

Final Traffic Impact Study Report

29700 Ahern Road

Tracy

County of San Joaquin, California

June 16, 2017



Final Report

Traffic Impact Study Report for the proposed project at 29700 Ahern Drive, San Joaquin County

June 16, 2017

This Traffic Impact Analysis Report has been prepared under the direction of a licensed Traffic Engineer. The licenses Traffic Engineer attests to the technical information contained therein, and has judged the qualifications of any technical specialists providing engineering data, which recommendations, conclusions and decisions are based.

Reviewed by:



Chris D. Kinzel, P.E., T.E.
Vice President
TJKM Transportation Consultants
4305 Hacienda Drive, Suite 550
Pleasanton, CA 94588



Contents

Executive Summary.....	1
Introduction	4
Study Intersections and Scenarios.....	4
Study Methodology	7
Level of Service Analysis Methodology	7
Unsignalized Intersections Analysis and Significant Impact Criteria/Level of Service Standards.....	7
Roadway Segment Analysis and Significant Impact Criteria/Level of Service Standards.....	8
Existing Conditions	9
Existing Setting and Roadway System	9
Existing Pedestrian Facilities	9
Existing Bicycle Facilities	9
Existing Transit Facilities	10
Existing Peak Hour Volumes	10
Intersection Level of Service Analysis – Existing Conditions.....	12
Roadway Segment Level of Service Analysis – Existing Conditions	12
Existing plus Project Conditions	14
Project Trip Generation	14
Project Trip Distribution and Assignment	14
Intersection Level of Service Analysis – Existing Plus Project Conditions.....	17
Roadway Segment Level of Service Analysis – Existing Plus Project Conditions	17
Cumulative Conditions	19
Intersections Level of Service Analysis – Cumulative Conditions.....	19
Roadway Segment Level of Service Analysis – Cumulative Conditions.....	19
Cumulative plus Project Conditions.....	22
Intersection Level of Service Analysis – Cumulative Plus Project Conditions.....	22
Project Fair Share Calculation.....	23
Roadway Segment Level of Service Analysis – Cumulative Plus Project Conditions.....	24
Site Access and On-Site Circulation and other impacts.....	27

Site Access.....	27
On-Site Circulation	27
Pedestrian access	27
Bicycle Access	28
Transit	28
Sight Distance Analysis	28
Parking.....	28
Conclusions and Recommendations	29

Tables

Table 1: TWSC and AWSC Level of Service Criteria.....	8
Table 2: Roadway Segments Threshold Capacity Volumes	8
Table 3: Intersection Level of Service Analysis – Existing Conditions	12
Table 4: Roadway Segment Level of Service Analysis - Existing Conditions	12
Table 5: Proposed Project Trip Generation	15
Table 6: Intersection Level of Service Analysis – Existing plus Project Conditions	17
Table 7: Roadway Segment Level of Service Analysis - Existing plus Project Conditions	17
Table 8: Intersection Level of Service Analysis – Cumulative Conditions.....	19
Table 9: Roadway Segment Level of Service Analysis - Cumulative Conditions	20
Table 10: Intersection Level of Service Analysis – Cumulative plus Project Conditions	22
Table 11: Fair Share Analysis – Cumulative plus Project Conditions.....	23
Table 12: Roadway Segment Level of Service Analysis - Cumulative plus Project Conditions.....	24

Figures

Figure 1: Vicinity Map	5
Figure 2: Proposed Site Plan	6
Figure 3: Existing Lane Geometry and Traffic Controls	11
Figure 4: Existing Conditions Peak Hour Traffic Volumes	13
Figure 5: Project Trip Distribution and Assignment.....	16
Figure 6: Existing plus Project Conditions Peak Hour Traffic Volumes	18
Figure 7: Cumulative Conditions Peak Hour Traffic Volumes.....	21

Figure 8: Cumulative plus Project Conditions Peak Hour Traffic Volumes..... 25

Appendices

Appendix A – Existing Traffic Counts Sheets

Appendix B – Existing Conditions Intersections Level of Service Worksheets

Appendix C – Existing plus Project Conditions Intersections Level of Service Worksheets

Appendix D – Cumulative Conditions Intersections Level of Service Worksheets

Appendix E – Cumulative plus Project Conditions Intersections Level of Service Worksheets

EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed development at 29700 Ahern Road which includes construction of an 8,625 square foot truck stop and gas station, 4,000 square foot fast food restaurant, an 8,000 square foot combination gas station and fast food restaurant, a 3,000 square foot fuel storage building, a 7,200 square foot truck lube and wash, and a truck scale. The proposed development site area is 9.49 acres.

The proposed project is to be located on the south side of Ahern Road in the County of San Joaquin, CA. The project site is located at the northwest corner of the Ahern Road and West Lehman Road / I-5 Southbound Ramps intersection. Access to the project site would be provided via full-access driveways on Ahern Road.

The purpose of this report is to investigate traffic impacts to the surrounding transportation system. To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, two study intersections were evaluated in accordance with the standards set forth by the level of service (LOS) policies of the County of San Joaquin.

The report also includes evaluations and recommendations concerning project site access and on-site circulation for vehicles, evaluation of on-site vehicle parking supply, adequate space for truck parking and queuing analysis at the driveway and at the study intersections.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, two study intersections were evaluated during the weekday a.m. peak hour and the p.m. peak hour under four study scenarios. The study intersections were evaluated under No Project and Plus Project scenarios for Existing and Cumulative Conditions. For the purposes of this analysis, potential traffic operational impacts from the proposed project are identified based on established traffic operational thresholds of the County of San Joaquin and Caltrans.

Project Trip Generation

The project is expected to generate approximately 413 weekday a.m. peak hour trips (213 inbound, 200 outbound) and 526 weekday p.m. peak hour trips (271 inbound, 255 outbound).

Existing Conditions

Under this scenario, the study intersections and roadway segments operate as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours.

Existing plus Project Conditions

Under this scenario, the study intersections and roadway segments operate as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours.

Based on the Caltrans LOS impact criteria, the proposed project is expected to have a *less-than-significant* impact at the study intersections during both a.m. and p.m. peak hours under Existing plus Project Conditions.

Cumulative Conditions

Under this scenario, the study intersections operates as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours. The study roadway segments are expected to be operating at a satisfactory LOS D or better.

Cumulative plus Project Conditions

Under this scenario, the study intersections operates as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours except the intersection of Ahern Road/W. Lehman Rd-I-5 SB Ramp (Intersection 1) operate at LOS E during the p.m. peak hour.

Based on the Caltrans impact criteria, the project will have *significant* impact at the study intersection of Ahern Road/W. Lehman Rd-I-5 SB Ramp (Intersection 1). The study roadway segments are expected to be operating at a satisfactory LOS D or better. TJKM analyzed a proposed mitigation to ameliorate the LOS to D or better. The mitigation results in a fair share contribution towards the proposed improvement.

Queuing and Driveway Analysis

The proposed project *does not create a significant impact* on the expected left-turn or right-turn queues at the study intersections.

Pedestrian, Bicycle and Transit Impacts

The proposed project does not conflict with existing and planned pedestrian or bicycle facilities. There is no transit service within the vicinity of study area so the project would not impose any impacts on existing transit service. Therefore, the impact to pedestrian, bicycle facilities, and transit facilities is *less-than-significant*.

On-Site Circulation

TJKM examined the project site plan in order to evaluate the adequacy of on-site vehicle circulation for trucks, and emergency vehicles. Based on the evaluation, the proposed on-site vehicle circulation is inadequate. TJKM recommends the applicant review the project site plan, performing a truck turning analysis at the project driveways and within the eastern portion of the site where the truck amenities are provided to confirm adequate truck circulation.

Parking

Based on the project site plan dated February 18, 2016 (**Figure 2**), 136 car parking spaces and 95 truck parking spaces are provided. Standard parking stalls (9 feet by 20 feet) are as per San Joaquin standards. Truck parking stalls (15 feet by 55 feet with overhead clearance of 14 feet) are as per San Joaquin standards. Based on the proposed parking spaces to be provided on site, no parking impacts are projected on County highways.

Recommendations

TJKM recommends restricting truck access to the northern-most driveway, installing the appropriate signage to guide passenger vehicles and trucks, installation of stop control at the project driveway with appropriate pavement delineation and signing.

INTRODUCTION

This report summarizes the results of the Traffic Impact Study (TIS) for the proposed development at 29700 Ahern Road which includes construction of an 8,625 square foot truck stop and gas station, 4,000 square foot fast food restaurant, an 8,000 square foot combination gas station and fast food restaurant, a 3,000 square foot fuel storage building, a 7,200 square foot truck lube and wash, and a truck scale. The proposed development site area is 9.49 acres. The proposed development is known as Ahern truck Stop and Fueling Center and is proposed to be located at 29700 S. Ahern Road, Tracy, California.

The proposed project is to be located on the north side of Ahern Road in the unincorporated part of Tracy, California in San Joaquin County. The project site is located at the corner of the intersection of Ahern Road and West Lehman Road / I-5 Southbound Ramps. Access to the project site would be provided via full-access driveways on Ahern Road. The project is located directly adjacent to the I-5 southbound ramps at Ahern Road as shown on **Figure 1**. The project site, zoned Freeway Service Commission, is currently a vacant lot, surrounded by agricultural uses.

This chapter discusses the TIA purpose, project study area, analysis scenarios and methods, and criteria used to identify significant impacts.

STUDY INTERSECTIONS AND SCENARIOS

TJKM evaluated traffic conditions at two study intersections during the a.m. and p.m. peak hours on a typical weekday. The peak periods observed were between 7-9 a.m. and 4-6 p.m. on weekdays. The highest single one hour period recorded for each peak period was used in the analysis. Throughout this report, these peak hours are identified as the a.m., and p.m. peak hours.

The study intersection and associated traffic controls are as follows:

- Ahern Road and West Lehman Road / I-5 Southbound Ramps (Two-Way Stop)
- Ahern Road/Highway 33 and I-5 Northbound Ramps (One-Way Stop)

This study addresses the following four traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersection based on existing traffic volumes, lane geometry and traffic controls. For the existing conditions scenario the proposed site is analyzed as vacant.
- **Existing plus Project Conditions** – This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.
- **Cumulative Conditions** - This scenario is similar to the Existing Conditions but with the projected growth rate of one percent per year for 20 years (Year 2036-forecasted traffic) which was applied to Existing Conditions Traffic Volumes.
- **Cumulative plus Project Conditions** – This scenario is identical to Cumulative Conditions, but with the addition of traffic from the proposed project.

Figure 1 shows the study area and project site location and **Figure 2** shows the proposed site plan.

