			52		58		110		20:30			32		19		51	
08:45			58	194	54	201	112	395	20:45			19	98	18	86	37	184
09:00			58		48		106		21:00			17		24		41	
09:15			48		34		82		21:15			26		18		44	
09:30			50		53		103		21:30			22		13		35	
09:45			57	213	54	189	111	402	21:45			15	80	15	70	30	150
10:00			70		56		126		22:00			19		13		32	
10:15			46		54		100		22:15			19		10		29	
10:30			61		50		111		22:30			17		30		47	
10:45			71	248	56	216	127	464	22:45			22	77	8	61	30	138
11:00			62		64		126		23:00			10		5		15	
11:15			59		48		107		23:15			11		18		29	
11:30			59		61		120		23:30			11		8		19	
11:45			60	240	62	235	122	475	23:45			12	44	5	36	17	80
TOTALS				1445		1591		**3036**	**TOTALS**				2063		1554		**3617**
SPLIT %				47.6%		52.4%		**45.6%**	**SPLIT %**				57.0%		43.0%		**54.4%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,508	3,145	6,653

AM Peak Hour			10:30	11:00	**10:45**	**PM Peak Hour**			13:00	12:15	**12:45**
AM Pk Volume			253	235	**480**	**PM Pk Volume**			280	221	**483**
Pk Hr Factor			0.891	0.918	**0.945**	**Pk Hr Factor**			0.886	0.789	**0.888**
7 - 9 Volume	0	0	354	402	**756**	**4 - 6 Volume**	0	0	447	341	**788**
7 - 9 Peak Hour			08:00	07:00	**08:00**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	194	201	**395**	**4 - 6 Pk Volume**	0	0	232	175	**407**
Pk Hr Factor	0.000	0.000	0.836	0.948	**0.882**	**Pk Hr Factor**	0.000	0.000	0.892	0.951	**0.917**

Prepared by NDS/ATD

VOLUME

Roth Rd E/O Mc Kinley Ave

Day: Tuesday
Date: 4/30/2019

City: Manteca
Project #: CA19_7160_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,309	3,058	6,367

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			8		17		25		12:00			63		44		107	
00:15			7		5		12		12:15			51		39		90	
00:30			13		4		17		12:30			62		53		115	
00:45			7	35	4	30	11	65	12:45			43	219	48	184	91	403
01:00			13		4		17		13:00			56		49		105	
01:15			6		7		13		13:15			57		61		118	
01:30			11		10		21		13:30			68		60		128	
01:45			14	44	14	35	28	79	13:45			63	244	51	221	114	465
02:00			12		6		18		14:00			64		58		122	
02:15			3		14		17		14:15			49		56		105	
02:30			10		12		22		14:30			53		63		116	
02:45			11	36	13	45	24	81	14:45			67	233	55	232	122	465
03:00			8		6		14		15:00			62		65		127	
03:15			11		10		21		15:15			37		50		87	
03:30			18		27		45		15:30			72		66		138	
03:45			16	53	10	53	26	106	15:45			77	248	57	238	134	486
04:00			8		20		28		16:00			53		59		112	
04:15			10		19		29		16:15			58		44		102	
04:30			16		16		32		16:30			53		60		113	
04:45			11	45	18	73	29	118	16:45			51	215	46	209	97	424
05:00			21		26		47		17:00			54		31		85	
05:15			24		24		48		17:15			44		50		94	
05:30			26		32		58		17:30			38		44		82	
05:45			28	99	37	119	65	218	17:45			35	171	22	147	57	318
06:00			16		34		50		18:00			43		34		77	
06:15			33		39		72		18:15			33		35		68	
06:30			54		29		83		18:30			44		33		77	
06:45			56	159	33	135	89	294	18:45			28	148	23	125	51	273
07:00			55		41		96		19:00			32		11		43	
07:15			49		53		102		19:15			22		20		42	
07:30			46		51		97		19:30			23		24		47	
07:45			40	190	44	189	84	379	19:45			33	110	27	82	60	192
08:00			46		48		94		20:00			19		17		36	
08:15			49		43		92		20:15			20		22		42	
08:30			68		48		116		20:30			21		12		33	
08:45			56	219	39	178	95	397	20:45			19	79	10	61	29	140
09:00			48		42		90		21:00			21		15		36	
09:15			54		39		93		21:15			20		13		33	
09:30			61		35		96		21:30			12		20		32	
09:45			42	205	39	155	81	360	21:45			15	68	10	58	25	126
10:00			41		46		87		22:00			9		4		13	
10:15			64		51		115		22:15			10		13		23	
10:30			42		45		87		22:30			13		11		24	
10:45			55	202	52	194	107	396	22:45			14	46	10	38	24	84
11:00			45		48		93		23:00			9		8		17	
11:15			46		51		97		23:15			14		17		31	
11:30			46		78		124		23:30			11		4		15	
11:45			62	199	45	222	107	421	23:45			8	42	6	35	14	77
TOTALS				1486		1428		**2914**	**TOTALS**				1823		1630		**3453**
SPLIT %				51.0%		49.0%		**45.8%**	**SPLIT %**				52.8%		47.2%		**54.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,309	3,058	6,367

AM Peak Hour			11:45	10:45	**11:15**	**PM Peak Hour**			15:30	14:15	**15:00**
AM Pk Volume			238	229	**435**	**PM Pk Volume**			260	239	**486**
Pk Hr Factor			0.944	0.734	**0.877**	**Pk Hr Factor**			0.844	0.919	**0.880**
7 - 9 Volume	0	0	409	367	**776**	**4 - 6 Volume**	0	0	386	356	**742**
7 - 9 Peak Hour			08:00	07:15	**08:00**	**4 - 6 Peak Hour**			16:15	16:00	**16:00**
7 - 9 Pk Volume	0	0	219	196	**397**	**4 - 6 Pk Volume**	0	0	216	209	**424**
Pk Hr Factor	0.000	0.000	0.805	0.925	**0.856**	**Pk Hr Factor**	0.000	0.000	0.931	0.871	**0.938**

Prepared by NDS/ATD

VOLUME

Roth Rd E/O Mc Kinley Ave

Day: Wednesday
Date: 5/1/2019

City: Manteca
Project #: CA19_7160_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,283	2,925	6,208

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			5		12		17		12:00			63		43		106	
00:15			8		4		12		12:15			47		68		115	
00:30			7		8		15		12:30			56		50		106	
00:45			6	26	0	24	6	50	12:45			55	221	55	216	110	437
01:00			4		15		19		13:00			71		44		115	
01:15			7		6		13		13:15			57		41		98	
01:30			4		9		13		13:30			80		54		134	
01:45			9	24	3	33	12	57	13:45			52	260	47	186	99	446
02:00			11		6		17		14:00			58		49		107	
02:15			7		5		12		14:15			56		51		107	
02:30			6		12		18		14:30			59		58		117	
02:45			10	34	19	42	29	76	14:45			43	216	61	219	104	435
03:00			11		10		21		15:00			58		51		109	
03:15			13		12		25		15:15			52		46		98	
03:30			11		16		27		15:30			76		72		148	
03:45			13	48	12	50	25	98	15:45			56	242	42	211	98	453
04:00			7		21		28		16:00			61		50		111	
04:15			16		18		34		16:15			50		48		98	
04:30			23		20		43		16:30			50		36		86	
04:45			9	55	20	79	29	134	16:45			52	213	50	184	102	397
05:00			18		21		39		17:00			55		46		101	
05:15			16		15		31		17:15			47		35		82	
05:30			39		18		57		17:30			52		39		91	
05:45			27	100	34	88	61	188	17:45			41	195	52	172	93	367
06:00			14		44		58		18:00			29		26		55	
06:15			23		23		46		18:15			39		27		66	
06:30			40		31		71		18:30			33		28		61	
06:45			57	134	25	123	82	257	18:45			22	123	22	103	44	226
07:00			30		41		71		19:00			29		20		49	
07:15			44		42		86		19:15			23		23		46	
07:30			43		35		78		19:30			19		19		38	
07:45			53	170	38	156	91	326	19:45			27	98	18	80	45	178
08:00			43		40		83		20:00			13		23		36	
08:15			50		37		87		20:15			22		15		37	
08:30			49		46		95		20:30			29		15		44	
08:45			55	197	35	158	90	355	20:45			19	83	15	68	34	151
09:00			52		45		97		21:00			17		20		37	
09:15			46		28		74		21:15			28		14		42	
09:30			50		43		93		21:30			18		15		33	
09:45			57	205	47	163	104	368	21:45			15	78	13	62	28	140
10:00			58		55		113		22:00			19		14		33	
10:15			40		46		86		22:15			18		21		39	
10:30			58		44		102		22:30			20		15		35	
10:45			67	223	51	196	118	419	22:45			19	76	9	59	28	135
11:00			57		60		117		23:00			8		6		14	
11:15			50		45		95		23:15			9		9		18	
11:30			53		57		110		23:30			10		6		16	
11:45			66	226	66	228	132	454	23:45			9	36	4	25	13	61
TOTALS				1442		1340		**2782**	**TOTALS**				1841		1585		**3426**
SPLIT %				51.8%		48.2%		**44.8%**	**SPLIT %**				53.7%		46.3%		**55.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,283	2,925	6,208

AM Peak Hour			10:30	11:30	**11:30**	**PM Peak Hour**			12:45	14:45	**14:45**
AM Pk Volume			232	234	**463**	**PM Pk Volume**			263	230	**459**
Pk Hr Factor			0.866	0.860	**0.877**	**Pk Hr Factor**			0.822	0.799	**0.775**
7 - 9 Volume	0	0	367	314	**681**	**4 - 6 Volume**	0	0	408	356	**764**
7 - 9 Peak Hour			08:00	07:45	**07:45**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	197	161	**356**	**4 - 6 Pk Volume**	0	0	213	184	**397**
Pk Hr Factor	0.000	0.000	0.895	0.875	**0.937**	**Pk Hr Factor**	0.000	0.000	0.873	0.920	**0.894**

Appendix B

Analysis Worksheets for
Existing (2019) Conditions

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	36	41	58	41	45
Future Vol, veh/h	97	36	41	58	41	45
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	52	52	74	74
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	149	55	79	112	55	61

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	306	135	0	0	191	0
Stage 1	135	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	678	903	-	-	1359	-
Stage 1	882	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	650	903	-	-	1359	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	650	903	1359	-
HCM Lane V/C Ratio	-	-	0.23	0.061	0.041	-
HCM Control Delay (s)	-	-	12.2	9.2	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.1	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	65	22	142	85	0	0	0	0	203	2	52
Future Vol, veh/h	0	65	22	142	85	0	0	0	0	203	2	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	56	56	79	79	79	92	92	92	88	88	88
Heavy Vehicles, %	12	12	12	40	40	40	40	40	40	20	20	20
Mvmt Flow	0	116	39	180	108	0	0	0	0	231	2	59

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	155	0	0				604	623	54
Stage 1	-	-	-	-	-	-				468	468	-
Stage 2	-	-	-	-	-	-				136	155	-
Critical Hdwy	-	-	-	4.7	-	-				6.9	6.8	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.1	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.7	5.8	-
Follow-up Hdwy	-	-	-	2.58	-	-				3.69	4.19	3.49
Pot Cap-1 Maneuver	0	-	-	1204	-	0				411	372	950
Stage 1	0	-	-	-	-	0				556	524	-
Stage 2	0	-	-	-	-	0				843	732	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1204	-	-				349	0	950
Mov Cap-2 Maneuver	-	-	-	-	-	-				349	0	-
Stage 1	-	-	-	-	-	-				473	0	-
Stage 2	-	-	-	-	-	-				843	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.3	19.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1204	-	349	481
HCM Lane V/C Ratio	-	-	0.149	-	0.441	0.287
HCM Control Delay (s)	-	-	8.5	-	23.2	15.5
HCM Lane LOS	-	-	A	-	C	C
HCM 95th %tile Q(veh)	-	-	0.5	-	2.2	1.2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	252	0	0	212	265	15	3	160	0	0	0
Future Vol, veh/h	29	252	0	0	212	265	15	3	160	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	81	81	81	93	93	93	92	92	92
Heavy Vehicles, %	20	20	20	34	34	34	49	49	49	40	40	40
Mvmt Flow	32	277	0	0	262	327	16	3	172	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	589	0	-	-	-	0	767	930	139
Stage 1	-	-	-	-	-	-	341	341	-
Stage 2	-	-	-	-	-	-	426	589	-
Critical Hdwy	4.4	-	-	-	-	-	7.335	7.235	7.635
Critical Hdwy Stg 1	-	-	-	-	-	-	6.535	6.235	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.135	6.235	-
Follow-up Hdwy	2.39	-	-	-	-	-	3.9655	4.4655	3.7655
Pot Cap-1 Maneuver	886	-	0	0	-	-	282	210	765
Stage 1	-	-	0	0	-	-	586	548	-
Stage 2	-	-	0	0	-	-	550	410	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	886	-	-	-	-	-	272	0	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	272	0	-
Stage 1	-	-	-	-	-	-	565	0	-
Stage 2	-	-	-	-	-	-	550	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	272	765	886	-	-	-
HCM Lane V/C Ratio	0.071	0.225	0.036	-	-	-
HCM Control Delay (s)	19.2	11.1	9.2	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.2	0.9	0.1	-	-	-