Vicinity Map

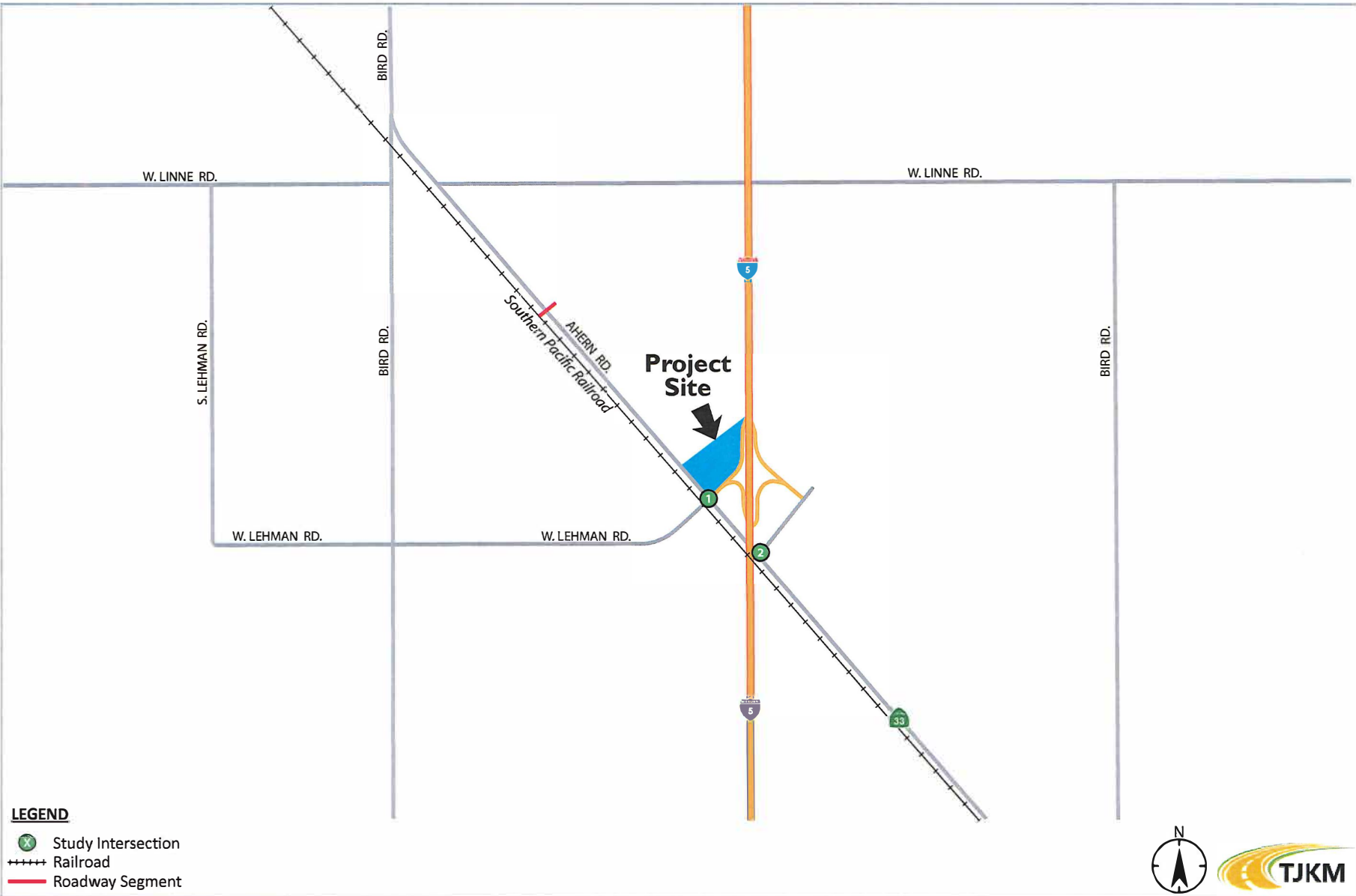
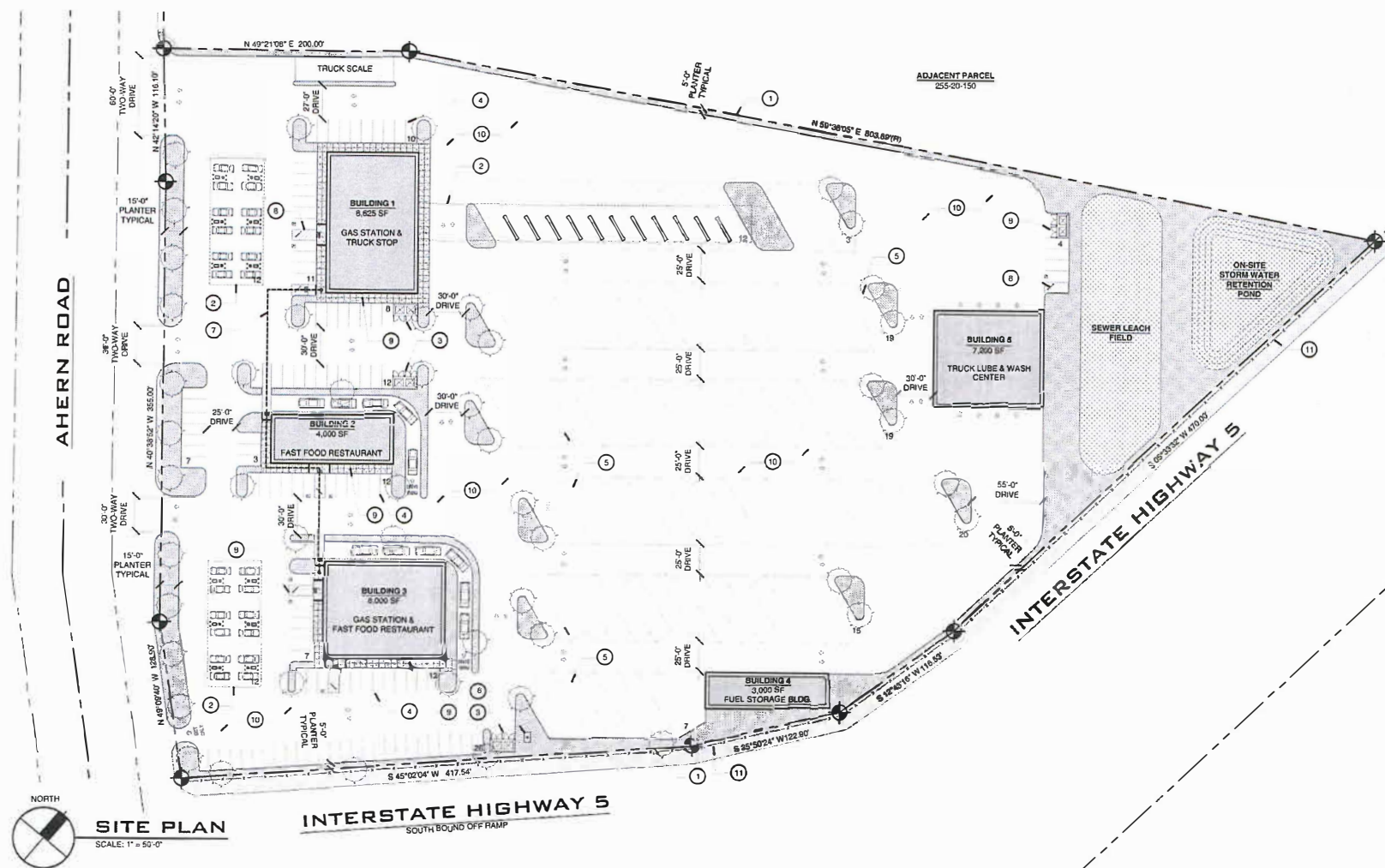


Figure 1

Proposed Project Site Plan



STUDY METHODOLOGY

This section describes the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

LEVEL OF SERVICE ANALYSIS METHODOLOGY

LOS is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets in urban areas.

UNSIGNALIZED INTERSECTIONS ANALYSIS AND SIGNIFICANT IMPACT CRITERIA/LEVEL OF SERVICE STANDARDS

Unsignalized intersections are addressed in the 2010 Highway Capacity Manual (HCM): Two-way stop-controlled (TWSC) and All-way stop-controlled (AWSC) intersections. The study intersections were stop-controlled and was analyzed using HCM Operations Methodology for unsignalized intersections described in Chapter 19. Synchro 9.0 traffic analysis software is used for the analysis purposes. HCM 2010 methodology was used to calculate intersection delay. The average control delay for unsignalized intersections was calculated using Synchro 9.0 analysis software and was correlated to a LOS designation as shown in **Table 1**. The LOS criteria for TWSC and AWSC intersections are different than that used for a signalized intersection. The primary reason for this is that drivers expect different levels of performance between signalized intersection and unsignalized intersection.

As per the *San Joaquin County 2035, General Plan Draft Environmental Report* dated October 2014, CMP Level of Service - The County is to maintain and enforce Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at an LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standards for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other roads. The County shall maintain the following:

1. On State highways, LOS D or Caltrans standards whichever is stricter.
2. Within a city's sphere of influence, LOS D, or the city planned standards for that level of service.
3. On Mountain House Gateways, as defined in the Master Plan, LOS D, on all other roads, LOS C.

For State highways that are designated as part of SJCOG's CMP, both the Caltrans and CMP LOS standards shall apply. Where roadways are designated as part of SJCOG's CMP, both the County and CMP LOS standards shall apply. (Source: Existing GP, Transportation, Roadways, Policy 8, modified)

For CMP intersections or roadways currently operating or expected to operate at LOS E or F under No Project conditions, the project would result in a significant impact if it would increase:

1. Average delay by 4 seconds or more (intersections); or
2. The volume-to-capacity (v/c) ratio by 1.0 or more.

Table 1: TWSC and AWSC Level of Service Criteria

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: Highway Capacity Manual 2010

ROADWAY SEGMENT ANALYSIS AND SIGNIFICANT IMPACT CRITERIA/LEVEL OF SERVICE STANDARDS

Roadway segment Level-of-Service (LOS) is determined based on volume/capacity (v/c) ratios where capacity is determined by facility type, as presented in **Table 2**, and volume is based on average daily traffic (ADT). ADT is defined as the average total volume passing a point or segment of a roadway facility, in both directions, during a 24-hour period. The capacities presented in **Table 2** were derived using planning level methodologies from the 2010 Highway Capacity Manual.

Table 2: Roadway Segments Threshold Capacity Volumes

Facility Type	LOS B	LOS C	LOS D	LOS E
Two-Lane Undivided Class I Arterial	8,900	14,100	15,200	***
Four-Lane Divided Class I Arterial	26,900	32,100	33,800	***
Six-Lane Divided Class I Arterial	41,500	48,600	51,000	***

Notes:

1. Daily roadway capacities developed using 2010 HCM methodologies as reported in FDOT 2009 Quality/Level-of-Service Handbook.

*** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached.

EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

EXISTING SETTING AND ROADWAY SYSTEM

Important roadways adjacent to the project site are discussed below:

Interstate 5 (I-5) is the major north-south freeway serving the western states. Approximately 25 full or partial interchanges exist along the 50-mile stretch of I-5 within San Joaquin County. I-5 is functionally classified as a Principal Arterial-Interstate. Within the project vicinity I-5 has four lanes with two travel lanes in each direction.

Ahern Road is a two-lane north-south roadway that connects to Interstate 5(I-5). It provides access to the City of Tracy and eventually becomes South Bird Road in Tracy, connecting to I-205. The posted speed limit is 55 mph within the project vicinity. It provides local access to residential and agricultural developments.

State Road 33 (Hwy 33) is a north-south state highway that runs from the intersection of Highway 33 and Interstate 5 (I-5) near the project site to Ventura in Southern California. North of I-5 Highway 33 become Ahern Road.

EXISTING PEDESTRIAN FACILITIES

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal “walkable” community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, and easy access to transit facilities and services. Pedestrian facilities consist of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities.

In the project vicinity, due the nature of the area, Ahern Road lacks sidewalks, crosswalks, and street lighting. There are no bus stops in the immediate vicinity of the project site.

EXISTING BICYCLE FACILITIES

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

1. Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
2. Class II – Provides a designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.

3. Class III – Provides a route designated by signs or pavement markings and shared with pedestrians and motorists.

In the project vicinity, there are no bicycle facilities on Ahern Road. According to San Joaquin County Master Plan, there are no proposed bike routes within the project vicinity.

EXISTING TRANSIT FACILITIES

There is no transit service within the project vicinity. The nature of the traffic generated by the proposed project would also not create any demand for new transit service and is not expected to generate a need for transit in the area.

EXISTING PEAK HOUR VOLUMES

TJKM evaluated existing traffic conditions at the selected study intersections during the a.m., and p.m. peak hour on a typical weekday. Intersection turning movement counts of vehicles, bicycles, and pedestrians were collected during weekday a.m. peak period (7:00-9:00 a.m.), and p.m. peak period (4:00-6:00 p.m.) on Tuesday, October 25, 2016. Peak hour factors and truck percentages used in the analysis were based on the counts.

The study intersections and associated traffic controls are as follows:

1. Ahern Road and West Lehman Road/I-5 Southbound Ramps (Two-Way Stop)
2. Ahern Road/Highway 33 and I-5 Northbound Ramps (One-Way Stop)

Seven-day 24 hour ADT counts were conducted at one location in October 2016.

1. Ahern Road northwest of the I-5 Southbound Ramps

Appendix A includes all the data sheets for the collected ADT, vehicle, bicycle and pedestrian counts. **Figure 3** illustrates the existing lane geometry and traffic control at the study intersections. **Figure 4** illustrates the existing conditions peak hour traffic volumes at the study intersections and ADT on roadway segments.

Existing Lane Geometry and Traffic Controls

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- Stop Sign
- Railroad



INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

The existing operations of the study intersections were evaluated for the highest one-hour volume during the weekday a.m. and p.m. peak periods. Turning movement counts for the study intersection were collected by TJKM. The results of the LOS analysis using the Synchro 9.0 software program for Existing Conditions are summarized in **Table 3**. Under this scenario, the study intersections operates as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours. LOS worksheets are provided in **Appendix B**.

Table 3: Intersection Level of Service Analysis – Existing Conditions

ID	Intersection	Control	Peak Hour ¹	Existing Conditions	
				Average Delay ²	LOS ³
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	Two-Way Stop	AM	12.0	B
			PM	13.2	B
2	Ahern Rd.-SR-33/I-5 NB Ramp	One-Way Stop	AM	10.5	B
			PM	11.8	B

Notes:

¹AM – morning peak hour (between 7 and 9 a.m.), PM – evening peak hour (between 4 and 6 p.m.)

²Total control delay for the worst movement is presented for side-street yield – controlled intersections.

³ LOS = Level of Service calculations conducted using the Synchro 9.0 level of service analysis software package was used, which applies the methodology described in the HCM 2010.

ROADWAY SEGMENT LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

The analysis methodology used to analyze roadway facilities is described in the LOS Analysis Methodology section. LOS was determined by comparing existing traffic volumes for selected roadway segment with daily LOS capacity thresholds. These thresholds are shown in **Table 2**. 24-hour bi-directional counts for seven days were collected for the listed roadway segment in the month of October 2016. **Table 4** below summarizes the study roadway segment operations under existing conditions and includes Facility type, Daily traffic Volume, and LOS information for each study roadway segment. The study roadway segment are expected to be operating at a satisfactory LOS D or better.

Table 4: Roadway Segment Level of Service Analysis - Existing Conditions

ID	Roadway Segment	Facility Type	Existing Conditions	
			Daily Traffic Volume	LOS
1	Ahern Road northwest of the I-5 Southbound Ramps	Principal Arterial/RCMP	3,607	A

Existing Conditions Peak Hour Traffic Volumes

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- XX AM Peak Hour Trips
- (XX) PM Peak Hour Trips
- X,XXX Average Daily Traffic Volume (ADT)
- +++++ Railroad



EXISTING PLUS PROJECT CONDITIONS

This analysis scenario presents the impacts of the proposed development at the study intersection and surrounding roadway system. This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.

PROJECT TRIP GENERATION

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the *Institute of Transportation Engineer's (ITE) publication Trip Generation (9th Edition)*. TJKM used published trip rates for the Truck Stop (ITE Code 950), Gasoline/Service Station (ITE Code 944) and Quick Lubrication Vehicle Stop (ITE Code 941). TJKM applied pass-by trip discount as per ITE Trip Generation Handbook, 9th Edition.

Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass by trips account for trips that are already on the roadway but will stop/divert to the new development on their way to their final destinations. Pass by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. Pass by trips are not diverted from another roadway.

Table 5 shows the trip generation for the proposed project. The project is expected to generate approximately 413 weekday a.m. peak hour trips (213 inbound, 200 outbound) and 526 weekday p.m. peak hour trips (271 inbound, 255 outbound).

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area. Assignment determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution. Trip distribution assumptions for the proposed project were developed based on the existing travel patterns and TJKM's knowledge of the study area.