Intersection	
Intersection Delay, s/veh	34.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	222	128	35	198	30	234	44	27	32	18	42
Future Vol, veh/h	59	222	128	35	198	30	234	44	27	32	18	42
Peak Hour Factor	0.94	0.94	0.94	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	32	32	32	46	46	46	13	13	13	53	53	53
Mvmt Flow	63	236	136	44	251	38	296	56	34	41	23	53
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	17.9	47.9	46.7	18.1
HCM LOS	C	E	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	84%	0%	100%	0%	0%	13%	35%
Vol Thru, %	16%	0%	0%	100%	0%	75%	20%
Vol Right, %	0%	100%	0%	0%	100%	11%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	278	27	59	222	128	263	92
LT Vol	234	0	59	0	0	35	32
Through Vol	44	0	0	222	0	198	18
RT Vol	0	27	0	0	128	30	42
Lane Flow Rate	352	34	63	236	136	333	116
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.879	0.074	0.157	0.557	0.294	0.857	0.332
Departure Headway (Hd)	8.992	7.839	9.012	8.496	7.773	9.27	10.261
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	405	457	398	425	462	393	351
Service Time	6.74	5.586	6.765	6.248	5.525	7.021	8.026
HCM Lane V/C Ratio	0.869	0.074	0.158	0.555	0.294	0.847	0.33
HCM Control Delay	50.2	11.2	13.4	21.5	13.8	47.9	18.1
HCM Lane LOS	F	B	B	C	B	E	C
HCM 95th-tile Q	8.8	0.2	0.6	3.3	1.2	8.2	1.4

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	165	156	14	36	37
Future Vol, veh/h	23	165	156	14	36	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	79	79	79	79
Heavy Vehicles, %	34	34	39	39	6	6
Mvmt Flow	27	196	197	18	46	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	215	0	-	0	456	206
Stage 1	-	-	-	-	206	-
Stage 2	-	-	-	-	250	-
Critical Hdwy	4.44	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.506	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1186	-	-	-	555	824
Stage 1	-	-	-	-	819	-
Stage 2	-	-	-	-	782	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1186	-	-	-	541	824
Mov Cap-2 Maneuver	-	-	-	-	541	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	782	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1186	-	-	-	655
HCM Lane V/C Ratio	0.023	-	-	-	0.141
HCM Control Delay (s)	8.1	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	60	100	254	130	67
Future Volume (veh/h)	43	60	100	254	130	67
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1470	1470	1796	1796	1589	1589
Adj Flow Rate, veh/h	54	75	120	306	140	72
Peak Hour Factor	0.80	0.80	0.83	0.83	0.93	0.93
Percent Heavy Veh, %	29	29	7	7	21	21
Cap, veh/h	132	117	156	1231	952	465
Arrive On Green	0.09	0.09	0.09	0.69	0.48	0.48
Sat Flow, veh/h	1400	1246	1711	1796	2045	959
Grp Volume(v), veh/h	54	75	120	306	106	106
Grp Sat Flow(s),veh/h/ln	1400	1246	1711	1796	1509	1416
Q Serve(g_s), s	1.5	2.4	2.8	2.6	1.6	1.7
Cycle Q Clear(g_c), s	1.5	2.4	2.8	2.6	1.6	1.7
Prop In Lane	1.00	1.00	1.00			0.68
Lane Grp Cap(c), veh/h	132	117	156	1231	731	686
V/C Ratio(X)	0.41	0.64	0.77	0.25	0.14	0.15
Avail Cap(c_a), veh/h	617	549	230	1231	731	686
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	17.8	18.1	2.4	5.8	5.9
Incr Delay (d2), s/veh	2.0	5.7	8.9	0.5	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.2	1.3	0.4	0.4	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	23.5	27.0	2.9	6.3	6.4
LnGrp LOS	B	C	C	A	A	A
Approach Vol, veh/h	129			426	212	
Approach Delay, s/veh	21.8			9.7	6.3	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		8.3	8.2	24.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		4.6		4.4	4.8	3.7
Green Ext Time (p_c), s		1.8		0.3	0.0	1.0

Intersection Summary						
HCM 6th Ctrl Delay			10.8			
HCM 6th LOS			B			

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	40	57	27	48	51
Future Vol, veh/h	31	40	57	27	48	51
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	88	88	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	45	65	31	62	66

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	271	81	0	0	96	0
Stage 1	81	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	718	979	-	-	1498	-
Stage 1	942	-	-	-	-	-
Stage 2	842	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	687	979	-	-	1498	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	842	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	687	979	1498	-
HCM Lane V/C Ratio	-	-	0.051	0.046	0.042	-
HCM Control Delay (s)	-	-	10.5	8.9	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0.1	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	60	15	137	47	0	0	0	0	207	4	24
Future Vol, veh/h	0	60	15	137	47	0	0	0	0	207	4	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	81	81	81	92	92	92	85	85	85
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	67	17	169	58	0	0	0	0	244	5	28

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	84	0	0				472	480	29
Stage 1	-	-	-	-	-	-				396	396	-
Stage 2	-	-	-	-	-	-				76	84	-
Critical Hdwy	-	-	-	4.445	-	-				6.825	6.725	7.125
Critical Hdwy Stg 1	-	-	-	-	-	-				6.025	5.725	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.625	5.725	-
Follow-up Hdwy	-	-	-	2.4185	-	-				3.6425	4.1425	3.4425
Pot Cap-1 Maneuver	0	-	-	1380	-	0				508	461	1001
Stage 1	0	-	-	-	-	0				618	576	-
Stage 2	0	-	-	-	-	0				912	798	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1380	-	-				446	0	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-				446	0	-
Stage 1	-	-	-	-	-	-				543	0	-
Stage 2	-	-	-	-	-	-				912	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1380	-	446	520
HCM Lane V/C Ratio	-	-	0.123	-	0.364	0.219
HCM Control Delay (s)	-	-	8	-	17.6	13.9
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	-	1.6	0.8

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	252	0	1	0	171	182	13	4	164	0	0	0
Future Vol, veh/h	15	252	0	1	0	171	182	13	4	164	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	82	82	82	82	82	82	82	92	92	92
Heavy Vehicles, %	14	14	14	20	20	20	20	29	29	29	2	2	2
Mvmt Flow	17	290	0	1	0	209	222	16	5	200	0	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	431	0	-	290	-	-	0	644	757	145
Stage 1	-	-	-	-	-	-	-	324	324	-
Stage 2	-	-	-	-	-	-	-	320	433	-
Critical Hdwy	4.31	-	-	7.2	-	-	-	7.035	6.935	7.335
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.235	5.935	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.835	5.935	-
Follow-up Hdwy	2.333	-	-	3.29	-	-	-	3.7755	4.2755	3.5755
Pot Cap-1 Maneuver	1056	-	0	697	0	-	-	373	297	805
Stage 1	-	-	0	-	0	-	-	642	595	-
Stage 2	-	-	0	-	0	-	-	668	527	-
Platoon blocked, %		-				-	-			
Mov Cap-1 Maneuver	1056	-	-	555	-	-	-	366	0	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	366	0	-
Stage 1	-	-	-	-	-	-	-	630	0	-
Stage 2	-	-	-	-	-	-	-	668	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	366	805	1056	-	-	-
HCM Lane V/C Ratio	0.057	0.248	0.016	-	-	-
HCM Control Delay (s)	15.4	10.9	8.5	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.2	1	0.1	-	-	-

Intersection	
Intersection Delay, s/veh	20.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	35	199	184	54	132	21	1	178	49	72	37	34	41
Future Vol, veh/h	35	199	184	54	132	21	1	178	49	72	37	34	41
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.74	0.74	0.74
Heavy Vehicles, %	20	20	20	31	31	31	11	11	11	11	23	23	23
Mvmt Flow	42	237	219	68	165	26	1	220	60	89	50	46	55
Number of Lanes	1	1	1	0	1	0	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	16.2	26.5	23.7	17.5
HCM LOS	C	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	26%	33%
Vol Thru, %	22%	0%	0%	100%	0%	64%	30%
Vol Right, %	0%	100%	0%	0%	100%	10%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	228	72	35	199	184	207	112
LT Vol	179	0	35	0	0	54	37
Through Vol	49	0	0	199	0	132	34
RT Vol	0	72	0	0	184	21	41
Lane Flow Rate	281	89	42	237	219	259	151
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.671	0.184	0.095	0.506	0.424	0.644	0.384
Departure Headway (Hd)	8.687	7.567	8.303	7.69	6.972	8.962	9.143
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	419	477	434	467	513	406	395
Service Time	6.387	5.267	6.003	5.489	4.77	6.662	6.858
HCM Lane V/C Ratio	0.671	0.187	0.097	0.507	0.427	0.638	0.382
HCM Control Delay	27.4	12	11.9	18.2	14.9	26.5	17.5
HCM Lane LOS	D	B	B	C	B	D	C
HCM 95th-tile Q	4.8	0.7	0.3	2.8	2.1	4.4	1.8

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	153	124	25	21	34
Future Vol, veh/h	52	153	124	25	21	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	74	74	76	76
Heavy Vehicles, %	20	20	28	28	4	4
Mvmt Flow	61	180	168	34	28	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	202	0	-	0	487	185
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	302	-
Critical Hdwy	4.3	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.38	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1269	-	-	-	536	852
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1269	-	-	-	508	852
Mov Cap-2 Maneuver	-	-	-	-	508	-
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	745	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1269	-	-	-	677
HCM Lane V/C Ratio	0.048	-	-	-	0.107
HCM Control Delay (s)	8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	78	108	65	206	230	57
Future Volume (veh/h)	78	108	65	206	230	57
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1633	1633	1811	1811	1737	1737
Adj Flow Rate, veh/h	98	135	82	261	267	66
Peak Hour Factor	0.80	0.80	0.79	0.79	0.86	0.86
Percent Heavy Veh, %	18	18	6	6	11	11
Cap, veh/h	222	197	125	1175	1243	302
Arrive On Green	0.14	0.14	0.07	0.65	0.47	0.47
Sat Flow, veh/h	1555	1384	1725	1811	2720	639
Grp Volume(v), veh/h	98	135	82	261	166	167
Grp Sat Flow(s),veh/h/ln	1555	1384	1725	1811	1650	1622
Q Serve(g_s), s	2.5	4.0	2.0	2.6	2.5	2.6
Cycle Q Clear(g_c), s	2.5	4.0	2.0	2.6	2.5	2.6
Prop In Lane	1.00	1.00	1.00			0.39
Lane Grp Cap(c), veh/h	222	197	125	1175	779	766
V/C Ratio(X)	0.44	0.68	0.66	0.22	0.21	0.22
Avail Cap(c_a), veh/h	649	577	220	1175	779	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	17.6	19.5	3.1	6.7	6.7
Incr Delay (d2), s/veh	1.4	4.1	5.7	0.4	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.2	0.9	0.5	0.8	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.3	21.7	25.2	3.5	7.3	7.4
LnGrp LOS	B	C	C	A	A	A
Approach Vol, veh/h	233			343	333	
Approach Delay, s/veh	20.3			8.7	7.3	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		10.7	7.6	24.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		4.6		6.0	4.0	4.6
Green Ext Time (p_c), s		1.5		0.6	0.0	1.6

Intersection Summary			
HCM 6th Ctrl Delay		11.2	
HCM 6th LOS		B	

Appendix C

Analysis Worksheets for
Existing (2019) plus Approved and Pending Project Conditions

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	36	45	63	41	45
Future Vol, veh/h	97	36	45	63	41	45
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	52	52	74	74
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	149	55	87	121	55	61

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	319	148	0	0	208	0
Stage 1	148	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	666	888	-	-	1339	-
Stage 1	870	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	637	888	-	-	1339	-
Mov Cap-2 Maneuver	637	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	637	888	1339	-
HCM Lane V/C Ratio	-	-	0.234	0.062	0.041	-
HCM Control Delay (s)	-	-	12.4	9.3	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.1	-

Intersection	
Int Delay, s/veh	16.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	84	22	172	85	0	0	0	0	275	5	52
Future Vol, veh/h	0	84	22	172	85	0	0	0	0	275	5	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	56	56	79	79	79	92	92	92	88	88	88
Heavy Vehicles, %	12	12	12	40	40	40	40	40	40	20	20	20
Mvmt Flow	0	150	39	218	108	0	0	0	0	313	6	59

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	189	0	0				714	733	54
Stage 1	-	-	-	-	-	-				544	544	-
Stage 2	-	-	-	-	-	-				170	189	-
Critical Hdwy	-	-	-	4.7	-	-				6.9	6.8	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.1	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.7	5.8	-
Follow-up Hdwy	-	-	-	2.58	-	-				3.69	4.19	3.49
Pot Cap-1 Maneuver	0	-	-	1166	-	0				350	320	950
Stage 1	0	-	-	-	-	0				506	483	-
Stage 2	0	-	-	-	-	0				812	706	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1166	-	-				~ 285	0	950
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 285	0	-
Stage 1	-	-	-	-	-	-				411	0	-
Stage 2	-	-	-	-	-	-				812	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	34.8
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1166	-	285	382
HCM Lane V/C Ratio	-	-	0.187	-	0.731	0.442
HCM Control Delay (s)	-	-	8.8	-	45.5	21.7
HCM Lane LOS	-	-	A	-	E	C
HCM 95th %tile Q(veh)	-	-	0.7	-	5.3	2.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	316	0	0	225	284	15	3	200	0	0	0
Future Vol, veh/h	43	316	0	0	225	284	15	3	200	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	81	81	81	93	93	93	92	92	92
Heavy Vehicles, %	20	20	20	34	34	34	49	49	49	40	40	40
Mvmt Flow	47	347	0	0	278	351	16	3	215	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	629	0	-	-	-	0	895	1070	174
Stage 1	-	-	-	-	-	-	441	441	-
Stage 2	-	-	-	-	-	-	454	629	-
Critical Hdwy	4.4	-	-	-	-	-	7.335	7.235	7.635
Critical Hdwy Stg 1	-	-	-	-	-	-	6.535	6.235	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.135	6.235	-
Follow-up Hdwy	2.39	-	-	-	-	-	3.9655	4.4655	3.7655
Pot Cap-1 Maneuver	854	-	0	0	-	-	231	170	723
Stage 1	-	-	0	0	-	-	515	488	-
Stage 2	-	-	0	0	-	-	532	391	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	854	-	-	-	-	-	218	0	723
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	0	-
Stage 1	-	-	-	-	-	-	487	0	-
Stage 2	-	-	-	-	-	-	532	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.1	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	218	723	854	-	-	-
HCM Lane V/C Ratio	0.089	0.297	0.055	-	-	-
HCM Control Delay (s)	23.1	12.1	9.5	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.3	1.2	0.2	-	-	-

Intersection	
Intersection Delay, s/veh	57.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	295	144	35	229	42	234	44	51	39	18	66
Future Vol, veh/h	77	295	144	35	229	42	234	44	51	39	18	66
Peak Hour Factor	0.94	0.94	0.94	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	32	32	32	46	46	46	13	13	13	53	53	53
Mvmt Flow	82	314	153	44	290	53	296	56	65	49	23	84
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	29.2	108.6	61.1	24
HCM LOS	D	F	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	84%	0%	100%	0%	0%	11%	32%
Vol Thru, %	16%	0%	0%	100%	0%	75%	15%
Vol Right, %	0%	100%	0%	0%	100%	14%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	278	51	77	295	144	306	123
LT Vol	234	0	77	0	0	35	39
Through Vol	44	0	0	295	0	229	18
RT Vol	0	51	0	0	144	42	66
Lane Flow Rate	352	65	82	314	153	387	156
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.955	0.155	0.217	0.787	0.354	1.095	0.47
Departure Headway (Hd)	10.227	9.058	9.939	9.418	8.689	10.177	11.506
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	359	398	364	386	417	356	315
Service Time	7.927	6.758	7.639	7.118	6.389	7.957	9.206
HCM Lane V/C Ratio	0.981	0.163	0.225	0.813	0.367	1.087	0.495
HCM Control Delay	69.9	13.4	15.4	39.2	16.1	108.6	24
HCM Lane LOS	F	B	C	E	C	F	C
HCM 95th-tile Q	10.3	0.5	0.8	6.7	1.6	14.3	2.4

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	288	204	17	36	37
Future Vol, veh/h	29	288	204	17	36	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	79	79	79	79
Heavy Vehicles, %	34	34	39	39	6	6
Mvmt Flow	35	343	258	22	46	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	280	0	-	0	682	269
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	4.44	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.506	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1119	-	-	-	409	760
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1119	-	-	-	393	760
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	659	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1119	-	-	-	520
HCM Lane V/C Ratio	0.031	-	-	-	0.178
HCM Control Delay (s)	8.3	0	-	-	13.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	53	70	115	286	147	79
Future Volume (veh/h)	53	70	115	286	147	79
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1470	1470	1796	1796	1589	1589
Adj Flow Rate, veh/h	66	88	139	345	158	85
Peak Hour Factor	0.80	0.80	0.83	0.83	0.93	0.93
Percent Heavy Veh, %	29	29	7	7	21	21
Cap, veh/h	145	129	175	1218	903	462
Arrive On Green	0.10	0.10	0.10	0.68	0.47	0.47
Sat Flow, veh/h	1400	1246	1711	1796	2011	988
Grp Volume(v), veh/h	66	88	139	345	122	121
Grp Sat Flow(s),veh/h/ln	1400	1246	1711	1796	1509	1411
Q Serve(g_s), s	1.8	2.8	3.3	3.2	1.9	2.1
Cycle Q Clear(g_c), s	1.8	2.8	3.3	3.2	1.9	2.1
Prop In Lane	1.00	1.00	1.00			0.70
Lane Grp Cap(c), veh/h	145	129	175	1218	705	659
V/C Ratio(X)	0.45	0.68	0.80	0.28	0.17	0.18
Avail Cap(c_a), veh/h	611	543	228	1218	705	659
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	17.8	18.1	2.6	6.4	6.4
Incr Delay (d2), s/veh	2.2	6.2	13.6	0.6	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.1	1.8	0.5	0.5	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.6	24.0	31.7	3.2	6.9	7.0
LnGrp LOS	B	C	C	A	A	A
Approach Vol, veh/h	154			484	243	
Approach Delay, s/veh	22.1			11.4	7.0	
Approach LOS	C			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		8.8	8.7	23.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		5.2		4.8	5.3	4.1
Green Ext Time (p_c), s		2.1		0.4	0.0	1.1

Intersection Summary						
HCM 6th Ctrl Delay			12.1			
HCM 6th LOS			B			

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	86	112	53	63	51
Future Vol, veh/h	48	86	112	53	63	51
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	88	88	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	97	127	60	82	66

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	387	157	0	0	187	0
Stage 1	157	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	616	889	-	-	1387	-
Stage 1	871	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	578	889	-	-	1387	-
Mov Cap-2 Maneuver	578	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	578	889	1387	-
HCM Lane V/C Ratio	-	-	0.093	0.109	0.059	-
HCM Control Delay (s)	-	-	11.9	9.5	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.4	0.2	-

Intersection	
Int Delay, s/veh	13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	80	36	171	96	0	0	0	0	266	4	38
Future Vol, veh/h	0	80	36	171	96	0	0	0	0	266	4	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	81	81	81	92	92	92	85	85	85
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	90	40	211	119	0	0	0	0	313	5	45

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	130	0	0				651	671	60
Stage 1	-	-	-	-	-	-				541	541	-
Stage 2	-	-	-	-	-	-				110	130	-
Critical Hdwy	-	-	-	4.445	-	-				6.825	6.725	7.125
Critical Hdwy Stg 1	-	-	-	-	-	-				6.025	5.725	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.625	5.725	-
Follow-up Hdwy	-	-	-	2.4185	-	-				3.6425	4.1425	3.4425
Pot Cap-1 Maneuver	0	-	-	1324	-	0				393	356	956
Stage 1	0	-	-	-	-	0				519	494	-
Stage 2	0	-	-	-	-	0				879	761	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1324	-	-				331	0	956
Mov Cap-2 Maneuver	-	-	-	-	-	-				331	0	-
Stage 1	-	-	-	-	-	-				436	0	-
Stage 2	-	-	-	-	-	-				879	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.3	26.8
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1324	-	331	412
HCM Lane V/C Ratio	-	-	0.159	-	0.63	0.373
HCM Control Delay (s)	-	-	8.2	-	32.7	18.8
HCM Lane LOS	-	-	A	-	D	C
HCM 95th %tile Q(veh)	-	-	0.6	-	4	1.7

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	35	311	0	1	0	231	375	36	5	194	0	0	0
Future Vol, veh/h	35	311	0	1	0	231	375	36	5	194	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	82	82	82	82	82	82	82	92	92	92
Heavy Vehicles, %	14	14	14	20	20	20	20	29	29	29	2	2	2
Mvmt Flow	40	357	0	1	0	282	457	44	6	237	0	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	739	0	-	357	-	-	0	948	1178	179
Stage 1	-	-	-	-	-	-	-	437	437	-
Stage 2	-	-	-	-	-	-	-	511	741	-
Critical Hdwy	4.31	-	-	7.2	-	-	-	7.035	6.935	7.335
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.235	5.935	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.835	5.935	-
Follow-up Hdwy	2.333	-	-	3.29	-	-	-	3.7755	4.2755	3.5755
Pot Cap-1 Maneuver	802	-	0	628	0	-	-	236	162	763
Stage 1	-	-	0	-	0	-	-	558	525	-
Stage 2	-	-	0	-	0	-	-	538	373	-
Platoon blocked, %		-				-	-			
Mov Cap-1 Maneuver	802	-	-	468	-	-	-	223	0	763
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	223	0	-
Stage 1	-	-	-	-	-	-	-	528	0	-
Stage 2	-	-	-	-	-	-	-	538	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	223	763	802	-	-	-
HCM Lane V/C Ratio	0.224	0.31	0.05	-	-	-
HCM Control Delay (s)	25.7	11.8	9.7	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	0.8	1.3	0.2	-	-	-