The distribution assumptions for the proposed development are as follows:

- ▶ 20 percent to/from north of Interstate 5 (I-5)
- ▶ 20 percent to/from south of Interstate 5 (I-5)
- ▶ 25 percent to/from north of Ahern Road
- ▶ 35 percent to/from south of Ahern Road

Figure 5 illustrates the net project trip assignment at the study intersections expected from the proposed development. The assigned project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Table 5: Proposed Project Trip Generation

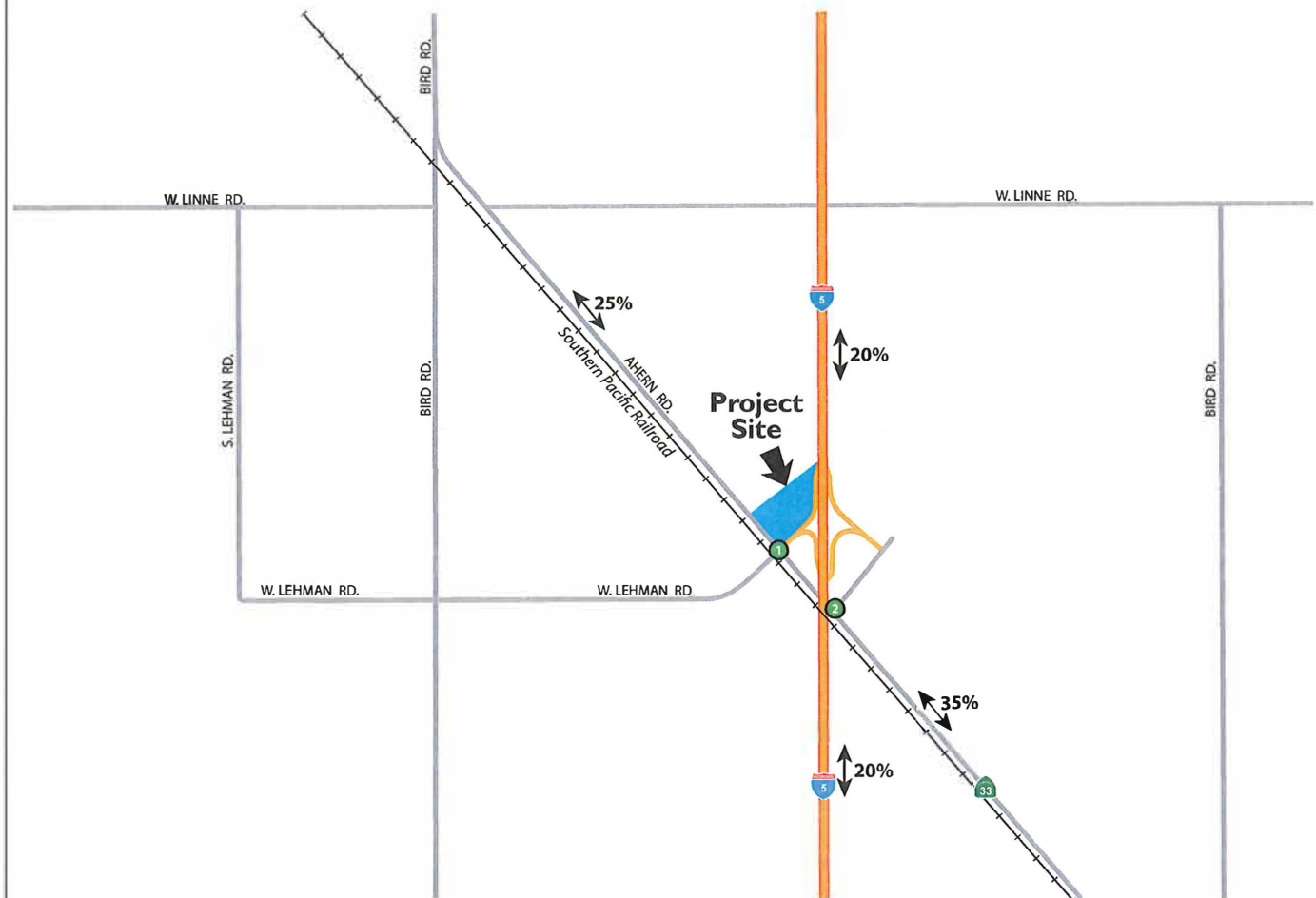
Land Use (ITE Code)	Size	Daily		AM Peak			PM Peak					
		Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total	
Truck Stop (950)	8.625	ksf	-	-	-	-	-	-	13.63	61	56	117
Gasoline/Service Station (944)	24	Vehicle fueling positions	168.56	4,045	12.16	149	143	292	13.87	166	166	332
Pass-by Trip Discount for Gasoline/Service Station			-	-	-58%	-86	-83	-169	-42%	-70	-70	-139
Fast Food Restaurant with Drive-Thru Window (934)	4.000	ksf	496.12	1,984	45.42	93	89	182	32.65	68	63	131
Fast Food Restaurant with Drive-Thru Window (934)	8.000	ksf	496.12	3,969	45.42	185	178	363	32.65	136	125	261
Pass-by Trip Discount for Fast Food Restaurant with Drive-Thru Window			-	-	-49%	-136	-131	-267	-50%	-102	-94	-196
Quick Lubrication Vehicle Stop (941)	4	service positions	40	160	3	8	4	12	5.19	12	9	21
Net Trips			-	10,158	-	213	200	413	-	271	255	527

Notes: Source- Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012:

1- Pass-by Trip Discount as recommended by ITE Trip Generation Handbook

Project Trip Distribution and Assignment

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- XX AM Peak Hour Trips
- (XX) PM Peak Hour Trips
- XX% Trip Distribution
- +++++ Railroad



INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection levels of service were calculated with the new traffic added by the proposed project to existing volumes to evaluate the operating conditions of the intersections and identify potential impacts to the roadway system. The results of the intersection level of service calculations for Existing plus Project Conditions are presented in **Table 6**. **Appendix C** contains the corresponding calculation sheets. The results for Existing Conditions are included for comparison purpose, along with the projected increases in delay. The changes in delay between Existing and Existing plus Project Conditions are used to identify significant impacts. **Figure 6** shows projected turning movement volumes at all the study intersections for Existing plus Project Conditions.

Under this scenario, all the intersections operate as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours. Based on the Caltrans LOS impact criteria, the proposed project is expected to have a *less-than-significant* impact at the study intersections.

Table 6: Intersection Level of Service Analysis – Existing plus Project Conditions

No	Intersections	Control	Peak Hour ¹	Existing Conditions		Existing with Project Conditions		Change in Delay ⁴ (Sec)
				Delay ²	LOS ³	Delay ²	LOS ³	
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	Two-Way Stop	AM	12.0	B	17.4	C	5.40
			PM	13.2	B	25.1	D	11.90
2	Ahern Rd.-SR-33/I-5 NB Ramp	One-Way Stop	AM	10.5	B	10.8	B	0.30
			PM	11.8	B	11.3	B	-0.50

Notes:

¹AM – morning peak hour (between 7 and 9 a.m.), PM – evening peak hour (between 4 and 6 p.m.)

²Total control delay for the worst movement is presented for side-street yield – controlled intersections.

³LOS = Level of Service calculations conducted using the Synchro 9.0 level of service analysis software package was used, which applies the methodology described in the HCM 2010.

⁴Change in Delay for Existing and Existing with project Conditions

ROADWAY SEGMENT LEVEL OF SERVICE ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Table 7 below summarizes the study roadway segments operations under existing plus project conditions and includes Facility type, Daily traffic Volume and LOS information for each study roadway segment. Based on the a.m. and p.m. peak hour trips, approximately 235 trips are estimated to generated per day from the proposed development. All the study roadway segments are expected to be operating at a satisfactory LOS D or better.

Table 7: Roadway Segment Level of Service Analysis - Existing plus Project Conditions

ID	Roadway Segment	Facility Type	Existing plus Project Conditions	
			Daily Traffic Volume	LOS
1	Ahern Road northwest of the I-5 Southbound Ramps	Principal Arterial/RCMP	3,842	A

Existing plus Project Conditions Peak Hour Traffic Volumes

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- XX AM Peak Hour Trips
- (XX) PM Peak Hour Trips
- X,XXX Average Daily Traffic Volume (ADT)
- ++++ Railroad



CUMULATIVE CONDITIONS

This section details expected traffic conditions at the study intersections under Cumulative (No Project) Conditions. This analysis scenario is defined as Cumulative conditions without the proposed project in year 2036. This scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for the Year 2036. In addition, Cumulative Conditions volumes were adjusted based on recommendations by Caltrans staff using the Caltrans Traffic Forecasting model¹. **Figure 7** shows projected turning movement volumes at the study intersection for Cumulative Conditions for a.m. and p.m. peak hours.

INTERSECTIONS LEVEL OF SERVICE ANALYSIS – CUMULATIVE CONDITIONS

The intersection LOS analysis results for Cumulative Conditions are summarized in **Table 8**. Detailed calculation sheets for Cumulative Conditions are contained in **Appendix D**. Under this scenario, the study intersections operates as per the Caltrans standards at LOS D or better during the a.m. and p.m. peak hours.

Table 8: Intersection Level of Service Analysis – Cumulative Conditions

ID	Intersection	Control	Peak Hour ¹	Cumulative Conditions	
				Average Delay ¹	LOS ²
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	Two-Way Stop	AM	13.6	B
			PM	15.7	C
2	Ahern Rd.-SR-33/I-5 NB Ramp	One-Way Stop	AM	11.4	B
			PM	13.1	B

Notes:

¹AM – morning peak hour (between 7 and 9 a.m.), PM – evening peak hour (between 4 and 6 p.m.)

²Total control delay for the worst movement is presented for side-street yield – controlled intersections.

³ LOS = Level of Service calculations conducted using the Synchro 9.0 level of service analysis software package was used, which applies the methodology described in the HCM 2010.

ROADWAY SEGMENT LEVEL OF SERVICE ANALYSIS – CUMULATIVE CONDITIONS

The analysis methodology used to analyze roadway facilities is described in LOS Analysis Methodology section. LOS was determined by comparing Cumulative traffic volumes for selected roadway segments with daily LOS capacity thresholds based on the assumption of a one percent growth factor for 20 years. These thresholds are shown in **Table 2**. **Table 9** below summarize the study roadway segments operations under cumulative conditions, respectively. All the study roadway segments are expected to be operating at a satisfactory LOS D or better.

¹ Per an email from Caltrans staff to San Joaquin County staff dated February 10, 2017, Caltrans requested to adjust the volumes to reflect 19 peak hour vehicles in the a.m. peak hour and 23 peak hour vehicles in the p.m. peak hour to the northbound on-ramp and southbound off-ramp respectively.

Table 9: Roadway Segment Level of Service Analysis - Cumulative Conditions

ID	Roadway Segment	Facility Type	Cumulative Conditions	
			Daily Traffic Volume	LOS
1	Ahern Road northwest of the I-5 Southbound Ramps	Principal Arterial/RCMP	4,401	A

Cumulative Conditions Peak Hour Traffic Volumes

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- XX AM Peak Hour Trips
- (XX) PM Peak Hour Trips
- X,XXX Average Daily Traffic Volume (ADT)
- +++++ Railroad



CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative Conditions, with the addition of projected traffic from the proposed development of the project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions. **Figure 8** shows projected turning movement volumes at the study intersection for Cumulative plus Project Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

The intersection LOS analysis results for Cumulative plus Project Conditions are summarized in **Table 10**. Detailed calculation sheets for Cumulative plus Project Conditions are contained in **Appendix E**.

Under this scenario, all the intersections operate as per the Caltrans standards Level of Service (LOS) D or better during the a.m. and p.m. peak hours except the intersection of Ahern Road-West Lehman road and I-5 Southbound Ramps (Intersection 1) operates at LOS E during the p.m. peak hour.

Table 10: Intersection Level of Service Analysis – Cumulative plus Project Conditions

No	Intersections	Control	Peak Hour ¹	Cumulative Conditions		Cumulative with Project Conditions		Change in Delay ⁴ (Sec)
				Delay ²	LOS ³	Delay ²	LOS ³	
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	Two-Way Stop	AM	13.6	B	22.1	C	8.5
			PM	15.7	C	40.2	E	24.5
2	Ahern Rd.-SR-33/I-5 NB Ramp	One-Way Stop	AM	11.4	B	12.4	B	1.0
			PM	13.1	B	14.3	B	1.2

Notes:

¹AM – morning peak hour (between 7 and 9 a.m.), PM – evening peak hour (between 4 and 6 p.m.)

²Total control delay for the worst movement is presented for side-street yield – controlled intersections.

³LOS = Level of Service calculations conducted using the Synchro 9.0 level of service analysis software package was used, which applies the methodology described in the HCM 2010.

⁴Change in Delay for Cumulative and Cumulative with project Conditions

Bold text indicates intersection operates at a deficient Level of Service.

The peak-hour signal warrant from the California Manual of Uniform Traffic Control Devices (CA MUTCD) was evaluated for the unsignalized intersection at Ahern Road-West Lehman Road and I-5 Southbound Ramps (Intersection 1), which operates at unacceptable LOS under Cumulative plus Project Conditions to determine if a traffic signal is warranted. The unsignalized intersection at Ahern Road-West Lehman Road and I-5 Southbound Ramps (Intersection 1) do not meet CA MUTCD peak hour signal warrant in p.m. peak hour for Cumulative plus Project Conditions. MUTCD peak hour signal warrants sheets conditions are contained in **Appendix E**. It should be noted that for the unsignalized intersection at Ahern Road-West Lehman Road and I-5 Southbound Ramps (Intersection 1), the major street (Ahern Road) volumes are very high during the p.m. peak hour, so on the minor street (I-5 Southbound Ramps) there are insufficient gaps. In particular, the right turn vehicles queue up behind the left turn vehicles. Hence, right turn movement experience longer wait times at this intersection.