Intersection	
Intersection Delay, s/veh	141.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	76	279	184	54	335	62	1	206	59	86	60	53	65
Future Vol, veh/h	76	279	184	54	335	62	1	206	59	86	60	53	65
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.74	0.74	0.74
Heavy Vehicles, %	20	20	20	31	31	31	11	11	11	11	23	23	23
Mvmt Flow	90	332	219	68	419	78	1	254	73	106	81	72	88
Number of Lanes	1	1	1	0	1	0	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	39	361.2	63.9	43.5
HCM LOS	E	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	12%	34%
Vol Thru, %	22%	0%	0%	100%	0%	74%	30%
Vol Right, %	0%	100%	0%	0%	100%	14%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	266	86	76	279	184	451	178
LT Vol	207	0	76	0	0	54	60
Through Vol	59	0	0	279	0	335	53
RT Vol	0	86	0	0	184	62	65
Lane Flow Rate	328	106	90	332	219	564	241
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.956	0.277	0.247	0.862	0.526	1.718	0.726
Departure Headway (Hd)	12.343	11.184	11.482	10.954	10.214	10.973	12.92
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	296	324	315	332	355	338	281
Service Time	10.043	8.884	9.182	8.654	7.914	8.673	10.62
HCM Lane V/C Ratio	1.108	0.327	0.286	1	0.617	1.669	0.858
HCM Control Delay	78.7	18.1	17.9	54.8	23.7	361.2	43.5
HCM Lane LOS	F	C	C	F	C	F	E
HCM 95th-tile Q	9.5	1.1	1	7.9	2.9	35.4	5.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	298	318	38	21	45
Future Vol, veh/h	67	298	318	38	21	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	74	74	76	76
Heavy Vehicles, %	20	20	28	28	4	4
Mvmt Flow	79	351	430	51	28	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	481	0	-	0	965	456
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	509	-
Critical Hdwy	4.3	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.38	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	994	-	-	-	280	600
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	994	-	-	-	252	600
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	994	-	-	-	417
HCM Lane V/C Ratio	0.079	-	-	-	0.208
HCM Control Delay (s)	8.9	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	169	103	319	356	91
Future Volume (veh/h)	125	169	103	319	356	91
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1633	1633	1811	1811	1737	1737
Adj Flow Rate, veh/h	156	211	130	404	414	106
Peak Hour Factor	0.80	0.80	0.79	0.79	0.86	0.86
Percent Heavy Veh, %	18	18	6	6	11	11
Cap, veh/h	316	281	164	1092	1072	272
Arrive On Green	0.20	0.20	0.10	0.60	0.41	0.41
Sat Flow, veh/h	1555	1384	1725	1811	2694	661
Grp Volume(v), veh/h	156	211	130	404	261	259
Grp Sat Flow(s),veh/h/ln	1555	1384	1725	1811	1650	1618
Q Serve(g_s), s	4.1	6.7	3.4	5.3	5.1	5.2
Cycle Q Clear(g_c), s	4.1	6.7	3.4	5.3	5.1	5.2
Prop In Lane	1.00	1.00	1.00			0.41
Lane Grp Cap(c), veh/h	316	281	164	1092	678	665
V/C Ratio(X)	0.49	0.75	0.79	0.37	0.38	0.39
Avail Cap(c_a), veh/h	603	537	204	1092	678	665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	17.4	20.6	4.7	9.6	9.6
Incr Delay (d2), s/veh	1.2	4.0	15.5	1.0	1.6	1.7
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	0.3	1.9	1.5	1.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	21.4	36.1	5.7	11.2	11.3
LnGrp LOS	B	C	D	A	B	B
Approach Vol, veh/h	367			534	520	
Approach Delay, s/veh	19.8			13.1	11.3	
Approach LOS	B			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		13.9	8.9	23.6
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		7.3		8.7	5.4	7.2
Green Ext Time (p_c), s		2.5		0.9	0.0	2.4

Intersection Summary		
HCM 6th Ctrl Delay		14.1
HCM 6th LOS		B

Appendix D

Analysis Worksheets for
Existing (2019) plus Approved and Pending Project plus Proposed Project Conditions

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	97	36	45	63	41	45
Future Vol, veh/h	97	36	45	63	41	45
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	52	52	74	74
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	149	55	87	121	55	61

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	319	148	0	0	208	0
Stage 1	148	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	666	888	-	-	1339	-
Stage 1	870	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	637	888	-	-	1339	-
Mov Cap-2 Maneuver	637	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	3.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	637	888	1339	-
HCM Lane V/C Ratio	-	-	0.234	0.062	0.041	-
HCM Control Delay (s)	-	-	12.4	9.3	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.1	-

Intersection	
Int Delay, s/veh	18.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	84	22	177	85	0	0	0	0	279	5	52
Future Vol, veh/h	0	84	22	177	85	0	0	0	0	279	5	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	56	56	79	79	79	92	92	92	88	88	88
Heavy Vehicles, %	12	12	12	40	40	40	40	40	40	20	20	20
Mvmt Flow	0	150	39	224	108	0	0	0	0	317	6	59

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	189	0	0				726	745	54
Stage 1	-	-	-	-	-	-				556	556	-
Stage 2	-	-	-	-	-	-				170	189	-
Critical Hdwy	-	-	-	4.7	-	-				6.9	6.8	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-				6.1	5.8	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.7	5.8	-
Follow-up Hdwy	-	-	-	2.58	-	-				3.69	4.19	3.49
Pot Cap-1 Maneuver	0	-	-	1166	-	0				344	315	950
Stage 1	0	-	-	-	-	0				499	476	-
Stage 2	0	-	-	-	-	0				812	706	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1166	-	-				~ 278	0	950
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 278	0	-
Stage 1	-	-	-	-	-	-				403	0	-
Stage 2	-	-	-	-	-	-				812	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	6	37.6
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1166	-	278	372
HCM Lane V/C Ratio	-	-	0.192	-	0.76	0.458
HCM Control Delay (s)	-	-	8.8	-	49.7	22.6
HCM Lane LOS	-	-	A	-	E	C
HCM 95th %tile Q(veh)	-	-	0.7	-	5.7	2.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	320	0	0	230	290	15	3	204	0	0	0
Future Vol, veh/h	43	320	0	0	230	290	15	3	204	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	81	81	81	93	93	93	92	92	92
Heavy Vehicles, %	20	20	20	34	34	34	49	49	49	40	40	40
Mvmt Flow	47	352	0	0	284	358	16	3	219	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	642	0	-	-	-	0	909	1088	176
Stage 1	-	-	-	-	-	-	446	446	-
Stage 2	-	-	-	-	-	-	463	642	-
Critical Hdwy	4.4	-	-	-	-	-	7.335	7.235	7.635
Critical Hdwy Stg 1	-	-	-	-	-	-	6.535	6.235	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.135	6.235	-
Follow-up Hdwy	2.39	-	-	-	-	-	3.9655	4.4655	3.7655
Pot Cap-1 Maneuver	844	-	0	0	-	-	225	165	721
Stage 1	-	-	0	0	-	-	511	485	-
Stage 2	-	-	0	0	-	-	526	385	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	844	-	-	-	-	-	212	0	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	212	0	-
Stage 1	-	-	-	-	-	-	482	0	-
Stage 2	-	-	-	-	-	-	526	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.1	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	212	721	844	-	-	-
HCM Lane V/C Ratio	0.091	0.304	0.056	-	-	-
HCM Control Delay (s)	23.7	12.2	9.5	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.3	1.3	0.2	-	-	-

Intersection	
Intersection Delay, s/veh	64.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	303	144	35	239	45	234	44	51	41	18	66
Future Vol, veh/h	77	303	144	35	239	45	234	44	51	41	18	66
Peak Hour Factor	0.94	0.94	0.94	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	32	32	32	46	46	46	13	13	13	53	53	53
Mvmt Flow	82	322	153	44	303	57	296	56	65	52	23	84
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	31.5	128.6	61.9	24.7
HCM LOS	D	F	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	84%	0%	100%	0%	0%	11%	33%
Vol Thru, %	16%	0%	0%	100%	0%	75%	14%
Vol Right, %	0%	100%	0%	0%	100%	14%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	278	51	77	303	144	319	125
LT Vol	234	0	77	0	0	35	41
Through Vol	44	0	0	303	0	239	18
RT Vol	0	51	0	0	144	45	66
Lane Flow Rate	352	65	82	322	153	404	158
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.956	0.156	0.218	0.814	0.357	1.154	0.48
Departure Headway (Hd)	10.404	9.233	10.062	9.54	8.81	10.291	11.7
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	352	391	359	384	411	355	310
Service Time	8.104	6.933	7.762	7.24	6.51	8.017	9.4
HCM Lane V/C Ratio	1	0.166	0.228	0.839	0.372	1.138	0.51
HCM Control Delay	70.8	13.6	15.5	42.8	16.3	128.6	24.7
HCM Lane LOS	F	B	C	E	C	F	C
HCM 95th-tile Q	10.2	0.5	0.8	7.2	1.6	16.1	2.5

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	298	217	17	36	37
Future Vol, veh/h	29	298	217	17	36	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	79	79	79	79
Heavy Vehicles, %	34	34	39	39	6	6
Mvmt Flow	35	355	275	22	46	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	297	0	-	0	711	286
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.44	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.506	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1102	-	-	-	394	744
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	651	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1102	-	-	-	378	744
Mov Cap-2 Maneuver	-	-	-	-	378	-
Stage 1	-	-	-	-	723	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1102	-	-	-	504
HCM Lane V/C Ratio	0.031	-	-	-	0.183
HCM Control Delay (s)	8.4	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	72	116	286	147	82
Future Volume (veh/h)	57	72	116	286	147	82
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1470	1470	1796	1796	1589	1589
Adj Flow Rate, veh/h	71	90	140	345	158	88
Peak Hour Factor	0.80	0.80	0.83	0.83	0.93	0.93
Percent Heavy Veh, %	29	29	7	7	21	21
Cap, veh/h	150	133	176	1214	886	469
Arrive On Green	0.11	0.11	0.10	0.68	0.46	0.46
Sat Flow, veh/h	1400	1246	1711	1796	1987	1009
Grp Volume(v), veh/h	71	90	140	345	123	123
Grp Sat Flow(s),veh/h/ln	1400	1246	1711	1796	1509	1407
Q Serve(g_s), s	2.0	2.9	3.3	3.2	2.0	2.1
Cycle Q Clear(g_c), s	2.0	2.9	3.3	3.2	2.0	2.1
Prop In Lane	1.00	1.00	1.00			0.72
Lane Grp Cap(c), veh/h	150	133	176	1214	701	654
V/C Ratio(X)	0.47	0.68	0.80	0.28	0.18	0.19
Avail Cap(c_a), veh/h	608	541	227	1214	701	654
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	17.8	18.2	2.7	6.5	6.5
Incr Delay (d2), s/veh	2.3	5.9	13.9	0.6	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	1.8	0.6	0.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.7	23.7	32.0	3.3	7.0	7.1
LnGrp LOS	B	C	C	A	A	A
Approach Vol, veh/h	161			485	246	
Approach Delay, s/veh	21.9			11.6	7.1	
Approach LOS	C			B	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		8.9	8.8	23.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		5.2		4.9	5.3	4.1
Green Ext Time (p_c), s		2.1		0.4	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	159	174	4	6	13
Future Vol, veh/h	10	159	174	4	6	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	40	40	2	2	2	2
Mvmt Flow	11	173	189	4	7	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	386	191
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	195	-
Critical Hdwy	4.5	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.56	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1182	-	-	-	617	851
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	838	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1182	-	-	-	611	851
Mov Cap-2 Maneuver	-	-	-	-	611	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	838	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1182	-	-	-	757
HCM Lane V/C Ratio	0.009	-	-	-	0.027
HCM Control Delay (s)	8.1	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	86	112	53	63	51
Future Vol, veh/h	48	86	112	53	63	51
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	88	88	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	97	127	60	82	66

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	387	157	0	0	187	0
Stage 1	157	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	616	889	-	-	1387	-
Stage 1	871	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	578	889	-	-	1387	-
Mov Cap-2 Maneuver	578	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	578	889	1387	-
HCM Lane V/C Ratio	-	-	0.093	0.109	0.059	-
HCM Control Delay (s)	-	-	11.9	9.5	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.4	0.2	-

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	80	36	175	96	0	0	0	0	270	4	38
Future Vol, veh/h	0	80	36	175	96	0	0	0	0	270	4	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	300	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	81	81	81	92	92	92	85	85	85
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	90	40	216	119	0	0	0	0	318	5	45

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	0	130	0	0				661	681	60
Stage 1	-	-	-	-	-	-				551	551	-
Stage 2	-	-	-	-	-	-				110	130	-
Critical Hdwy	-	-	-	4.445	-	-				6.825	6.725	7.125
Critical Hdwy Stg 1	-	-	-	-	-	-				6.025	5.725	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.625	5.725	-
Follow-up Hdwy	-	-	-	2.4185	-	-				3.6425	4.1425	3.4425
Pot Cap-1 Maneuver	0	-	-	1324	-	0				387	351	956
Stage 1	0	-	-	-	-	0				513	489	-
Stage 2	0	-	-	-	-	0				879	761	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1324	-	-				324	0	956
Mov Cap-2 Maneuver	-	-	-	-	-	-				324	0	-
Stage 1	-	-	-	-	-	-				429	0	-
Stage 2	-	-	-	-	-	-				879	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.3	28.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1324	-	324	403
HCM Lane V/C Ratio	-	-	0.163	-	0.654	0.385
HCM Control Delay (s)	-	-	8.2	-	34.8	19.4
HCM Lane LOS	-	-	A	-	D	C
HCM 95th %tile Q(veh)	-	-	0.6	-	4.3	1.8