Based on the impact criteria listed in Study Methodology, the proposed project will have a significant impact at the study intersection at Ahern Road-West Lehman Road and I-5 Southbound Ramps (Intersection 1) during the p.m. peak hour.

The following measure is a draft recommendation to mitigate significant impacts. The final mitigations may require coordination with multiple jurisdictions to address the practical steps of implementing physical improvements:

Ahern Road-West Lehman Road and I-5 Southbound Ramps (Intersection 1)– The addition of project traffic under Cumulative with Project Conditions exacerbates unacceptable intersection operations during the p.m. peak hour. Providing one right turn lane of storage length of 150 feet for the westbound approach, the I-5 Southbound Ramps, would improve operations to an acceptable LOS D during both peak hours. As a result of this mitigation measure, intersection conditions would improve to LOS C with 18.9 seconds of delay in the a.m. peak hour and LOS D with 29.6 seconds of delay in the p.m. peak hour.

The mitigated intersection LOS calculations are presented in **Appendix E**.

PROJECT FAIR SHARE CALCULATION

In order to restore the LOS to the County of San Joaquin and Caltrans acceptable standards, the addition of a westbound right turn lane is recommended under Cumulative plus Project Conditions. The project sponsor will be required to pay a fair share contribution of the associated mitigation measure. The fair share is calculated from the Caltrans and County of San Joaquin Traffic Impact Study guidelines. Based on the projected additional trips from the proposed project, the fair share contribution is approximately 76 percent during the a.m. peak hour and 78 percent during the p.m. peak. The Fair Share Analysis results for Cumulative plus Project Conditions are summarized in **Table 11**. The contribution of the project is 77 percent.

Table 11: Fair Share Analysis – Cumulative plus Project Conditions

ID	Intersection		Peak Hour ¹		Total
			AM	PM	
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	Existing Volume (vph)	390	467	857
		Project Trips	309	394	703
		Cumulative Volume (vph)	487	577	1,064
		Cumulative plus project Volume (vph)	796	971	1767
		Fair Share (%) ²	76	78	77

Notes:

¹AM – morning peak hour (between 7 and 9 a.m.), PM – evening peak hour (between 4 and 6 p.m.)

²Fair Share (%) = Total project trips divided by the increase in the total trips from Existing plus Approved Projects to Cumulative plus Project

Per the County, the highest cost for a roadway reconstruct in pavement management system is \$9.42 per square foot. In this case, provision of a westbound right-turn lane with a storage bay is 150 feet long with a taper of 50 feet, and a 12 feet wide lane width. Hence, the total cost estimate for the improvements necessary to mitigate the forecasted traffic demand is \$22,608. Based on **Table 11**, and per the County standards, the fair share contribution is an average of both the peaks which arises to be 77 percent. Therefore, the equitable cost of traffic mitigation for the proposed project is \$17,408.

ROADWAY SEGMENT LEVEL OF SERVICE ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Table 12 below summarizes the study roadway segments operations under Cumulative plus project conditions, respectively and include Facility type, Daily traffic Volume, and LOS information for each study roadway segment. All the study roadway segments are expected to be operating at a satisfactory LOS D or better.

Table 12: Roadway Segment Level of Service Analysis - Cumulative plus Project Conditions

ID	Roadway Segment	Facility Type	Cumulative plus Project Conditions	
			Daily Traffic Volume	LOS
1	Ahern Road northwest of the I-5 Southbound Ramps	Principal Arterial/RCMP	4,636	A

Cumulative plus Project Conditions Peak Hour Traffic Volumes

Intersection #1 Ahern Rd./ W. Lehman Rd./I-5 SB Ramp	Intersection #2 Ahern Rd./ I-5 NB Ramp



LEGEND

- Study Intersection
- XX AM Peak Hour Trips
- (XX) PM Peak Hour Trips
- X,XXX Average Daily Traffic Volume (ADT)
- ++++ Railroad



QUEUING AND DRIVEWAY ANALYSIS

QUEUING ANALYSIS AT STUDY INTERSECTION

TJKM conducted a vehicle queuing analysis at the study intersections where project traffic is added under Existing plus Project Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Sim Traffic software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 13** summarizes the 95th percentile queue lengths at study intersections under Existing and Existing plus Project Conditions scenarios. The proposed project *does not create a significant queues* on the expected left-turn or right-turn queues at study intersections.

Table 13: 95th Percentile Queues at Turn Pockets Affected by Project Traffic

ID	Intersection	Lane Group	Storage Length per Lane	Existing		Existing plus Project	
				AM	PM	AM	PM
1	Ahern Road/W. Lehman Rd-I-5 SB Ramp	NBL	195	20	20	50	20
		SBL	210	20	20	40	30
2	Ahern Rd.-SR-33/I-5 NB Ramp	SBL	150	20	20	50	50

Notes: Storage length and 95th percentile queue is expressed in feet per lane
Queue length is rounded to nearest tenth value.

SITE ACCESS AND ON-SITE CIRCULATION AND OTHER IMPACTS

SITE ACCESS

This section analyzes site access and internal circulation for vehicles, pedestrians and bicycles based on the site plan presented on **Figure 2**. TJKM reviewed internal and external access for the project site for passenger vehicles, trucks, pedestrians, and bicycles.

ON-SITE CIRCULATION

TJKM reviewed the proposed project site plan in order to evaluate access to the project, the adequacy of maneuvering by on-site vehicles, truck stop, and emergency vehicles circulation. . The proposed project's access will be via full access driveways on Ahern Road as shown in the project site plan dated February 18, 2016 (**Figure 2**). Two project driveways are 30 feet wide and one driveway is 60 feet wide for passenger cars and trucks. The project site plan has adequate access for all types of emergency vehicles.

The internal circulation for the proposed project was reviewed for issues related to queuing, safety, dead-end aisles, and parking spaces for which maneuvering in and out may be difficult. All circulation aisles accommodate two-way travel and proposed parking spaces are angular and perpendicular. According to design standards, all the driveway and drive aisles have a minimum width of 26 feet. It is expected that there will be semi-trailer trucks and single unit trucks entering and exiting almost all the three driveways. Based on the site plan, all circulation aisles are about 25 feet wide and accommodate two-way travel, which is not sufficient for trucks. As an example, a survey of truck stops and large commercial truck facilities within San Joaquin County show circulation aisles ranging from 50 to 65 feet wide. In addition, the site plan presents areas where the turning radii is inadequate for the trucks. TJKM recommends to confirm trucks can circulate on-site, by performing a truck turning analysis at the project driveways and within the eastern portion of the site where the truck amenities are provided.

TJKM also recommends the following project driveway treatment to enhance traffic safety and operations:

- Restrict truck access to just the northern-most driveway as it is 60 feet wide and can accommodate truck ingress and egress
- Installation of "Autos only" or "No Trucks" signage at the two 30 feet southern driveways along with the appropriate pavement delineation
- Installation of Stop control at the project driveways with appropriate pavement delineation

PEDESTRIAN ACCESS

In the project vicinity, the study intersections were unsignalized and there were no sidewalks and street lighting on Ahern Road. Based on the pedestrian counts conducted there is little pedestrian activity along the Ahern Road. The proposed project will not result in any impacts to existing or planned pedestrian facilities in the immediate vicinity of the project. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is *less-than-significant*.

BICYCLE ACCESS

In terms of bicycle access to the project site, there are no bicycle facilities within the project vicinity. According to the San Joaquin County Master Plan, there are no proposed bike routes within the vicinity of project. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is less-than-significant.

TRANSIT

There is no transit service within the vicinity of study area so the project would not impose any impacts on existing transit service. The nature of the traffic generated by the proposed project would also not create any demand for new transit service and is not expected to generate a need for transit in the area. Therefore, impacts to transit service are expected to be *less than significant*.

SIGHT DISTANCE ANALYSIS

Sight distance is evaluated to determine if a driver will have adequate visibility to enter a roadway safely without resulting in a conflict with traffic already on the roadway. The distance between the intersection of Ahern Road/W. Lehman Rd-I-5 SB Ramp and the proposed site driveway on Ahern Road is approximately 200 feet. According to the Caltrans Highway Design Manual (HDM), Chapter 200, 2014, the required minimum stopping sight distance for design speed of 15 mph (project driveway) should be 100 feet. The speed limit on Ahern Road is 55 mph. According to HDM, Chapter 200, 2014, the required minimum stopping sight distance for design speed of 55 mph is 500 feet. Therefore, there is ample sight distance for vehicular speeds of 55 mph.

PARKING

Based on the project site plan dated February 18, 2016 (**Figure 2**), 136 car parking spaces and 95 truck parking spaces are provided. Standard parking stalls (9 feet by 20 feet) are as per San Joaquin Standards. Truck parking stalls (15 feet by 55 feet with overhead clearance of 14 feet) are as per San Joaquin Standards. Based on the proposed parking spaces to be provided on site, no parking impacts are projected on County highways.

CONCLUSIONS AND RECOMMENDATIONS

1. Based on the local trip generation rates, the proposed development is expected to generate approximately 413 weekday a.m. peak hour trips (213 inbound, 200 outbound) and 526 weekday p.m. peak hour trips (271 inbound, 255 outbound).
2. Under Existing Conditions, the study intersections and roadway segments operate as per the Caltrans standards (LOS D or better) during the a.m. and p.m. peak hours.
3. Under Existing plus Project Conditions, the study intersections and roadway segments operates as per the Caltrans standards during the a.m. and p.m. peak hours. Based on the Caltrans impact criteria, the project is expected to have a less-than-significant impact at the study intersections under Existing plus Project Conditions.
4. Under Cumulative Conditions, the study intersections operates as per the Caltrans standards during the a.m. and p.m. peak hours. The study roadway segments are expected to be operating at a satisfactory LOS D or better.
5. Under Cumulative plus Project Conditions, the study intersections operates as per the Caltrans standards during the a.m. and p.m. peak hour except the intersection of Ahern Road/W. Lehman Road-I-5 SB Ramp (Intersection 1) which operates at LOS E during the p.m. peak hour. Based on the Caltrans impact criteria, the project will have a *significant* impact at study intersection 1. For this, provision of one right turn lane on the I-5 SB Ramp would improve operations to an acceptable LOS C/D during both peak hours. The study roadway segment is expected to be operating at a satisfactory LOS D or better. The Fair Share contribution for the proposed project under Cumulative plus Project Conditions is approximately 77 percent, which amounts to \$17,408.
6. The proposed project does not create a significant impact on the expected queues at the study intersections.
7. The proposed project does not conflict with the existing and planned pedestrian or bicycle facilities. There are no transit service within the vicinity of study area so the project would not impose any impacts on existing transit service. Therefore, the impact to pedestrian, bicycle facilities, and transit facilities is less-than-significant.
8. TJKM examined the project site plan in order to evaluate the adequacy of on-site vehicle circulation for trucks, and emergency vehicles. Based on the evaluation, the proposed on-site vehicle circulation is inadequate. TJKM recommends the applicant review the project site plan, performing a truck turning analysis at the project driveways and within the eastern portion of the site where the truck amenities are provided to confirm adequate truck circulation.
9. Based on the project site plan dated February 18, 2016 (**Figure 2**), 136 car parking spaces and 95 truck parking spaces are provided. Based on the proposed parking spaces to be provided on site, no parking impacts are projected on County highways.
10. TJKM recommends restricting truck access to the northern-most driveway, installing the appropriate signage to guide passenger vehicles and trucks, installation of stop control at the project driveway with appropriate pavement delineation and signing.

Appendix A – Existing Traffic Counts Sheets

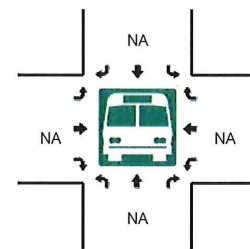
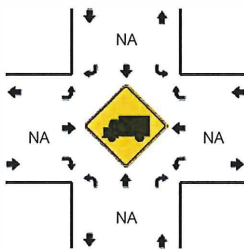
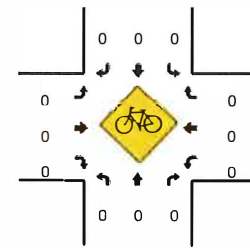
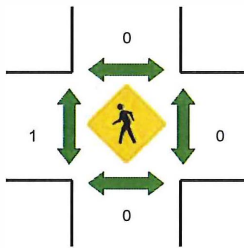
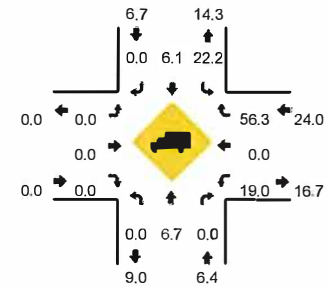
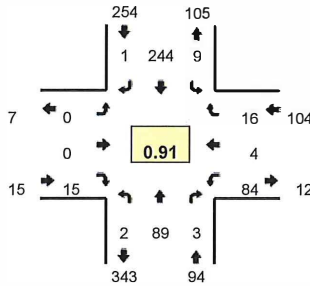
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Ahern Rd -- W Lehman Rd/I-5 SB Ramps
CITY/STATE: Tracy, CA

QC JOB #: 13941402
DATE: Tue, Oct 25 2016

Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 4:40 PM -- 4:55 PM



5-Min Count Period Beginning At	Ahern Rd (Northbound)				Ahern Rd (Southbound)				W Lehman Rd/I-5 SB Ramps (Eastbound)				W Lehman Rd/I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	8	1	0	0	22	0	0	0	0	1	0	6	0	0	0	38	
4:05 PM	0	13	0	0	1	14	0	0	0	0	1	0	7	0	0	0	36	
4:10 PM	0	10	0	0	0	19	0	0	0	0	0	0	10	0	0	0	39	
4:15 PM	0	17	0	0	0	17	0	0	0	0	0	0	7	0	0	0	41	
4:20 PM	1	12	0	0	0	16	0	0	1	0	0	0	4	1	0	0	35	
4:25 PM	0	9	0	0	0	16	0	0	0	0	0	0	7	0	0	0	32	
4:30 PM	0	4	0	0	1	17	0	0	0	0	0	0	7	1	0	0	30	
4:35 PM	1	5	0	0	1	11	0	0	0	0	2	0	7	1	0	0	28	
4:40 PM	1	10	0	0	0	24	0	0	0	0	1	0	6	0	0	0	42	
4:45 PM	0	6	0	0	0	26	0	0	0	0	2	0	13	1	4	0	52	
4:50 PM	0	6	0	0	0	19	0	0	0	0	0	0	8	0	2	0	35	
4:55 PM	0	7	0	0	2	22	0	0	0	0	3	0	2	0	2	0	38	446
5:00 PM	0	8	1	0	1	25	0	0	0	0	2	0	13	1	3	0	54	462
5:05 PM	0	2	0	0	1	18	1	0	0	0	3	0	6	1	0	0	32	458
5:10 PM	0	9	0	0	0	25	0	0	0	0	0	0	8	0	0	0	42	461
5:15 PM	0	11	1	0	1	25	0	0	0	0	0	0	6	0	2	0	46	466
5:20 PM	0	8	0	0	1	18	0	0	0	0	1	0	2	0	0	0	30	461
5:25 PM	1	6	1	0	1	15	0	0	0	0	0	0	10	1	1	0	36	465
5:30 PM	0	9	0	0	1	12	0	0	0	0	2	0	6	0	1	0	31	466
5:35 PM	0	7	0	0	1	15	0	0	0	0	1	0	4	0	1	0	29	467
5:40 PM	0	11	1	0	0	15	1	0	0	0	0	0	6	0	0	0	34	459
5:45 PM	0	2	0	0	1	20	0	0	0	0	1	0	8	0	1	0	33	440
5:50 PM	0	6	0	0	0	14	0	0	0	0	2	0	3	0	0	0	25	430
5:55 PM	0	9	0	0	0	10	0	0	0	0	0	0	4	1	0	0	24	416
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	88	0	0	0	276	0	0	0	0	12	0	108	4	24	0	516	
Heavy Trucks	0	12	0	0	0	16	0	0	0	0	0	0	24	0	12	0	64	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

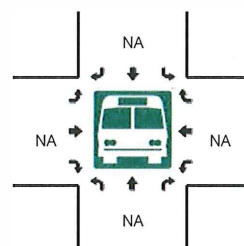
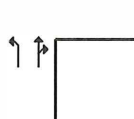
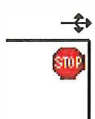
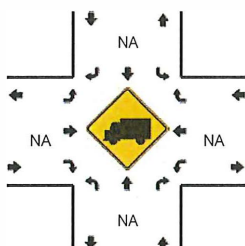
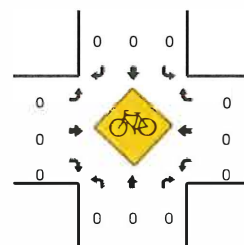
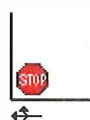
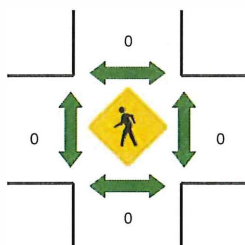
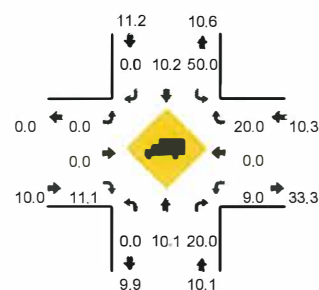
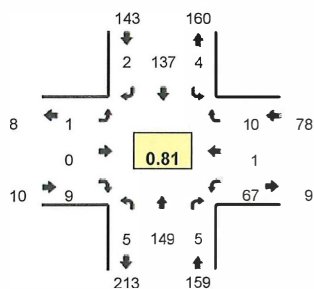
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Ahern Rd -- W Lehman Rd/I-5 SB Ramps
CITY/STATE: Tracy, CA

QC JOB #: 13941401
DATE: Tue, Oct 25 2016

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:10 AM -- 8:25 AM



5-Min Count Period Beginning At	Ahern Rd (Northbound)				Ahern Rd (Southbound)				W Lehman Rd/I-5 SB Ramps (Eastbound)				W Lehman Rd/I-5 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	12	0	0	0	1	0	0	0	0	0	0	1	0	1	0	15	283 300 322 335 357 375 370 380 387 388 390 381 381
7:05 AM	0	13	0	0	0	3	0	0	1	0	1	0	4	1	2	0	25	
7:10 AM	0	20	0	0	1	3	0	0	0	0	0	0	1	0	1	0	26	
7:15 AM	0	3	1	0	0	1	1	0	1	0	1	0	1	1	1	0	11	
7:20 AM	0	14	0	0	2	6	0	0	0	0	2	0	3	0	2	1	30	
7:25 AM	0	15	0	0	0	7	0	0	0	0	1	0	2	0	3	0	28	
7:30 AM	1	11	0	0	0	3	1	0	0	0	0	0	4	0	1	0	21	
7:35 AM	0	10	0	0	0	6	0	0	0	0	0	0	1	1	0	1	19	
7:40 AM	0	10	0	0	0	9	0	0	0	0	1	0	5	0	1	0	26	
7:45 AM	2	8	0	0	0	9	0	0	0	0	0	0	5	0	0	0	24	
7:50 AM	0	16	0	0	0	11	0	0	0	0	1	0	3	0	0	0	31	
7:55 AM	0	6	1	0	0	12	0	0	1	0	0	0	6	0	1	0	27	
8:00 AM	0	10	1	0	0	12	0	0	0	0	0	0	6	0	3	0	32	
8:05 AM	3	14	1	0	0	19	1	0	0	0	2	0	6	0	1	0	47	
8:10 AM	0	14	0	0	2	12	0	0	0	0	1	0	8	0	2	0	39	
8:15 AM	0	11	0	0	0	14	0	0	0	0	1	0	7	0	0	0	33	
8:20 AM	1	19	0	0	0	17	1	0	0	0	0	0	10	0	0	0	48	
8:25 AM	0	12	0	0	0	7	0	0	0	0	0	0	2	1	1	0	23	
8:30 AM	1	16	1	0	2	8	0	0	0	0	1	0	2	0	0	0	31	
8:35 AM	0	10	1	0	0	7	0	0	0	0	1	0	5	0	2	0	26	
8:40 AM	0	11	0	0	0	7	0	0	0	0	1	0	8	0	0	0	27	
8:45 AM	0	10	0	0	0	11	0	0	0	0	1	0	4	0	0	0	26	
8:50 AM	0	9	0	0	0	10	0	0	0	0	0	0	3	0	0	0	22	
8:55 AM	0	14	0	0	1	5	0	0	0	0	0	0	6	0	1	0	27	
Peak 15-Min Flowrates	No rhbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	176	0	0	8	172	4	0	0	0	8	0	100	0	8	0	480	
Heavy Trucks	0	28	0		8	28	0		0	0	0		4	0	0		68	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		
Comments:																		

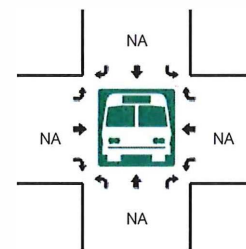
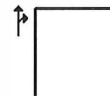
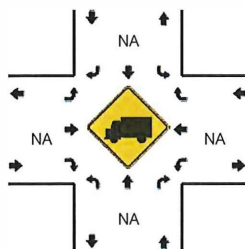
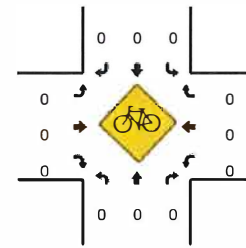
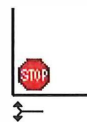
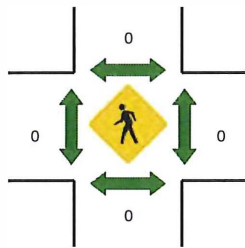
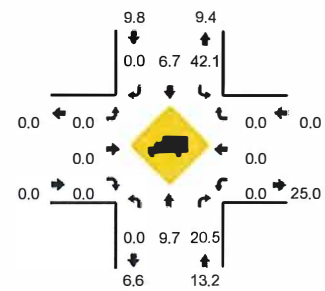
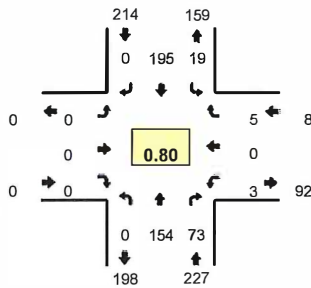
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Ahern Rd -- I-5 NB Ramps
CITY/STATE: Tracy, CA

QC JOB #: 13941403
DATE: Tue, Oct 25 2016

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:10 AM -- 8:25 AM



5-Min Count Period Beginning At	Ahern Rd (Northbound)				Ahern Rd (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	12	1	0	0	2	0	0	0	0	0	0	0	0	0	0	15	
7:05 AM	0	13	6	0	3	5	0	0	0	0	0	0	0	0	0	0	27	
7:10 AM	0	20	10	0	1	2	0	0	0	0	0	0	0	0	0	0	33	
7:15 AM	0	4	3	0	2	2	0	0	0	0	0	0	0	0	0	0	11	
7:20 AM	0	14	3	0	2	8	0	0	0	0	0	0	0	0	0	0	27	
7:25 AM	0	15	7	0	2	10	0	0	0	0	0	0	0	0	0	0	34	
7:30 AM	0	10	5	0	0	5	0	0	0	0	0	0	0	0	2	0	22	
7:35 AM	0	9	2	0	2	6	0	0	0	0	0	0	0	0	1	0	20	
7:40 AM	0	11	3	0	0	16	0	0	0	0	0	0	1	0	0	0	31	
7:45 AM	0	9	3	0	3	10	0	0	0	0	0	0	0	0	0	0	25	
7:50 AM	0	15	4	0	0	13	0	0	0	0	0	0	0	0	1	0	33	
7:55 AM	0	7	4	0	1	20	0	0	0	0	0	0	2	0	0	0	34	
8:00 AM	0	11	3	0	1	17	0	0	0	0	0	0	0	0	0	0	32	312
8:05 AM	0	18	10	0	2	21	0	0	0	0	0	0	0	0	0	0	51	329
8:10 AM	0	14	3	0	2	21	0	0	0	0	0	0	1	0	0	0	41	353
8:15 AM	0	9	8	0	2	20	0	0	0	0	0	0	0	0	2	0	41	361
8:20 AM	0	20	10	0	4	25	0	0	0	0	0	0	0	0	0	0	59	391
8:25 AM	0	13	8	0	0	9	0	0	0	0	0	0	0	0	0	0	30	423
8:30 AM	0	16	2	0	2	8	0	0	0	0	0	0	0	0	1	0	29	419
8:35 AM	0	10	8	0	1	13	0	0	0	0	0	0	0	0	1	0	33	426
8:40 AM	0	13	5	0	2	12	0	0	0	0	0	0	0	0	0	0	32	439
8:45 AM	0	8	8	0	2	16	0	0	0	0	0	0	0	0	0	0	34	440
8:50 AM	0	8	3	0	0	13	0	0	0	0	0	0	0	0	1	0	25	449
8:55 AM	0	14	5	0	0	11	0	0	0	0	0	0	0	0	0	0	30	441
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	172	84	0	32	264	0	0	0	0	0	0	4	0	8	0	564	
Heavy Trucks	0	24	16		24	12	0		0	0	0		0	0	0		76	
Pedestrians	0				0				0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

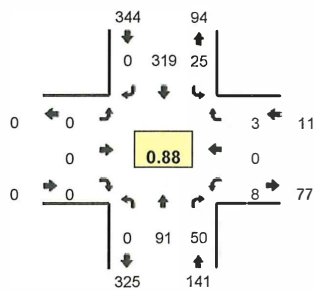
Comments:

Type of peak hour being reported: Intersection Peak

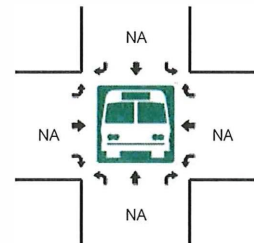
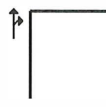
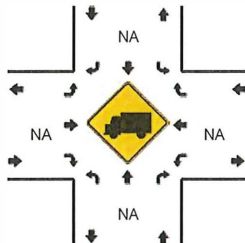
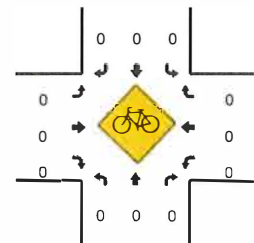
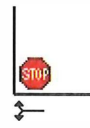
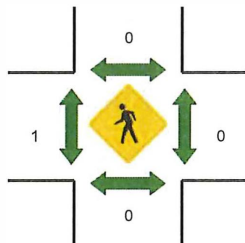
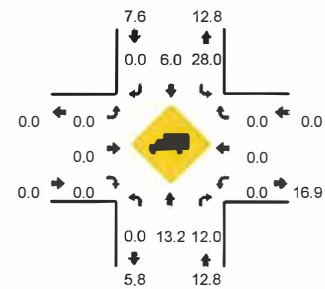
Method for determining peak hour: Total Entering Volume