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	35	315	0	1	0	235	380	36	5	197	0	0	0
Future Vol, veh/h	35	315	0	1	0	235	380	36	5	197	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	-	-	-	50	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	82	82	82	82	82	82	82	92	92	92
Heavy Vehicles, %	14	14	14	20	20	20	20	29	29	29	2	2	2
Mvmt Flow	40	362	0	1	0	287	463	44	6	240	0	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	750	0	-	362	-	-	0	961	1194	181
Stage 1	-	-	-	-	-	-	-	442	442	-
Stage 2	-	-	-	-	-	-	-	519	752	-
Critical Hdwy	4.31	-	-	7.2	-	-	-	7.035	6.935	7.335
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.235	5.935	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.835	5.935	-
Follow-up Hdwy	2.333	-	-	3.29	-	-	-	3.7755	4.2755	3.5755
Pot Cap-1 Maneuver	794	-	0	623	0	-	-	231	158	761
Stage 1	-	-	0	-	0	-	-	554	522	-
Stage 2	-	-	0	-	0	-	-	533	369	-
Platoon blocked, %		-				-	-			
Mov Cap-1 Maneuver	794	-	-	462	-	-	-	219	0	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	219	0	-
Stage 1	-	-	-	-	-	-	-	524	0	-
Stage 2	-	-	-	-	-	-	-	533	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	219	761	794	-	-	-
HCM Lane V/C Ratio	0.228	0.316	0.051	-	-	-
HCM Control Delay (s)	26.2	11.9	9.8	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	0.9	1.4	0.2	-	-	-

Intersection	
Intersection Delay, s/veh	152.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	76	286	184	54	344	65	1	206	59	86	62	53	65
Future Vol, veh/h	76	286	184	54	344	65	1	206	59	86	62	53	65
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.74	0.74	0.74
Heavy Vehicles, %	20	20	20	31	31	31	11	11	11	11	23	23	23
Mvmt Flow	90	340	219	68	430	81	1	254	73	106	84	72	88
Number of Lanes	1	1	1	0	1	0	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	41.8	386.2	65.3	45.3
HCM LOS	E	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	12%	34%
Vol Thru, %	22%	0%	0%	100%	0%	74%	29%
Vol Right, %	0%	100%	0%	0%	100%	14%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	266	86	76	286	184	463	180
LT Vol	207	0	76	0	0	54	62
Through Vol	59	0	0	286	0	344	53
RT Vol	0	86	0	0	184	65	65
Lane Flow Rate	328	106	90	340	219	579	243
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.96	0.278	0.248	0.886	0.528	1.775	0.738
Departure Headway (Hd)	12.53	11.369	11.631	11.102	10.361	11.038	13.099
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	292	319	311	330	350	336	277
Service Time	10.23	9.069	9.331	8.802	8.061	8.738	10.799
HCM Lane V/C Ratio	1.123	0.332	0.289	1.03	0.626	1.723	0.877
HCM Control Delay	80.4	18.4	18.1	59.5	24.1	386.2	45.3
HCM Lane LOS	F	C	C	F	C	F	E
HCM 95th-tile Q	9.5	1.1	1	8.3	2.9	37.4	5.3

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	67	306	330	38	21	45
Future Vol, veh/h	67	306	330	38	21	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	74	74	76	76
Heavy Vehicles, %	20	20	28	28	4	4
Mvmt Flow	79	360	446	51	28	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	497	0	-	0	990	472
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	4.3	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.38	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	980	-	-	-	271	588
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	980	-	-	-	244	588
Mov Cap-2 Maneuver	-	-	-	-	244	-
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	594	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	980	-	-	-	406
HCM Lane V/C Ratio	0.08	-	-	-	0.214
HCM Control Delay (s)	9	0	-	-	16.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	171	104	319	356	93
Future Volume (veh/h)	128	171	104	319	356	93
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1633	1633	1811	1811	1737	1737
Adj Flow Rate, veh/h	160	214	132	404	414	108
Peak Hour Factor	0.80	0.80	0.79	0.79	0.86	0.86
Percent Heavy Veh, %	18	18	6	6	11	11
Cap, veh/h	320	284	166	1089	1060	274
Arrive On Green	0.21	0.21	0.10	0.60	0.41	0.41
Sat Flow, veh/h	1555	1384	1725	1811	2683	671
Grp Volume(v), veh/h	160	214	132	404	262	260
Grp Sat Flow(s),veh/h/ln	1555	1384	1725	1811	1650	1616
Q Serve(g_s), s	4.2	6.8	3.5	5.3	5.2	5.3
Cycle Q Clear(g_c), s	4.2	6.8	3.5	5.3	5.2	5.3
Prop In Lane	1.00	1.00	1.00			0.41
Lane Grp Cap(c), veh/h	320	284	166	1089	674	660
V/C Ratio(X)	0.50	0.75	0.79	0.37	0.39	0.39
Avail Cap(c_a), veh/h	601	535	204	1089	674	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	17.4	20.6	4.8	9.7	9.7
Incr Delay (d2), s/veh	1.2	4.0	15.9	1.0	1.7	1.8
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	5.3	2.0	1.5	1.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	21.4	36.5	5.7	11.4	11.5
LnGrp LOS	B	C	D	A	B	B
Approach Vol, veh/h	374			536	522	
Approach Delay, s/veh	19.8			13.3	11.4	
Approach LOS	B			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		14.1	9.0	23.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		7.3		8.8	5.5	7.3
Green Ext Time (p_c), s		2.5		0.9	0.0	2.4

Intersection Summary		
HCM 6th Ctrl Delay		14.3
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	316	356	4	5	12
Future Vol, veh/h	8	316	356	4	5	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	343	387	4	5	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	750	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1168	-	-	-	379	659
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1168	-	-	-	375	659
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	539
HCM Lane V/C Ratio	0.007	-	-	-	0.034
HCM Control Delay (s)	8.1	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Appendix E

Analysis Worksheets for
Cumulative (2040) Conditions

Intersection	
Int Delay, s/veh	9.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	260	70	100	160	90	100
Future Vol, veh/h	260	70	100	160	90	100
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	283	76	109	174	98	109

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	501	196	0	0	283	0
Stage 1	196	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	523	835	-	-	1257	-
Stage 1	828	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	480	835	-	-	1257	-
Mov Cap-2 Maneuver	480	-	-	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	739	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	3.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	480	835	1257	-
HCM Lane V/C Ratio	-	-	0.589	0.091	0.078	-
HCM Control Delay (s)	-	-	22.7	9.7	8.1	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.3	0.3	-

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	150	80	220	180	0	0	0	0	300	10	150
Future Vol, veh/h	0	150	80	220	180	0	0	0	0	300	10	150
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
Heavy Vehicles, %	12	12	12	40	40	40	2	2	2	20	20	20
Mvmt Flow	0	163	87	239	196	0	0	0	0	326	11	163
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	13.5	16.2	17.5
HCM LOS	B	C	C

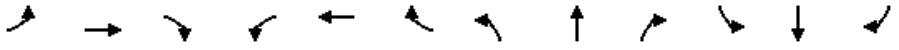
Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	27%
Vol Thru, %	100%	0%	0%	100%	100%	0%	5%
Vol Right, %	0%	100%	0%	0%	0%	0%	68%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	80	220	90	90	240	220
LT Vol	0	0	220	0	0	240	60
Through Vol	150	0	0	90	90	0	10
RT Vol	0	80	0	0	0	0	150
Lane Flow Rate	163	87	239	98	98	261	239
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.352	0.171	0.551	0.211	0.143	0.555	0.453
Departure Headway (Hd)	7.78	7.061	8.288	7.777	5.249	7.772	6.924
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	465	510	438	465	675	467	524
Service Time	5.492	4.772	5.988	5.477	3.047	5.472	4.624
HCM Lane V/C Ratio	0.351	0.171	0.546	0.211	0.145	0.559	0.456
HCM Control Delay	14.7	11.2	20.7	12.5	8.9	19.7	15.2
HCM Lane LOS	B	B	C	B	A	C	C
HCM 95th-tile Q	1.6	0.6	3.2	0.8	0.5	3.3	2.3

Intersection	
Intersection Delay, s/veh	27.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	330	0	0	290	370	100	30	250	0	0	0
Future Vol, veh/h	150	330	0	0	290	370	100	30	250	0	0	0
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
Heavy Vehicles, %	20	20	20	34	34	34	49	49	49	2	2	2
Mvmt Flow	163	359	0	0	315	402	109	33	272	0	0	0
Number of Lanes	1	2	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	16.1	37.9	23.5
HCM LOS	C	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	77%	0%	100%	0%	0%	0%	0%
Vol Thru, %	23%	0%	0%	100%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	250	150	165	165	290	370
LT Vol	100	0	150	0	0	0	0
Through Vol	30	0	0	165	165	290	0
RT Vol	0	250	0	0	0	0	370
Lane Flow Rate	141	272	163	179	179	315	402
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.382	0.65	0.414	0.429	0.325	0.74	0.863
Departure Headway (Hd)	9.723	8.616	9.136	8.621	6.522	8.448	7.727
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	370	418	393	418	549	429	467
Service Time	7.495	6.387	6.901	6.386	4.286	6.213	5.491
HCM Lane V/C Ratio	0.381	0.651	0.415	0.428	0.326	0.734	0.861
HCM Control Delay	18.4	26.1	18.2	17.8	12.4	31.8	42.7
HCM Lane LOS	C	D	C	C	B	D	E
HCM 95th-tile Q	1.7	4.5	2	2.1	1.4	6	8.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	295	180	40	270	42	320	50	51	40	30	80
Future Volume (veh/h)	100	295	180	40	270	42	320	50	51	40	30	80
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1426	1426	1426	1218	1218	1218	1707	1707	1707	1115	1115	1115
Adj Flow Rate, veh/h	109	321	196	43	293	46	348	54	55	43	33	87
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, %	32	32	32	46	46	46	13	13	13	53	53	53
Cap, veh/h	129	505	428	45	306	48	384	266	271	43	40	105
Arrive On Green	0.09	0.35	0.35	0.04	0.30	0.30	0.24	0.34	0.34	0.04	0.15	0.15
Sat Flow, veh/h	1358	1426	1208	1160	1028	161	1626	775	790	1061	271	715
Grp Volume(v), veh/h	109	321	196	43	0	339	348	0	109	43	0	120
Grp Sat Flow(s),veh/h/ln	1358	1426	1208	1160	0	1189	1626	0	1565	1061	0	986
Q Serve(g_s), s	6.3	15.1	10.0	3.0	0.0	22.5	16.7	0.0	3.9	3.2	0.0	9.5
Cycle Q Clear(g_c), s	6.3	15.1	10.0	3.0	0.0	22.5	16.7	0.0	3.9	3.2	0.0	9.5
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.50	1.00		0.73
Lane Grp Cap(c), veh/h	129	505	428	45	0	354	384	0	537	43	0	145
V/C Ratio(X)	0.85	0.64	0.46	0.96	0.00	0.96	0.91	0.00	0.20	1.00	0.00	0.83
Avail Cap(c_a), veh/h	140	505	428	85	0	354	423	0	597	122	0	232
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	21.6	20.0	38.5	0.0	27.7	29.8	0.0	18.6	38.5	0.0	33.2
Incr Delay (d2), s/veh	33.7	2.6	0.8	55.1	0.0	36.7	21.6	0.0	0.2	64.0	0.0	12.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	5.1	2.8	1.5	0.0	9.7	8.6	0.0	1.4	1.6	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	24.2	20.8	93.7	0.0	64.4	51.4	0.0	18.8	102.5	0.0	45.7
LnGrp LOS	E	C	C	F	A	E	D	A	B	F	A	D
Approach Vol, veh/h		626			382			457			163	
Approach Delay, s/veh		31.0			67.7			43.6			60.7	
Approach LOS		C			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	32.0	7.6	32.9	23.5	16.3	12.1	28.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.2	30.6	5.9	26.3	20.9	18.9	8.3	23.9
Max Q Clear Time (g_c+I1), s	5.2	5.9	5.0	17.1	18.7	11.5	8.3	24.5
Green Ext Time (p_c), s	0.0	0.6	0.0	1.9	0.3	0.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.1
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	288	204	30	60	60
Future Vol, veh/h	40	288	204	30	60	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	34	34	39	39	6	6
Mvmt Flow	43	313	222	33	65	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	255	0	-	0	638	239
Stage 1	-	-	-	-	239	-
Stage 2	-	-	-	-	399	-
Critical Hdwy	4.44	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.506	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1145	-	-	-	435	790
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1145	-	-	-	415	790
Mov Cap-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1145	-	-	-	544
HCM Lane V/C Ratio	0.038	-	-	-	0.24
HCM Control Delay (s)	8.3	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	120	210	300	160	80
Future Volume (veh/h)	60	120	210	300	160	80
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1470	1470	1796	1796	1589	1589
Adj Flow Rate, veh/h	65	130	228	326	174	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	29	29	7	7	21	21
Cap, veh/h	198	177	218	1167	827	395
Arrive On Green	0.14	0.14	0.13	0.65	0.42	0.42
Sat Flow, veh/h	1400	1246	1711	1796	2060	947
Grp Volume(v), veh/h	65	130	228	326	131	130
Grp Sat Flow(s),veh/h/ln	1400	1246	1711	1796	1509	1418
Q Serve(g_s), s	1.8	4.3	5.5	3.3	2.4	2.5
Cycle Q Clear(g_c), s	1.8	4.3	5.5	3.3	2.4	2.5
Prop In Lane	1.00	1.00	1.00			0.67
Lane Grp Cap(c), veh/h	198	177	218	1167	630	592
V/C Ratio(X)	0.33	0.74	1.04	0.28	0.21	0.22
Avail Cap(c_a), veh/h	585	520	218	1167	630	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	17.7	18.8	3.2	8.0	8.1
Incr Delay (d2), s/veh	1.0	5.9	73.1	0.6	0.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	6.3	0.7	0.7	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	23.6	91.9	3.8	8.8	8.9
LnGrp LOS	B	C	F	A	A	A
Approach Vol, veh/h	195			554	261	
Approach Delay, s/veh	21.6			40.1	8.8	
Approach LOS	C			D	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		10.6	10.0	22.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		5.3		6.3	7.5	4.5
Green Ext Time (p_c), s		1.9		0.5	0.0	1.2