LOCATION: Ahern Rd -- I-5 NB Ramps
CITY/STATE: Tracy, CA

QC JOB #: 13941404
DATE: Tue, Oct 25 2016



Peak-Hour: 4:20 PM -- 5:20 PM
Peak 15-Min: 4:40 PM -- 4:55 PM



5-Min Count Period	Ahern Rd (Northbound)				Ahern Rd (Southbound)				I-5 NB Ramps (Eastbound)				I-5 NB Ramps (Westbound)				Total	Hourly Totals
Beginning At	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	7	4	0	3	26	0	0	0	0	0	0	0	0	1	0	41	
4:05 PM	0	12	5	0	1	19	0	0	0	0	0	0	0	0	1	0	38	
4:10 PM	0	9	4	0	5	26	0	0	0	0	0	0	0	0	1	0	45	
4:15 PM	0	18	7	0	1	21	0	0	0	0	0	0	1	0	0	0	48	
4:20 PM	0	12	4	0	1	22	0	0	0	0	0	0	0	0	0	0	39	
4:25 PM	0	10	4	0	2	20	0	0	0	0	0	0	1	0	0	0	37	
4:30 PM	0	3	3	0	0	22	0	0	0	0	0	0	1	0	0	0	29	
4:35 PM	0	6	5	0	1	21	0	0	0	0	0	0	0	0	0	0	33	
4:40 PM	0	10	5	0	6	24	0	0	0	0	0	0	0	0	1	0	46	
4:45 PM	0	6	6	0	5	35	0	0	0	0	0	0	1	0	0	0	53	
4:50 PM	0	7	7	0	0	27	0	0	0	0	0	0	0	0	1	0	42	
4:55 PM	0	5	1	0	1	26	0	0	0	0	0	0	0	0	0	0	33	484
5:00 PM	0	9	2	0	3	36	0	0	0	0	0	0	2	0	0	0	52	495
5:05 PM	0	2	5	0	0	21	0	0	0	0	0	0	0	0	0	0	28	485
5:10 PM	0	8	3	0	1	36	0	0	0	0	0	0	0	0	1	2	51	491
5:15 PM	0	13	5	0	5	29	0	0	0	0	0	0	1	0	0	0	53	496
5:20 PM	0	6	3	0	3	17	0	0	0	0	0	0	0	0	1	0	30	487
5:25 PM	0	8	3	0	2	23	0	0	0	0	0	0	1	0	0	0	37	487
5:30 PM	0	8	0	0	1	16	0	0	0	0	0	0	0	0	1	0	26	484
5:35 PM	0	7	3	0	2	19	0	0	0	0	0	0	0	0	0	0	31	482
5:40 PM	0	11	4	0	1	23	0	0	0	0	0	0	0	0	1	0	40	476
5:45 PM	0	2	5	0	3	26	0	0	0	0	0	0	0	0	0	0	36	459
5:50 PM	0	4	4	0	2	17	0	0	0	0	0	0	0	0	2	0	29	446
5:55 PM	0	9	1	0	1	12	0	0	0	0	0	0	0	0	0	0	23	436
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	92	72	0	44	344	0	0	0	0	0	0	4	0	8	0	564	
Heavy Trucks	0	12	4	0	4	36	0	0	0	0	0	0	0	0	0	0	56	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps CITY/STATE: Tracy, CA														QC JOB #: 13941405 DIRECTION: NB/SB DATE: Oct 25 2016	
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	18	2	0	1	0	0	0	0	0	0	0	0	2	23
1:00 AM	0	6	0	0	1	0	0	0	0	0	0	0	0	5	12
2:00 AM	0	11	2	0	1	0	0	1	0	0	0	0	0	0	15
3:00 AM	0	34	5	0	3	0	0	0	0	0	1	0	0	4	47
4:00 AM	0	59	10	0	2	0	0	2	0	0	1	0	0	7	81
5:00 AM	0	139	34	0	2	0	0	1	0	0	3	0	0	4	183
6:00 AM	0	165	40	1	5	0	0	13	0	0	2	0	0	4	230
7:00 AM	0	152	54	4	6	0	0	6	0	0	4	0	0	7	233
8:00 AM	0	209	47	7	13	0	0	8	0	0	6	0	0	4	294
9:00 AM	0	62	25	0	15	0	0	10	0	0	0	0	0	3	115
10:00 AM	0	64	34	1	6	0	0	10	0	0	0	0	0	3	118
11:00 AM	0	76	22	1	14	0	0	10	0	0	3	0	0	3	129
12:00 PM	0	75	27	1	12	0	0	10	1	0	4	0	0	3	133
1:00 PM	1	104	41	1	11	0	0	9	1	0	7	0	0	4	179
2:00 PM	0	186	58	3	12	0	0	8	0	0	7	0	0	5	279
3:00 PM	0	261	76	5	12	0	0	14	0	0	5	0	0	4	377
4:00 PM	0	250	54	6	13	1	0	10	1	0	5	0	0	11	351
5:00 PM	0	212	68	1	9	0	0	6	0	0	5	0	0	10	311
6:00 PM	0	145	32	0	10	0	0	5	0	0	4	0	0	6	202
7:00 PM	0	74	12	0	5	0	0	2	1	0	4	0	0	4	102
8:00 PM	0	60	12	0	3	0	0	2	0	0	0	0	0	1	78
9:00 PM	0	36	9	0	0	0	0	1	0	0	1	0	0	3	50
10:00 PM	0	28	3	0	0	0	0	0	0	0	0	0	0	2	33
11:00 PM	0	19	3	0	0	0	0	0	0	0	0	0	0	0	22
Day Total	1	2445	670	31	156	1	0	128	4	0	62	0	0	99	3597
Percent	0.0%	68.0%	18.6%	0.9%	4.3%	0.0%	0.0%	3.6%	0.1%	0.0%	1.7%	0.0%	0.0%	2.8%	
ADT 3597															
AM Peak Volume	8:00 AM 209		7:00 AM 54	8:00 AM 7	9:00 AM 15	6:00 AM 13				8:00 AM 6				4:00 AM 7	8:00 AM 294
PM Peak Volume	1:00 PM 1	3:00 PM 261	3:00 PM 76	4:00 PM 6	4:00 PM 13	4:00 PM 1	3:00 PM 14		12:00 PM 1	1:00 PM 7				4:00 PM 11	3:00 PM 377
Comments:															

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps**QC JOB #:** 13941405**SPECIFIC LOCATION:** Ahern Road-SR 33 NW of the I-5 SB Ramps**DIRECTION:** NB/SB**CITY/STATE:** Tracy, CA**DATE:** Oct 26 2016

Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	17	3	0	0	0	0	2	0	0	0	0	0	2	24
1:00 AM	0	11	1	0	2	0	0	2	0	0	0	0	0	2	18
2:00 AM	0	9	1	0	1	0	0	1	0	0	2	0	0	3	17
3:00 AM	0	30	2	0	1	0	0	2	0	0	1	0	0	5	41
4:00 AM	0	70	19	0	3	0	0	1	0	0	1	0	0	3	97
5:00 AM	0	135	28	0	5	0	0	5	0	0	2	0	0	6	181
6:00 AM	0	158	38	2	20	0	0	10	0	0	2	0	0	14	244
7:00 AM	0	168	45	4	5	0	0	14	0	0	2	0	0	10	248
8:00 AM	0	200	40	6	12	0	0	5	0	0	5	0	0	6	274
9:00 AM	0	55	36	1	8	0	0	13	0	0	2	0	0	5	120
10:00 AM	0	63	36	1	10	0	0	15	0	0	1	0	0	3	129
11:00 AM	0	49	31	0	10	0	0	15	0	0	1	0	0	9	115
12:00 PM	5	93	35	0	11	0	0	15	0	0	4	0	0	10	173
1:00 PM	0	136	38	5	15	0	0	11	0	0	7	0	0	4	216
2:00 PM	0	179	53	1	16	0	0	19	1	0	5	0	0	3	277
3:00 PM	0	242	77	6	20	0	0	9	0	0	8	0	0	9	371
4:00 PM	0	229	74	2	22	0	0	12	0	0	7	0	0	18	364
5:00 PM	0	258	62	0	19	0	0	7	1	0	4	0	0	16	367
6:00 PM	0	136	41	0	6	0	0	5	0	0	3	0	0	6	197
7:00 PM	0	74	17	0	7	0	0	2	1	0	2	0	0	7	110
8:00 PM	0	53	7	0	1	0	0	2	0	0	0	0	0	2	65
9:00 PM	0	47	10	0	5	0	0	0	0	0	0	0	0	5	67
10:00 PM	0	23	10	0	1	0	0	0	0	0	0	0	0	1	35
11:00 PM	0	37	6	0	0	0	0	0	2	0	0	0	0	0	45
Day Total	5	2472	710	28	200	0	0	167	5	0	59	0	0	149	3795
Percent	0.1%	65.1%	18.7%	0.7%	5.3%	0.0%	0.0%	4.4%	0.1%	0.0%	1.6%	0.0%	0.0%	3.9%	
ADT 3795															
AM Peak Volume	8:00 AM 200	7:00 AM 45	8:00 AM 6	6:00 AM 20				10:00 AM 15			8:00 AM 5			6:00 AM 14	8:00 AM 274
PM Peak Volume	12:00 PM 5	5:00 PM 258	3:00 PM 77	3:00 PM 6	4:00 PM 22			2:00 PM 19	11:00 PM 2		3:00 PM 8			4:00 PM 18	3:00 PM 371

Comments:

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps CITY/STATE: Tracy, CA														QC JOB #: 13941405 DIRECTION: NB/SB DATE: Oct 27 2016	
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	14	5	0	1	0	0	0	0	0	0	0	0	0	20
1:00 AM	0	14	0	0	1	0	0	1	0	0	1	0	0	0	17
2:00 AM	0	7	1	0	0	0	0	1	0	0	1	0	0	1	11
3:00 AM	0	30	2	0	4	0	0	3	0	0	1	0	0	6	46
4:00 AM	0	64	13	0	2	0	0	3	0	0	3	0	0	5	90
5:00 AM	0	113	20	0	9	0	0	4	0	0	4	0	0	11	161
6:00 AM	0	161	44	1	11	0	0	10	0	0	1	0	0	8	236
7:00 AM	0	139	41	4	4	0	0	8	0	0	4	0	0	6	206
8:00 AM	0	184	48	5	4	0	0	9	0	0	5	0	0	4	259
9:00 AM	0	55	39	0	9	0	0	4	1	0	4	0	0	4	116
10:00 AM	3	58	25	0	7	4	0	6	1	0	4	1	0	14	123
11:00 AM	0	69	32	1	4	0	0	13	0	0	4	0	0	8	131
12:00 PM	0	91	39	2	6	0	0	15	1	0	5	0	0	1	160
1:00 PM	0	104	34	0	11	0	0	8	0	0	5	0	0	5	167
2:00 PM	0	183	52	0	19	0	0	12	1	0	8	0	0	2	277
3:00 PM	0	276	64	6	15	0	0	5	0	0	8	0	0	10	384
4:00 PM	0	240	55	5	22	0	0	7	0	0	6	0	0	19	354
5:00 PM	0	235	51	0	14	0	0	6	1	0	5	0	0	3	315
6:00 PM	0	145	33	0	5	0	0	5	1	0	5	0	0	5	199
7:00 PM	0	69	18	0	5	0	0	9	0	0	1	0	0	2	104
8:00 PM	0	44	10	0	4	0	0	1	0	0	0	0	0	2	61
9:00 PM	1	36	7	0	0	1	0	2	0	0	0	0	0	0	47
10:00 PM	0	25	8	0	2	0	0	1	0	0	0	0	0	0	36
11:00 PM	0	21	3	0	0	0	0	1	0	0	1	0	0	1	27
Day Total	4	2377	644	24	159	5	0	134	6	0	76	1	0	117	3547
Percent	0.1%	67.0%	18.2%	0.7%	4.5%	0.1%	0.0%	3.8%	0.2%	0.0%	2.1%	0.0%	0.0%	3.3%	
ADT 3547															
AM Peak Volume	10:00 AM 3	8:00 AM 184	8:00 AM 48	8:00 AM 5	6:00 AM 11	10:00 AM 4		11:00 AM 13	9:00 AM 1		8:00 AM 5	10:00 AM 1		10:00 AM 14	8:00 AM 259
PM Peak Volume	9:00 PM 1	3:00 PM 276	3:00 PM 64	3:00 PM 6	4:00 PM 22	9:00 PM 1		12:00 PM 15	12:00 PM 1		2:00 PM 8			4:00 PM 19	3:00 PM 384
Comments:															

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps**QC JOB #:** 13941405**SPECIFIC LOCATION:** Ahern Road-SR 33 NW of the I-5 SB Ramps**DIRECTION:** NB/SB**CITY/STATE:** Tracy, CA**DATE:** Oct 28 2016

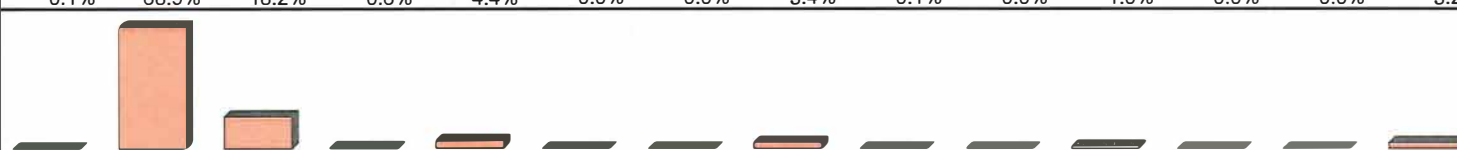
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	17	3	0	1	0	0	1	0	0	0	0	0	1	23
1:00 AM	0	12	1	0	3	0	0	0	0	0	0	0	0	1	17
2:00 AM	0	8	0	0	0	0	0	1	0	0	0	0	0	1	10
3:00 AM	0	25	2	0	1	0	0	0	0	0	0	0	0	5	33
4:00 AM	0	62	13	0	4	0	0	0	0	0	1	0	0	1	81
5:00 AM	0	101	23	0	0	0	0	2	0	0	0	0	0	4	130
6:00 AM	0	160	33	1	4	0	0	7	0	0	0	0	0	3	208
7:00 AM	0	153	34	5	9	1	0	8	0	0	0	0	0	9	219
8:00 AM	0	194	38	5	10	0	0	4	0	0	1	0	0	7	259
9:00 AM	0	65	23	0	8	0	0	11	0	0	1	0	0	2	110
10:00 AM	0	61	25	0	9	0	0	7	0	0	1	0	0	3	106
11:00 AM	0	71	32	0	11	0	0	13	0	0	2	0	0	6	135
12:00 PM	0	84	31	2	6	0	0	7	0	0	0	0	0	4	134
1:00 PM	0	164	48	1	12	0	0	10	0	0	0	0	0	5	240
2:00 PM	0	177	37	3	12	0	0	16	0	0	0	0	0	9	254
3:00 PM	0	199	60	2	8	0	0	12	0	0	0	0	0	4	285
4:00 PM	0	247	63	5	8	0	0	8	0	0	1	0	0	10	342
5:00 PM	0	196	54	0	6	0	0	9	0	0	0	0	0	9	274
6:00 PM	0	156	27	0	11	0	0	0	0	0	0	0	0	4	198
7:00 PM	0	67	8	0	1	0	0	1	0	0	0	0	0	5	82
8:00 PM	0	69	10	0	3	0	0	3	0	0	0	0	0	1	86
9:00 PM	0	57	10	0	2	0	0	2	0	0	0	0	0	2	73
10:00 PM	0	45	14	0	2	0	0	0	0	0	0	0	0	3	64
11:00 PM	0	28	9	0	1	0	0	1	0	0	0	0	0	1	40
Day Total	0	2418	598	24	132	1	0	123	0	0	7	0	0	100	3403
Percent	0.0%	71.1%	17.6%	0.7%	3.9%	0.0%	0.0%	3.6%	0.0%	0.0%	0.2%	0.0%	0.0%	2.9%	
ADT 3403															
AM Peak Volume	8:00 AM	8:00 AM	7:00 AM	11:00 AM	7:00 AM			11:00 AM			11:00 AM			7:00 AM	8:00 AM
	194	38	5	11	1			13			2			9	259
PM Peak Volume	4:00 PM	4:00 PM	4:00 PM	1:00 PM				2:00 PM			4:00 PM			4:00 PM	4:00 PM
	247	63	5	12				16			1			10	342

Comments:

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps CITY/STATE: Tracy, CA														QC JOB #: 13941405 DIRECTION: NB/SB DATE: Oct 29 2016	
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	32	10	1	1	0	0	1	0	0	0	0	0	3	48
1:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
2:00 AM	0	14	0	0	0	0	0	1	0	0	0	0	0	0	15
3:00 AM	0	16	1	0	0	0	0	1	0	0	0	0	0	0	18
4:00 AM	0	34	3	0	1	0	0	0	0	0	0	0	0	5	43
5:00 AM	0	58	10	0	0	0	0	1	0	0	1	0	0	2	72
6:00 AM	0	51	16	0	2	0	0	2	0	0	0	0	0	6	77
7:00 AM	0	42	12	0	0	0	0	6	0	0	0	0	0	3	63
8:00 AM	0	38	15	0	5	0	0	5	0	0	0	0	0	3	66
9:00 AM	2	74	23	1	7	2	0	4	0	0	0	0	0	4	117
10:00 AM	0	71	25	0	6	0	0	2	0	0	0	0	0	4	108
11:00 AM	0	70	25	0	6	0	0	1	0	0	0	0	0	3	105
12:00 PM	0	106	34	1	10	0	0	3	0	0	0	0	0	4	158
1:00 PM	0	99	33	1	6	0	0	5	0	0	0	0	0	4	148
2:00 PM	0	117	17	0	9	0	0	2	0	0	0	0	0	3	148
3:00 PM	0	104	28	0	3	0	0	1	0	0	1	0	0	7	144
4:00 PM	0	97	34	0	3	0	0	0	0	0	2	0	0	2	138
5:00 PM	0	101	26	0	2	0	0	0	0	0	0	0	0	4	133
6:00 PM	0	106	18	0	6	0	0	0	0	0	0	0	0	5	135
7:00 PM	0	46	13	0	4	0	0	0	0	0	0	0	0	2	65
8:00 PM	0	49	12	0	1	0	0	0	0	0	0	0	0	6	68
9:00 PM	0	53	11	0	1	0	0	0	0	0	0	0	0	3	68
10:00 PM	0	25	6	0	3	0	0	0	0	0	0	0	0	1	35
11:00 PM	0	35	4	0	2	0	0	1	0	0	0	0	0	0	42
Day Total	2	1443	378	4	78	2	0	36	0	0	4	0	0	74	2021
Percent	0.1%	71.4%	18.7%	0.2%	3.9%	0.1%	0.0%	1.8%	0.0%	0.0%	0.2%	0.0%	0.0%	3.7%	
ADT 2021															
AM Peak Volume	9:00 AM 2	9:00 AM 74	10:00 AM 25	12:00 AM 1	9:00 AM 7	9:00 AM 2		7:00 AM 6			5:00 AM 1			6:00 AM 6	9:00 AM 117
PM Peak Volume		2:00 PM 117	12:00 PM 34	12:00 PM 1	12:00 PM 10			1:00 PM 5			4:00 PM 2			3:00 PM 7	12:00 PM 158
Comments:															

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps														QC JOB #: 13941405	
SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps														DIRECTION: NB/SB	
CITY/STATE: Tracy, CA														DATE: Oct 30 2016	
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	24	2	0	0	0	0	1	0	0	0	0	0	0	27
1:00 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
2:00 AM	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
3:00 AM	0	6	0	0	1	0	0	0	0	0	0	0	0	0	7
4:00 AM	0	18	3	0	1	0	0	2	0	0	0	0	0	1	25
5:00 AM	0	15	2	0	1	0	0	1	0	0	0	0	0	3	22
6:00 AM	0	34	4	0	0	0	0	0	0	0	0	0	0	0	38
7:00 AM	0	23	5	1	3	0	0	0	0	0	0	0	0	2	34
8:00 AM	0	40	14	0	1	0	0	0	0	0	0	0	0	2	57
9:00 AM	0	41	9	0	0	0	0	0	0	0	0	0	0	2	52
10:00 AM	0	64	13	0	1	0	0	2	0	0	0	0	0	1	81
11:00 AM	0	64	21	0	4	0	0	3	0	0	0	0	0	1	93
12:00 PM	0	69	11	0	2	0	0	2	0	0	0	0	0	2	86
1:00 PM	0	79	11	0	5	0	0	2	0	0	0	0	0	3	100
2:00 PM	0	76	19	0	2	0	0	1	0	0	0	0	0	2	100
3:00 PM	0	74	15	1	2	0	0	0	0	0	0	0	0	2	94
4:00 PM	1	80	19	0	1	0	0	1	0	0	0	0	0	2	104
5:00 PM	0	78	10	0	5	0	0	0	0	0	0	0	0	7	100
6:00 PM	0	56	9	0	2	0	0	2	0	0	0	0	0	2	71
7:00 PM	0	53	11	0	1	0	0	1	0	0	0	0	0	2	68
8:00 PM	0	52	9	0	4	0	0	1	0	0	0	0	0	1	67
9:00 PM	0	34	9	0	1	0	0	0	0	0	0	0	0	3	47
10:00 PM	0	22	4	0	0	0	0	2	0	0	0	0	0	1	29
11:00 PM	0	17	2	0	0	0	0	0	0	0	0	0	0	0	19
Day Total	1	1031	203	2	38	0	0	21	0	0	0	0	0	39	1335
Percent	0.1%	77.2%	15.2%	0.1%	2.8%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	
ADT 1335															
AM Peak Volume	10:00 AM 64		11:00 AM 21	7:00 AM 1	11:00 AM 4	11:00 AM 3				5:00 AM 3				11:00 AM 93	
PM Peak Volume	4:00 PM 1	4:00 PM 80	2:00 PM 19	3:00 PM 1	1:00 PM 5	12:00 PM 2				5:00 PM 7				4:00 PM 104	
Comments:															

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps														QC JOB #: 13941405	
SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps														DIRECTION: NB/SB	
CITY/STATE: Tracy, CA														DATE: Oct 31 2016	
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
12:00 AM	0	8	1	0	0	0	0	1	0	0	0	0	0	0	10
1:00 AM	0	8	1	0	0	0	0	0	0	0	1	0	0	0	10
2:00 AM	0	2	0	0	0	0	0	0	0	0	1	0	0	2	5
3:00 AM	0	25	2	0	0	0	0	0	0	0	1	0	0	3	31
4:00 AM	0	56	11	0	3	0	0	1	0	0	0	0	0	3	74
5:00 AM	0	117	24	0	4	0	0	2	0	0	1	0	0	7	155
6:00 AM	0	156	34	1	9	0	0	5	0	0	0	0	0	7	212
7:00 AM	0	128	38	4	4	0	0	9	1	0	2	0	0	8	194
8:00 AM	0	200	50	5	7	0	0	11	0	0	2	0	0	4	279
9:00 AM	0	79	35	0	11	0	0	9	0	0	1	0	0	5	140
10:00 AM	0	61	32	0	6	0	0	13	0	0	0	0	0	5	117
11:00 AM	0	72	30	1	11	0	0	11	0	0	0	0	0	4	129
12:00 PM	0	94	21	0	15	0	0	11	0	0	0	0	0	9	150
1:00 PM	0	128	37	0	14	0	0	7	0	0	2	0	0	7	195
2:00 PM	0	197	52	2	16	0	0	13	0	0	0	0	0	7	287
3:00 PM	0	241	74	3	13	0	0	7	0	0	3	0	0	8	349
4:00 PM	0	270	84	6	23	0	0	6	0	0	0	0	0	7	396
5:00 PM	0	270	74	0	19	0	0	7	0	0	0	0	0	18	388
6:00 PM	3	201	34	0	8	0	0	5	0	0	0	0	0	5	256
7:00 PM	0	66	14	0	9	0	0	2	0	0	1	0	0	5	97
8:00 PM	0	51	10	0	3	0	0	1	0	0	0	0	0	2	67
9:00 PM	0	56	10	0	2	0	0	2	0	0	0	0	0	1	71
10:00 PM	0	30	9	0	0	0	0	2	0	0	0	0	0	0	41
11:00 PM	0	24	7	0	2	0	0	1	0	0	0	0	0	0	34
Day Total	3	2540	684	22	179	0	0	126	1	0	15	0	0	117	3687
Percent	0.1%	68.9%	18.6%	0.6%	4.9%	0.0%	0.0%	3.4%	0.0%	0.0%	0.4%	0.0%	0.0%	3.2%	
ADT 3687															
AM Peak Volume	8:00 AM 200		8:00 AM 50	8:00 AM 5	9:00 AM 11			10:00 AM 13	7:00 AM 1	7:00 AM 2				7:00 AM 8	8:00 AM 279
PM Peak Volume	6:00 PM 3	4:00 PM 270	4:00 PM 84	4:00 PM 6	4:00 PM 23			2:00 PM 13			3:00 PM 3			5:00 PM 18	4:00 PM 396
Comments:															

LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps SPECIFIC LOCATION: Ahern Road-SR 33 NW of the I-5 SB Ramps CITY/STATE: Tracy, CA												QC JOB #: 13941405 DIRECTION: NB/SB DATE: Oct 25 2016 - Oct 31 2016			
Start Time	Motor-cycles	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi	Not Classified	Total
Grand Total	16	14726	3887	135	942	9	0	735	16	0	223	1	0	695	21385
Percent	0.1%	68.9%	18.2%	0.6%	4.4%	0.0%	0.0%	3.4%	0.1%	0.0%	1.0%	0.0%	0.0%	3.2%	
ADT 3055															
Comments:															

**Appendix B – Existing Conditions Intersections Level of Service
Worksheets**

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: AM Peak

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	1	0	9	67	1	10	5	149	5	4	137	2
Future Vol, veh/h	1	0	9	67	1	10	5	149	5	4	137	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	10	76	1	11	6	169	6	5	156	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	356	352	157	355	351	172	158	0	0	175	0	0
Stage 1	166	166	-	184	184	-	-	-	-	-	-	-
Stage 2	190	186	-	171	167	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	585	560	868	585	561	851	1374	-	-	1354	-	-
Stage 1	818	746	-	800	733	-	-	-	-	-	-	-
Stage 2	794	731	-	812	745	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	573	555	868	575	556	851	1374	-	-	1354	-	-
Mov Cap-2 Maneuver	573	555	-	575	556	-	-	-	-	-	-	-
Stage 1	814	743	-	797	730	-	-	-	-	-	-	-
Stage 2	779	728	-	799	742	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	12	0.2	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1374	-	-	826 600	1354	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014 0.148	0.003	-	-
HCM Control Delay (s)	7.6	-	-	9.4 12	7.7	-	-
HCM Lane LOS	A	-	-	A B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0.5	0	-	-

HCM 2010 TWSC

2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

Timing Plan: AM Peak

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	5	154	73	19	195
Future Vol, veh/h	3	5	154	73	19	195
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	3	6	175	83	22	222

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	481	216	0	0	258	0
Stage 1	216	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.2	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.29	-
Pot Cap-1 Maneuver	530	804	-	-	1262	-
Stage 1	801	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	521	804	-	-	1262	-
Mov Cap-2 Maneuver	521	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	10.5		0		0.7
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 668	1262	-
HCM Lane V/C Ratio	-	- 0.014	0.017	-
HCM Control Delay (s)	-	- 10.5	7.9	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0	0.1	-