Intersection Summary		
HCM 6th Ctrl Delay		28.4
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	100	86	150	90	90	130
Future Vol, veh/h	100	86	150	90	90	130
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	93	163	98	98	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	549	212	0	0	261	0
Stage 1	212	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	497	828	-	-	1303	-
Stage 1	823	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	456	828	-	-	1303	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	3.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	456	828	1303	-
HCM Lane V/C Ratio	-	-	0.238	0.113	0.075	-
HCM Control Delay (s)	-	-	15.3	9.9	8	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.4	0.2	-

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	130	60	220	100	0	0	0	0	300	20	80
Future Vol, veh/h	0	130	60	220	100	0	0	0	0	300	20	80
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
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	141	65	239	109	0	0	0	0	326	22	87
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	11.7	14.9	14.5
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	49%
Vol Thru, %	100%	0%	0%	100%	100%	0%	10%
Vol Right, %	0%	100%	0%	0%	0%	0%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	60	220	50	50	204	196
LT Vol	0	0	220	0	0	204	96
Through Vol	130	0	0	50	50	0	20
RT Vol	0	60	0	0	0	0	80
Lane Flow Rate	141	65	239	54	54	222	213
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.276	0.115	0.497	0.105	0.073	0.439	0.39
Departure Headway (Hd)	7.038	6.322	7.475	6.967	4.842	7.129	6.586
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	509	564	481	513	735	503	545
Service Time	4.808	4.091	5.237	4.728	2.602	4.885	4.342
HCM Lane V/C Ratio	0.277	0.115	0.497	0.105	0.073	0.441	0.391
HCM Control Delay	12.5	9.9	17.5	10.6	8	15.4	13.5
HCM Lane LOS	B	A	C	B	A	C	B
HCM 95th-tile Q	1.1	0.4	2.7	0.3	0.2	2.2	1.8

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	80	370	0	1	0	250	375	60	20	194	0	0	0
Future Vol, veh/h	80	370	0	1	0	250	375	60	20	194	0	0	0
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	0.92
Heavy Vehicles, %	14	14	14	20	20	20	20	29	29	29	2	2	2
Mvmt Flow	87	402	0	1	0	272	408	65	22	211	0	0	0
Number of Lanes	1	2	0	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	13.5	24	15.9
HCM LOS	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	75%	0%	100%	0%	0%	0%	0%
Vol Thru, %	25%	0%	0%	100%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	194	80	185	185	251	375
LT Vol	60	0	80	0	0	0	0
Through Vol	20	0	0	185	185	251	0
RT Vol	0	194	0	0	0	0	375
Lane Flow Rate	87	211	87	201	201	273	408
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.213	0.452	0.198	0.43	0.319	0.559	0.755
Departure Headway (Hd)	8.814	7.721	8.207	7.696	5.715	7.382	6.668
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	408	466	438	469	629	488	542
Service Time	6.56	5.467	5.946	5.435	3.454	5.12	4.405
HCM Lane V/C Ratio	0.213	0.453	0.199	0.429	0.32	0.559	0.753
HCM Control Delay	13.9	16.7	13	16.1	11.1	19.1	27.2
HCM Lane LOS	B	C	B	C	B	C	D
HCM 95th-tile Q	0.8	2.3	0.7	2.1	1.4	3.4	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	279	260	60	335	62	250	70	86	60	60	70
Future Volume (veh/h)	76	279	260	60	335	62	250	70	86	60	60	70
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1441	1441	1441	1737	1737	1737	1559	1559	1559
Adj Flow Rate, veh/h	83	303	283	65	364	67	272	76	93	65	65	76
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, %	20	20	20	31	31	31	11	11	11	23	23	23
Cap, veh/h	100	570	483	74	407	75	317	194	237	77	87	102
Arrive On Green	0.07	0.36	0.36	0.05	0.34	0.34	0.19	0.27	0.27	0.05	0.13	0.13
Sat Flow, veh/h	1527	1604	1359	1372	1184	218	1654	711	870	1485	655	766
Grp Volume(v), veh/h	83	303	283	65	0	431	272	0	169	65	0	141
Grp Sat Flow(s),veh/h/ln	1527	1604	1359	1372	0	1401	1654	0	1580	1485	0	1421
Q Serve(g_s), s	3.6	10.2	11.5	3.2	0.0	19.8	10.8	0.0	5.9	2.9	0.0	6.5
Cycle Q Clear(g_c), s	3.6	10.2	11.5	3.2	0.0	19.8	10.8	0.0	5.9	2.9	0.0	6.5
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.55	1.00		0.54
Lane Grp Cap(c), veh/h	100	570	483	74	0	482	317	0	432	77	0	190
V/C Ratio(X)	0.83	0.53	0.59	0.87	0.00	0.89	0.86	0.00	0.39	0.84	0.00	0.74
Avail Cap(c_a), veh/h	128	631	535	152	0	589	403	0	641	226	0	446
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.3	17.4	17.8	31.8	0.0	21.1	26.5	0.0	20.1	31.9	0.0	28.3
Incr Delay (d2), s/veh	28.0	0.8	1.4	25.0	0.0	14.2	13.8	0.0	0.6	20.6	0.0	5.7
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	2.1	3.6	3.5	1.5	0.0	7.8	5.2	0.0	2.1	1.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.3	18.2	19.2	56.8	0.0	35.3	40.3	0.0	20.6	52.5	0.0	33.9
LnGrp LOS	E	B	B	E	A	D	D	A	C	D	A	C
Approach Vol, veh/h		669			496			441			206	
Approach Delay, s/veh		23.7			38.1			32.8			39.8	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	23.0	8.2	28.6	17.5	13.5	9.0	27.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.3	27.5	7.5	26.7	16.5	21.3	5.7	28.5
Max Q Clear Time (g_c+I1), s	4.9	7.9	5.2	13.5	12.8	8.5	5.6	21.8
Green Ext Time (p_c), s	0.0	0.9	0.0	2.4	0.3	0.6	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	298	318	70	60	50
Future Vol, veh/h	80	298	318	70	60	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	28	28	4	4
Mvmt Flow	87	324	346	76	65	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	422	0	-	0	882	384
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.3	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.38	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1047	-	-	-	314	659
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1047	-	-	-	282	659
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	607	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1047	-	-	-	381
HCM Lane V/C Ratio	0.083	-	-	-	0.314
HCM Control Delay (s)	8.8	0	-	-	18.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	220	140	319	356	91
Future Volume (veh/h)	125	220	140	319	356	91
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1633	1633	1811	1811	1737	1737
Adj Flow Rate, veh/h	136	239	152	347	387	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	18	18	6	6	11	11
Cap, veh/h	343	306	191	1068	1002	254
Arrive On Green	0.22	0.22	0.11	0.59	0.38	0.38
Sat Flow, veh/h	1555	1384	1725	1811	2695	660
Grp Volume(v), veh/h	136	239	152	347	243	243
Grp Sat Flow(s),veh/h/ln	1555	1384	1725	1811	1650	1618
Q Serve(g_s), s	3.5	7.7	4.1	4.6	5.1	5.2
Cycle Q Clear(g_c), s	3.5	7.7	4.1	4.6	5.1	5.2
Prop In Lane	1.00	1.00	1.00			0.41
Lane Grp Cap(c), veh/h	343	306	191	1068	634	622
V/C Ratio(X)	0.40	0.78	0.80	0.32	0.38	0.39
Avail Cap(c_a), veh/h	590	525	200	1068	634	622
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	15.8	17.4	20.6	4.9	10.6	10.6
Incr Delay (d2), s/veh	0.7	4.4	19.0	0.8	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.0	2.5	1.3	1.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.5	21.8	39.5	5.8	12.3	12.4
LnGrp LOS	B	C	D	A	B	B
Approach Vol, veh/h	375			499	486	
Approach Delay, s/veh	19.9			16.0	12.4	
Approach LOS	B			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		15.0	9.8	22.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		6.6		9.7	6.1	7.2
Green Ext Time (p_c), s		2.1		0.8	0.0	2.2

Intersection Summary		
HCM 6th Ctrl Delay		15.8
HCM 6th LOS		B

Appendix F

Analysis Worksheets for
Cumulative (2040) plus Proposed Project Conditions

Intersection	
Int Delay, s/veh	9.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	260	70	100	160	90	100
Future Vol, veh/h	260	70	100	160	90	100
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	283	76	109	174	98	109

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	501	196	0	0	283	0
Stage 1	196	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.16	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.254	-
Pot Cap-1 Maneuver	523	835	-	-	1257	-
Stage 1	828	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	480	835	-	-	1257	-
Mov Cap-2 Maneuver	480	-	-	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	739	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	3.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	480	835	1257	-
HCM Lane V/C Ratio	-	-	0.589	0.091	0.078	-
HCM Control Delay (s)	-	-	22.7	9.7	8.1	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.3	0.3	-

Intersection	
Intersection Delay, s/veh	16.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	150	80	225	180	0	0	0	0	304	10	150
Future Vol, veh/h	0	150	80	225	180	0	0	0	0	304	10	150
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
Heavy Vehicles, %	12	12	12	40	40	40	2	2	2	20	20	20
Mvmt Flow	0	163	87	245	196	0	0	0	0	330	11	163
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	13.6	16.6	17.8
HCM LOS	B	C	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	29%
Vol Thru, %	100%	0%	0%	100%	100%	0%	4%
Vol Right, %	0%	100%	0%	0%	0%	0%	67%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	80	225	90	90	240	224
LT Vol	0	0	225	0	0	240	64
Through Vol	150	0	0	90	90	0	10
RT Vol	0	80	0	0	0	0	150
Lane Flow Rate	163	87	245	98	98	261	243
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.354	0.171	0.564	0.212	0.143	0.557	0.463
Departure Headway (Hd)	7.814	7.094	8.307	7.797	5.268	7.796	6.962
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	508	438	463	672	465	521
Service Time	5.527	4.807	6.007	5.497	3.066	5.496	4.662
HCM Lane V/C Ratio	0.352	0.171	0.559	0.212	0.146	0.561	0.466
HCM Control Delay	14.8	11.3	21.2	12.6	9	19.9	15.5
HCM Lane LOS	B	B	C	B	A	C	C
HCM 95th-tile Q	1.6	0.6	3.4	0.8	0.5	3.3	2.4

Intersection	
Intersection Delay, s/veh	28.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	334	0	0	295	376	100	30	254	0	0	0
Future Vol, veh/h	150	334	0	0	295	376	100	30	254	0	0	0
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
Heavy Vehicles, %	20	20	20	34	34	34	49	49	49	2	2	2
Mvmt Flow	163	363	0	0	321	409	109	33	276	0	0	0
Number of Lanes	1	2	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	16.3	40.3	24.3
HCM LOS	C	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	77%	0%	100%	0%	0%	0%	0%
Vol Thru, %	23%	0%	0%	100%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	254	150	167	167	295	376
LT Vol	100	0	150	0	0	0	0
Through Vol	30	0	0	167	167	295	0
RT Vol	0	254	0	0	0	0	376
Lane Flow Rate	141	276	163	182	182	321	409
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.384	0.665	0.416	0.438	0.332	0.757	0.882
Departure Headway (Hd)	9.78	8.672	9.192	8.677	6.577	8.494	7.772
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	367	417	391	414	545	426	466
Service Time	7.555	6.447	6.96	6.445	4.344	6.261	5.539
HCM Lane V/C Ratio	0.384	0.662	0.417	0.44	0.334	0.754	0.878
HCM Control Delay	18.6	27.2	18.4	18.1	12.6	33.4	45.8
HCM Lane LOS	C	D	C	C	B	D	E
HCM 95th-tile Q	1.8	4.7	2	2.2	1.4	6.3	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	303	180	40	280	45	320	50	51	42	30	80
Future Volume (veh/h)	100	303	180	40	280	45	320	50	51	42	30	80
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1426	1426	1426	1218	1218	1218	1707	1707	1707	1115	1115	1115
Adj Flow Rate, veh/h	109	329	196	43	304	49	348	54	55	46	33	87
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, %	32	32	32	46	46	46	13	13	13	53	53	53
Cap, veh/h	129	505	428	45	305	49	384	263	268	47	40	105
Arrive On Green	0.09	0.35	0.35	0.04	0.30	0.30	0.24	0.34	0.34	0.04	0.15	0.15
Sat Flow, veh/h	1358	1426	1208	1160	1024	165	1626	775	790	1061	271	715
Grp Volume(v), veh/h	109	329	196	43	0	353	348	0	109	46	0	120
Grp Sat Flow(s),veh/h/ln	1358	1426	1208	1160	0	1189	1626	0	1565	1061	0	986
Q Serve(g_s), s	6.3	15.6	10.0	3.0	0.0	23.8	16.7	0.0	4.0	3.5	0.0	9.5
Cycle Q Clear(g_c), s	6.3	15.6	10.0	3.0	0.0	23.8	16.7	0.0	4.0	3.5	0.0	9.5
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.50	1.00		0.73
Lane Grp Cap(c), veh/h	129	505	428	45	0	354	384	0	531	47	0	145
V/C Ratio(X)	0.85	0.65	0.46	0.96	0.00	1.00	0.91	0.00	0.21	0.99	0.00	0.83
Avail Cap(c_a), veh/h	140	505	428	85	0	354	423	0	597	122	0	232
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.8	21.8	20.0	38.5	0.0	28.2	29.8	0.0	18.8	38.4	0.0	33.2
Incr Delay (d2), s/veh	33.7	3.0	0.8	55.1	0.0	47.2	21.6	0.0	0.2	57.9	0.0	12.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	5.3	2.8	1.5	0.0	11.0	8.6	0.0	1.4	1.6	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	24.7	20.8	93.7	0.0	75.3	51.4	0.0	19.0	96.2	0.0	45.7
LnGrp LOS	E	C	C	F	A	E	D	A	B	F	A	D
Approach Vol, veh/h		634			396			457			166	
Approach Delay, s/veh		31.2			77.3			43.7			59.7	
Approach LOS		C			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	31.7	7.6	32.9	23.5	16.3	12.1	28.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.2	30.6	5.9	26.3	20.9	18.9	8.3	23.9
Max Q Clear Time (g_c+I1), s	5.5	6.0	5.0	17.6	18.7	11.5	8.3	25.8
Green Ext Time (p_c), s	0.0	0.6	0.0	1.9	0.3	0.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	298	217	30	60	60
Future Vol, veh/h	40	298	217	30	60	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	34	34	39	39	6	6
Mvmt Flow	43	324	236	33	65	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	269	0	-	0	663	253
Stage 1	-	-	-	-	253	-
Stage 2	-	-	-	-	410	-
Critical Hdwy	4.44	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.506	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1130	-	-	-	420	776
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1130	-	-	-	401	776
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	744	-
Stage 2	-	-	-	-	661	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1130	-	-	-	529
HCM Lane V/C Ratio	0.038	-	-	-	0.247
HCM Control Delay (s)	8.3	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	122	211	300	160	83
Future Volume (veh/h)	64	122	211	300	160	83
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1470	1470	1796	1796	1589	1589
Adj Flow Rate, veh/h	70	133	229	326	174	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	29	29	7	7	21	21
Cap, veh/h	204	181	217	1162	814	402
Arrive On Green	0.15	0.15	0.13	0.65	0.42	0.42
Sat Flow, veh/h	1400	1246	1711	1796	2037	967
Grp Volume(v), veh/h	70	133	229	326	132	132
Grp Sat Flow(s),veh/h/ln	1400	1246	1711	1796	1509	1415
Q Serve(g_s), s	1.9	4.4	5.5	3.4	2.4	2.6
Cycle Q Clear(g_c), s	1.9	4.4	5.5	3.4	2.4	2.6
Prop In Lane	1.00	1.00	1.00			0.68
Lane Grp Cap(c), veh/h	204	181	217	1162	628	588
V/C Ratio(X)	0.34	0.73	1.05	0.28	0.21	0.22
Avail Cap(c_a), veh/h	582	518	217	1162	628	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	17.7	18.9	3.3	8.1	8.1
Incr Delay (d2), s/veh	1.0	5.7	75.9	0.6	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.2	6.5	0.7	0.7	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	23.4	94.8	3.9	8.9	9.0
LnGrp LOS	B	C	F	A	A	A
Approach Vol, veh/h	203			555	264	
Approach Delay, s/veh	21.4			41.4	8.9	
Approach LOS	C			D	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		10.8	10.0	22.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		5.4		6.4	7.5	4.6
Green Ext Time (p_c), s		1.9		0.5	0.0	1.2
Intersection Summary						
HCM 6th Ctrl Delay			29.0			
HCM 6th LOS			C			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	220	260	4	6	13
Future Vol, veh/h	10	220	260	4	6	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	239	283	4	7	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	287	0	-	0	546	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1275	-	-	-	499	754
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	783	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1275	-	-	-	494	754
Mov Cap-2 Maneuver	-	-	-	-	494	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1275	-	-	-	647
HCM Lane V/C Ratio	0.009	-	-	-	0.032
HCM Control Delay (s)	7.8	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	100	86	150	90	90	130
Future Vol, veh/h	100	86	150	90	90	130
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	93	163	98	98	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	549	212	0	0	261	0
Stage 1	212	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	497	828	-	-	1303	-
Stage 1	823	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	456	828	-	-	1303	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	3.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	456	828	1303	-
HCM Lane V/C Ratio	-	-	0.238	0.113	0.075	-
HCM Control Delay (s)	-	-	15.3	9.9	8	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.4	0.2	-

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	130	60	224	100	0	0	0	0	304	20	80
Future Vol, veh/h	0	130	60	224	100	0	0	0	0	304	20	80
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
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	141	65	243	109	0	0	0	0	330	22	87
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	11.8	15.2	14.6
HCM LOS	B	C	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	49%
Vol Thru, %	100%	0%	0%	100%	100%	0%	10%
Vol Right, %	0%	100%	0%	0%	0%	0%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	60	224	50	50	207	197
LT Vol	0	0	224	0	0	207	97
Through Vol	130	0	0	50	50	0	20
RT Vol	0	60	0	0	0	0	80
Lane Flow Rate	141	65	243	54	54	225	214
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.278	0.115	0.507	0.105	0.073	0.446	0.394
Departure Headway (Hd)	7.07	6.354	7.496	6.987	4.862	7.15	6.61
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	506	562	480	511	733	503	543
Service Time	4.839	4.123	5.257	4.748	2.621	4.906	4.366
HCM Lane V/C Ratio	0.279	0.116	0.506	0.106	0.074	0.447	0.394
HCM Control Delay	12.6	10	17.8	10.6	8	15.6	13.6
HCM Lane LOS	B	A	C	B	A	C	B
HCM 95th-tile Q	1.1	0.4	2.8	0.3	0.2	2.3	1.9

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	80	374	0	1	0	254	380	60	20	197	0	0	0
Future Vol, veh/h	80	374	0	1	0	254	380	60	20	197	0	0	0
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	0.92
Heavy Vehicles, %	14	14	14	20	20	20	20	29	29	29	2	2	2
Mvmt Flow	87	407	0	1	0	276	413	65	22	214	0	0	0
Number of Lanes	1	2	0	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	3
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	13.7	24.9	16.1
HCM LOS	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2
Vol Left, %	75%	0%	100%	0%	0%	0%	0%
Vol Thru, %	25%	0%	0%	100%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	197	80	187	187	255	380
LT Vol	60	0	80	0	0	0	0
Through Vol	20	0	0	187	187	255	0
RT Vol	0	197	0	0	0	0	380
Lane Flow Rate	87	214	87	203	203	277	413
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.214	0.462	0.199	0.437	0.325	0.571	0.769
Departure Headway (Hd)	8.86	7.767	8.25	7.739	5.759	7.417	6.703
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	405	465	436	465	624	488	541
Service Time	6.607	5.513	5.992	5.481	3.5	5.157	4.442
HCM Lane V/C Ratio	0.215	0.46	0.2	0.437	0.325	0.568	0.763
HCM Control Delay	14	17	13	16.4	11.3	19.6	28.4
HCM Lane LOS	B	C	B	C	B	C	D
HCM 95th-tile Q	0.8	2.4	0.7	2.2	1.4	3.5	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	286	260	60	344	65	250	70	86	62	60	70
Future Volume (veh/h)	76	286	260	60	344	65	250	70	86	62	60	70
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1441	1441	1441	1737	1737	1737	1559	1559	1559
Adj Flow Rate, veh/h	83	311	283	65	374	71	272	76	93	67	65	76
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, %	20	20	20	31	31	31	11	11	11	23	23	23
Cap, veh/h	101	581	493	75	413	78	316	192	235	80	87	102
Arrive On Green	0.07	0.36	0.36	0.05	0.35	0.35	0.19	0.27	0.27	0.05	0.13	0.13
Sat Flow, veh/h	1527	1604	1359	1372	1177	223	1654	711	870	1485	655	766
Grp Volume(v), veh/h	83	311	283	65	0	445	272	0	169	67	0	141
Grp Sat Flow(s),veh/h/ln	1527	1604	1359	1372	0	1400	1654	0	1580	1485	0	1421
Q Serve(g_s), s	3.7	10.6	11.6	3.3	0.0	21.0	11.0	0.0	6.1	3.1	0.0	6.6
Cycle Q Clear(g_c), s	3.7	10.6	11.6	3.3	0.0	21.0	11.0	0.0	6.1	3.1	0.0	6.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.55	1.00		0.54
Lane Grp Cap(c), veh/h	101	581	493	75	0	492	316	0	426	80	0	188
V/C Ratio(X)	0.83	0.54	0.57	0.87	0.00	0.91	0.86	0.00	0.40	0.84	0.00	0.75
Avail Cap(c_a), veh/h	126	617	523	148	0	575	394	0	627	221	0	437
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.0	17.5	17.8	32.5	0.0	21.4	27.2	0.0	20.7	32.5	0.0	29.0
Incr Delay (d2), s/veh	29.0	0.8	1.4	24.7	0.0	16.3	14.7	0.0	0.6	19.8	0.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	3.8	3.5	1.6	0.0	8.5	5.4	0.0	2.2	1.5	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.0	18.3	19.2	57.2	0.0	37.7	41.9	0.0	21.3	52.3	0.0	34.8
LnGrp LOS	E	B	B	E	A	D	D	A	C	D	A	C
Approach Vol, veh/h		677			510			441			208	
Approach Delay, s/veh		23.9			40.2			34.0			40.5	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	23.2	8.3	29.6	17.7	13.7	9.1	28.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.3	27.5	7.5	26.7	16.5	21.3	5.7	28.5
Max Q Clear Time (g_c+I1), s	5.1	8.1	5.3	13.6	13.0	8.6	5.7	23.0
Green Ext Time (p_c), s	0.0	0.9	0.0	2.5	0.3	0.6	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	306	330	70	60	50
Future Vol, veh/h	80	306	330	70	60	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	28	28	4	4
Mvmt Flow	87	333	359	76	65	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	435	0	-	0	904	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	4.3	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.38	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	1035	-	-	-	305	648
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1035	-	-	-	274	648
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1035	-	-	-	371
HCM Lane V/C Ratio	0.084	-	-	-	0.322
HCM Control Delay (s)	8.8	0	-	-	19.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	222	141	319	356	93
Future Volume (veh/h)	128	222	141	319	356	93
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1633	1633	1811	1811	1737	1737
Adj Flow Rate, veh/h	139	241	153	347	387	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	18	18	6	6	11	11
Cap, veh/h	346	308	192	1066	993	256
Arrive On Green	0.22	0.22	0.11	0.59	0.38	0.38
Sat Flow, veh/h	1555	1384	1725	1811	2683	670
Grp Volume(v), veh/h	139	241	153	347	244	244
Grp Sat Flow(s),veh/h/ln	1555	1384	1725	1811	1650	1616
Q Serve(g_s), s	3.6	7.8	4.1	4.6	5.1	5.2
Cycle Q Clear(g_c), s	3.6	7.8	4.1	4.6	5.1	5.2
Prop In Lane	1.00	1.00	1.00			0.41
Lane Grp Cap(c), veh/h	346	308	192	1066	631	618
V/C Ratio(X)	0.40	0.78	0.80	0.33	0.39	0.39
Avail Cap(c_a), veh/h	589	524	199	1066	631	618
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	15.8	17.4	20.6	5.0	10.6	10.7
Incr Delay (d2), s/veh	0.8	4.4	19.1	0.8	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.0	2.5	1.3	1.8	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.6	21.8	39.7	5.8	12.4	12.6
LnGrp LOS	B	C	D	A	B	B
Approach Vol, veh/h	380			500	488	
Approach Delay, s/veh	19.9			16.2	12.5	
Approach LOS	B			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		15.1	9.8	22.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		6.6		9.8	6.1	7.2
Green Ext Time (p_c), s		2.1		0.8	0.0	2.2

Intersection Summary		
HCM 6th Ctrl Delay		15.9
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	316	356	4	5	12
Future Vol, veh/h	8	316	356	4	5	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	343	387	4	5	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	750	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	361	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1168	-	-	-	379	659
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1168	-	-	-	375	659
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	539
HCM Lane V/C Ratio	0.007	-	-	-	0.034
HCM Control Delay (s)	8.1	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Appendix G

Analysis Worksheets for Mitigated Conditions

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	84	22	177	85	0	0	0	0	279	5	52
Future Vol, veh/h	0	84	22	177	85	0	0	0	0	279	5	52
Peak Hour Factor	0.56	0.56	0.56	0.79	0.79	0.79	0.92	0.92	0.92	0.88	0.88	0.88
Heavy Vehicles, %	12	12	12	40	40	40	40	40	40	20	20	20
Mvmt Flow	0	150	39	224	108	0	0	0	0	317	6	59
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	12	14.5	13.8
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	66%
Vol Thru, %	100%	0%	0%	100%	100%	0%	3%
Vol Right, %	0%	100%	0%	0%	0%	0%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	84	22	177	43	43	170	166
LT Vol	0	0	177	0	0	170	109
Through Vol	84	0	0	43	43	0	5
RT Vol	0	22	0	0	0	0	52
Lane Flow Rate	150	39	224	54	54	193	188
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.292	0.069	0.472	0.106	0.07	0.383	0.353
Departure Headway (Hd)	6.998	6.284	7.59	7.083	4.667	7.134	6.741
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	513	568	475	505	764	505	533
Service Time	4.756	4.041	5.342	4.835	2.418	4.884	4.491
HCM Lane V/C Ratio	0.292	0.069	0.472	0.107	0.071	0.382	0.353
HCM Control Delay	12.6	9.5	17	10.7	7.8	14.3	13.2
HCM Lane LOS	B	A	C	B	A	B	B
HCM 95th-tile Q	1.2	0.2	2.5	0.4	0.2	1.8	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	303	144	35	239	45	234	44	51	41	18	66
Future Volume (veh/h)	77	303	144	35	239	45	234	44	51	41	18	66
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1426	1426	1426	1218	1218	1218	1707	1707	1707	1115	1115	1115
Adj Flow Rate, veh/h	82	322	153	44	303	57	296	56	65	52	23	84
Peak Hour Factor	0.94	0.94	0.94	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	32	32	32	46	46	46	13	13	13	53	53	53
Cap, veh/h	96	514	436	47	330	62	339	214	249	53	29	107
Arrive On Green	0.07	0.36	0.36	0.04	0.33	0.33	0.21	0.30	0.30	0.05	0.14	0.14
Sat Flow, veh/h	1358	1426	1208	1160	997	188	1626	721	836	1061	210	767
Grp Volume(v), veh/h	82	322	153	44	0	360	296	0	121	52	0	107
Grp Sat Flow(s),veh/h/ln	1358	1426	1208	1160	0	1185	1626	0	1557	1061	0	977
Q Serve(g_s), s	4.3	13.4	6.6	2.7	0.0	20.9	12.6	0.0	4.2	3.5	0.0	7.6
Cycle Q Clear(g_c), s	4.3	13.4	6.6	2.7	0.0	20.9	12.6	0.0	4.2	3.5	0.0	7.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.54	1.00		0.79
Lane Grp Cap(c), veh/h	96	514	436	47	0	392	339	0	463	53	0	136
V/C Ratio(X)	0.86	0.63	0.35	0.93	0.00	0.92	0.87	0.00	0.26	0.98	0.00	0.79
Avail Cap(c_a), veh/h	123	537	455	97	0	438	420	0	635	145	0	280
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.9	18.9	16.8	34.3	0.0	23.0	27.4	0.0	19.2	34.0	0.0	29.8
Incr Delay (d2), s/veh	34.6	2.2	0.5	45.3	0.0	23.0	15.5	0.0	0.3	53.4	0.0	9.7
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	2.3	4.4	1.8	1.3	0.0	7.9	6.1	0.0	1.5	1.7	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.5	21.1	17.3	79.5	0.0	46.1	42.9	0.0	19.5	87.4	0.0	39.5
LnGrp LOS	E	C	B	E	A	D	D	A	B	F	A	D
Approach Vol, veh/h		557			404			417			159	
Approach Delay, s/veh		26.9			49.7			36.1			55.2	
Approach LOS		C			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	25.8	7.4	30.3	19.4	14.5	9.6	28.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.8	29.2	6.0	27.0	18.5	20.5	6.5	26.5
Max Q Clear Time (g_c+I1), s	5.5	6.2	4.7	15.4	14.6	9.6	6.3	22.9
Green Ext Time (p_c), s	0.0	0.6	0.0	2.0	0.3	0.4	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	80	36	175	96	0	0	0	0	270	4	38
Future Vol, veh/h	0	80	36	175	96	0	0	0	0	270	4	38
Peak Hour Factor	0.89	0.89	0.89	0.81	0.81	0.81	0.92	0.92	0.92	0.85	0.85	0.85
Heavy Vehicles, %	4	4	4	23	23	23	2	2	2	15	15	15
Mvmt Flow	0	90	40	216	119	0	0	0	0	318	5	45
Number of Lanes	0	1	1	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	10.3	12.7	12.7
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	0%	100%	72%
Vol Thru, %	100%	0%	0%	100%	100%	0%	3%
Vol Right, %	0%	100%	0%	0%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	36	175	48	48	159	153
LT Vol	0	0	175	0	0	159	111
Through Vol	80	0	0	48	48	0	4
RT Vol	0	36	0	0	0	0	38
Lane Flow Rate	90	40	216	59	59	187	180
Geometry Grp	8	8	8	8	8	8	8
Degree of Util (X)	0.167	0.067	0.421	0.107	0.072	0.352	0.322
Departure Headway (Hd)	6.7	5.987	7.018	6.512	4.394	6.761	6.449
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	535	597	514	551	814	532	559
Service Time	4.444	3.73	4.754	4.248	2.129	4.491	4.178
HCM Lane V/C Ratio	0.168	0.067	0.42	0.107	0.072	0.352	0.322
HCM Control Delay	10.8	9.2	14.8	10	7.5	13.1	12.2
HCM Lane LOS	B	A	B	A	A	B	B
HCM 95th-tile Q	0.6	0.2	2.1	0.4	0.2	1.6	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	286	185	54	344	65	207	59	86	62	53	65
Future Volume (veh/h)	76	286	185	54	344	65	207	59	86	62	53	65
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1441	1441	1441	1737	1737	1737	1559	1559	1559
Adj Flow Rate, veh/h	90	340	220	68	430	81	256	73	106	84	72	88
Peak Hour Factor	0.84	0.84	0.84	0.80	0.80	0.80	0.81	0.81	0.81	0.74	0.74	0.74
Percent Heavy Veh, %	20	20	20	31	31	31	11	11	11	23	23	23
Cap, veh/h	110	643	545	80	456	86	377	163	236	102	241	294
Arrive On Green	0.07	0.40	0.40	0.06	0.39	0.39	0.25	0.25	0.25	0.07	0.38	0.38
Sat Flow, veh/h	1527	1604	1359	1372	1179	222	1139	640	930	1485	638	780
Grp Volume(v), veh/h	90	340	220	68	0	511	256	0	179	84	0	160
Grp Sat Flow(s),veh/h/ln	1527	1604	1359	1372	0	1401	1139	0	1570	1485	0	1419
Q Serve(g_s), s	4.8	13.3	9.5	4.0	0.0	29.0	17.8	0.0	7.9	4.6	0.0	6.5
Cycle Q Clear(g_c), s	4.8	13.3	9.5	4.0	0.0	29.0	17.8	0.0	7.9	4.6	0.0	6.5
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.59	1.00		0.55
Lane Grp Cap(c), veh/h	110	643	545	80	0	542	377	0	399	102	0	535
V/C Ratio(X)	0.82	0.53	0.40	0.85	0.00	0.94	0.68	0.00	0.45	0.83	0.00	0.30
Avail Cap(c_a), veh/h	121	643	545	130	0	571	441	0	487	117	0	630
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	18.7	17.6	38.4	0.0	24.3	29.5	0.0	25.8	37.8	0.0	18.0
Incr Delay (d2), s/veh	32.1	0.8	0.5	24.2	0.0	23.8	3.4	0.0	0.8	33.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	4.8	2.9	1.9	0.0	12.5	5.0	0.0	2.9	2.6	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.7	19.6	18.1	62.6	0.0	48.2	32.9	0.0	26.6	70.8	0.0	18.3
LnGrp LOS	E	B	B	E	A	D	C	A	C	E	A	B
Approach Vol, veh/h		650			579			435			244	
Approach Delay, s/veh		26.0			49.9			30.3			36.4	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	10.1	25.4	9.3	37.4		35.5	10.4	36.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	25.5	7.8	32.2		36.5	6.5	33.5
Max Q Clear Time (g_c+I1), s	6.6	19.8	6.0	15.3		8.5	6.8	31.0
Green Ext Time (p_c), s	0.0	1.1	0.0	2.7		1.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	35.6
HCM 6th LOS	D