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	15	84	4	16	2	89	3	9	244	1
Future Vol, veh/h	0	0	15	84	4	16	2	89	3	9	244	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	0	17	95	5	18	2	101	3	10	277	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	417	407	278	414	406	103	278	0	0	105	0	0
Stage 1	298	298	-	107	107	-	-	-	-	-	-	-
Stage 2	119	109	-	307	299	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	532	521	742	535	522	930	1240	-	-	1438	-	-
Stage 1	694	653	-	879	791	-	-	-	-	-	-	-
Stage 2	866	790	-	686	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	515	517	742	519	518	930	1240	-	-	1438	-	-
Mov Cap-2 Maneuver	515	517	-	519	518	-	-	-	-	-	-	-
Stage 1	693	648	-	878	790	-	-	-	-	-	-	-
Stage 2	843	789	-	666	647	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10			13.2			0.2			0.3		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1240	-	-	742	557	1438	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.023	0.212	0.007	-	-				
HCM Control Delay (s)	7.9	-	-	10	13.2	7.5	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0	-	-				

HCM 2010 TWSC

2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	3	91	50	25	319
Future Vol, veh/h	8	3	91	50	25	319
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	9	3	103	57	28	363

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	551	132	0	0	160	0
Stage 1	132	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.2	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.29	-
Pot Cap-1 Maneuver	482	896	-	-	1372	-
Stage 1	875	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	472	896	-	-	1372	-
Mov Cap-2 Maneuver	472	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	634	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	11.8		0		0.6
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	542	1372
HCM Lane V/C Ratio	-	-	0.023	0.021
HCM Control Delay (s)	-	-	11.8	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

**Appendix C – Existing plus Project Conditions Intersections
Level of Service Worksheets**

HCM 2010 TWSC
1: Ahern Road & W. Lehman Road/I-5 SB Ramp

AM Peak
12/16/2016

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	9	67	1	52	5	266	5	44	247	2
Future Vol, veh/h	1	0	9	67	1	52	5	266	5	44	247	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	10	76	1	59	6	302	6	50	281	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	729	701	282	703	699	305	283	0	0	308	0	0
Stage 1	382	382	-	316	316	-	-	-	-	-	-	-
Stage 2	347	319	-	387	383	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	328	353	738	342	354	716	1235	-	-	1209	-	-
Stage 1	625	599	-	678	641	-	-	-	-	-	-	-
Stage 2	653	639	-	621	598	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	290	337	738	325	338	716	1235	-	-	1209	-	-
Mov Cap-2 Maneuver	290	337	-	325	338	-	-	-	-	-	-	-
Stage 1	622	574	-	675	638	-	-	-	-	-	-	-
Stage 2	595	636	-	587	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	17.4	0.1	1.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1235	-	-	639	426	1209	-	-
HCM Lane V/C Ratio	0.005	-	-	0.018	0.32	0.041	-	-
HCM Control Delay (s)	7.9	-	-	10.7	17.4	8.1	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.4	0.1	-	-

HCM 2010 TWSC
2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

AM Peak
12/16/2016

Intersection

Int Delay, s/veh 1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	3	48	228	73	59	265
Future Vol, veh/h	3	48	228	73	59	265
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	3	55	259	83	67	301

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	736	301	0
Stage 1	301	-	-
Stage 2	435	-	-
Critical Hdwy	6.5	6.3	4.2
Critical Hdwy Stg 1	5.5	-	-
Critical Hdwy Stg 2	5.5	-	-
Follow-up Hdwy	3.59	3.39	2.29
Pot Cap-1 Maneuver	375	720	1174
Stage 1	733	-	-
Stage 2	636	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	354	720	1174
Mov Cap-2 Maneuver	354	-	-
Stage 1	733	-	-
Stage 2	600	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	679	1174
HCM Lane V/C Ratio	-	-	0.085	0.057
HCM Control Delay (s)	-	-	10.8	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2

HCM 2010 TWSC
1: Ahern Road & W. Lehman Road/I-5 SB Ramp

PM Peak
12/16/2016

Intersection

Int Delay, s/veh 5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	15	84	4	70	2	238	3	60	384	1
Future Vol, veh/h	0	0	15	84	4	70	2	238	3	60	384	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	0	17	95	5	80	2	270	3	68	436	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	892	851	437	859	851	272	438	0	0	274	0	0
Stage 1	573	573	-	277	277	-	-	-	-	-	-	-
Stage 2	319	278	-	582	574	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	254	289	603	268	289	748	1081	-	-	1244	-	-
Stage 1	491	491	-	712	667	-	-	-	-	-	-	-
Stage 2	676	666	-	485	491	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	214	273	603	249	273	748	1081	-	-	1244	-	-
Mov Cap-2 Maneuver	214	273	-	249	273	-	-	-	-	-	-	-
Stage 1	490	464	-	711	666	-	-	-	-	-	-	-
Stage 2	599	665	-	446	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	25.1	0.1	1.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1081	-	-	603	355	1244	-	-
HCM Lane V/C Ratio	0.002	-	-	0.028	0.506	0.055	-	-
HCM Control Delay (s)	8.3	-	-	11.1	25.1	8.1	-	-
HCM Lane LOS	A	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.7	0.2	-	-

HCM 2010 TWSC
2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

PM Peak
12/16/2016

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	8	57	186	50	76	408
Future Vol, veh/h	8	57	186	50	76	408
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	9	65	211	57	86	464

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	876	240	0
Stage 1	240	-	-
Stage 2	636	-	-
Critical Hdwy	6.5	6.3	4.2
Critical Hdwy Stg 1	5.5	-	-
Critical Hdwy Stg 2	5.5	-	-
Follow-up Hdwy	3.59	3.39	2.29
Pot Cap-1 Maneuver	309	780	1251
Stage 1	781	-	-
Stage 2	512	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	288	780	1251
Mov Cap-2 Maneuver	288	-	-
Stage 1	781	-	-
Stage 2	477	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 644	1251	-
HCM Lane V/C Ratio	-	- 0.115	0.069	-
HCM Control Delay (s)	-	- 11.3	8.1	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.4	0.2	-

**Appendix D – Cumulative Conditions Intersections
Level of Service Worksheets**

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: AM Peak

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	11	82	2	13	6	192	6	5	167	2
Future Vol, veh/h	1	0	11	82	2	13	6	192	6	5	167	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	13	93	2	15	7	218	7	6	190	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	446	441	191	444	438	222	192	0	0	225	0	0
Stage 1	202	202	-	235	235	-	-	-	-	-	-	-
Stage 2	244	239	-	209	203	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	509	499	831	511	501	798	1335	-	-	1298	-	-
Stage 1	782	719	-	750	696	-	-	-	-	-	-	-
Stage 2	742	693	-	775	719	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	494	494	831	500	496	798	1335	-	-	1298	-	-
Mov Cap-2 Maneuver	494	494	-	500	496	-	-	-	-	-	-	-
Stage 1	778	716	-	746	692	-	-	-	-	-	-	-
Stage 2	722	689	-	760	716	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	13.6	0.2	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1335	-	-	786	526	1298	-
HCM Lane V/C Ratio	0.005	-	-	0.017	0.21	0.004	-
HCM Control Delay (s)	7.7	-	-	9.7	13.6	7.8	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0	-

HCM 2010 TWSC

2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

Timing Plan: AM Peak

Intersection

Int Delay, s/veh 0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	11	16	188	89	23	238
Future Vol, veh/h	11	16	188	89	23	238
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	13	18	214	101	26	270

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	587	264	0 0 315 0
Stage 1	264	-	- - - -
Stage 2	323	-	- - - -
Critical Hdwy	6.5	6.3	- - 4.2 -
Critical Hdwy Stg 1	5.5	-	- - - -
Critical Hdwy Stg 2	5.5	-	- - - -
Follow-up Hdwy	3.59	3.39	- - 2.29 -
Pot Cap-1 Maneuver	459	756	- - 1201 -
Stage 1	762	-	- - - -
Stage 2	716	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	449	756	- - 1201 -
Mov Cap-2 Maneuver	449	-	- - - -
Stage 1	762	-	- - - -
Stage 2	700	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 591	1201	-
HCM Lane V/C Ratio	-	- 0.052	0.022	-
HCM Control Delay (s)	-	- 11.4	8.1	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.2	0.1	-

HCM 2010 TWSC
1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	18	102	5	20	2	116	4	11	298	1
Future Vol, veh/h	0	0	18	102	5	20	2	116	4	11	298	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	0	20	116	6	23	2	132	5	13	339	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	517	505	339	513	504	134	340	0	0	136	0	0
Stage 1	364	364	-	139	139	-	-	-	-	-	-	-
Stage 2	153	141	-	374	365	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	456	458	685	459	459	894	1176	-	-	1400	-	-
Stage 1	639	610	-	845	767	-	-	-	-	-	-	-
Stage 2	831	765	-	631	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	436	453	685	442	454	894	1176	-	-	1400	-	-
Mov Cap-2 Maneuver	436	453	-	442	454	-	-	-	-	-	-	-
Stage 1	638	604	-	844	766	-	-	-	-	-	-	-
Stage 2	802	764	-	606	603	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.4			15.7			0.1			0.3		
HCM LOS	B			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1176	-	-	685	481	1400	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.03	0.3	0.009	-	-				
HCM Control Delay (s)	8.1	-	-	10.4	15.7	7.6	-	-				
HCM Lane LOS	A	-	-	B	C	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	1.2	0	-	-				

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	23	11	111	61	31	388
Future Vol, veh/h	23	11	111	61	31	388
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	26	13	126	69	35	441

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	672	161	0 0 195 0
Stage 1	161	-	- - - -
Stage 2	511	-	- - - -
Critical Hdwy	6.5	6.3	- - 4.2 -
Critical Hdwy Stg 1	5.5	-	- - - -
Critical Hdwy Stg 2	5.5	-	- - - -
Follow-up Hdwy	3.59	3.39	- - 2.29 -
Pot Cap-1 Maneuver	409	863	- - 1331 -
Stage 1	849	-	- - - -
Stage 2	586	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	398	863	- - 1331 -
Mov Cap-2 Maneuver	398	-	- - - -
Stage 1	849	-	- - - -
Stage 2	571	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	482	1331
HCM Lane V/C Ratio	-	-	0.08	0.026
HCM Control Delay (s)	-	-	13.1	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1

**Appendix E – Cumulative plus Project Conditions Intersections
Level of Service Worksheets**

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: AM Peak

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	11	82	2	55	6	309	6	45	277	2
Future Vol, veh/h	1	0	11	82	2	55	6	309	6	45	277	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	13	93	2	63	7	351	7	51	315	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	819	790	316	792	787	355	317	0	0	358	0	0
Stage 1	418	418	-	368	368	-	-	-	-	-	-	-
Stage 2	401	372	-	424	419	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	285	313	706	298	315	671	1199	-	-	1158	-	-
Stage 1	597	577	-	636	608	-	-	-	-	-	-	-
Stage 2	610	605	-	592	576	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	247	297	706	282	299	671	1199	-	-	1158	-	-
Mov Cap-2 Maneuver	247	297	-	282	299	-	-	-	-	-	-	-
Stage 1	594	552	-	632	604	-	-	-	-	-	-	-
Stage 2	548	601	-	556	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	22.1	0.1	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1199	-	-	611	366	1158	-	-
HCM Lane V/C Ratio	0.006	-	-	0.022	0.432	0.044	-	-
HCM Control Delay (s)	8	-	-	11	22.1	8.3	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.1	0.1	-	-

HCM 2010 TWSC

2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	11	59	262	89	63	308
Future Vol, veh/h	11	59	262	89	63	308
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	13	67	298	101	72	350
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	841	348	0	0	399	0
Stage 1	348	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.5	6.3	-	-	4.2	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.39	-	-	2.29	-
Pot Cap-1 Maneuver	324	677	-	-	1118	-
Stage 1	697	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	303	677	-	-	1118	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	12.4		0		1.4	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	567	1118	-	-
HCM Lane V/C Ratio	-	-	0.14	0.064	-	-
HCM Control Delay (s)	-	-	12.4	8.4	-	-
HCM Lane LOS	-	-	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-	-

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	0	18	102	5	74	2	265	4	62	438	1
Future Vol, veh/h	0	0	18	102	5	74	2	265	4	62	438	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	0	20	116	6	84	2	301	5	70	498	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	992	949	498	957	948	303	499	0	0	306	0	0
Stage 1	639	639	-	308	308	-	-	-	-	-	-	-
Stage 2	353	310	-	649	640	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	217	253	557	230	253	718	1025	-	-	1211	-	-
Stage 1	451	458	-	685	646	-	-	-	-	-	-	-
Stage 2	648	645	-	445	458	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	180	238	557	211	238	718	1025	-	-	1211	-	-
Mov Cap-2 Maneuver	180	238	-	211	238	-	-	-	-	-	-	-
Stage 1	450	432	-	684	645	-	-	-	-	-	-	-
Stage 2	566	644	-	404	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	40.2	0.1	1
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	557	298	1211	-	-
HCM Lane V/C Ratio	0.002	-	-	0.037	0.69	0.058	-	-
HCM Control Delay (s)	8.5	-	-	11.7	40.2	8.2	-	-
HCM Lane LOS	A	-	-	B	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	4.7	0.2	-	-

HCM 2010 TWSC

2: Hwy 33/Ahern Rd/Hwy 33 & I-5 NB Ramp

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	23	65	206	61	82	477
Future Vol, veh/h	23	65	206	61	82	477
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10
Mvmt Flow	26	74	234	69	93	542

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	997	269	0 0 303 0
Stage 1	269	-	- - - -
Stage 2	728	-	- - - -
Critical Hdwy	6.5	6.3	- - 4.2 -
Critical Hdwy Stg 1	5.5	-	- - - -
Critical Hdwy Stg 2	5.5	-	- - - -
Follow-up Hdwy	3.59	3.39	- - 2.29 -
Pot Cap-1 Maneuver	262	751	- - 1214 -
Stage 1	758	-	- - - -
Stage 2	464	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	242	751	- - 1214 -
Mov Cap-2 Maneuver	242	-	- - - -
Stage 1	758	-	- - - -
Stage 2	428	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.2
HCM LOS	B		

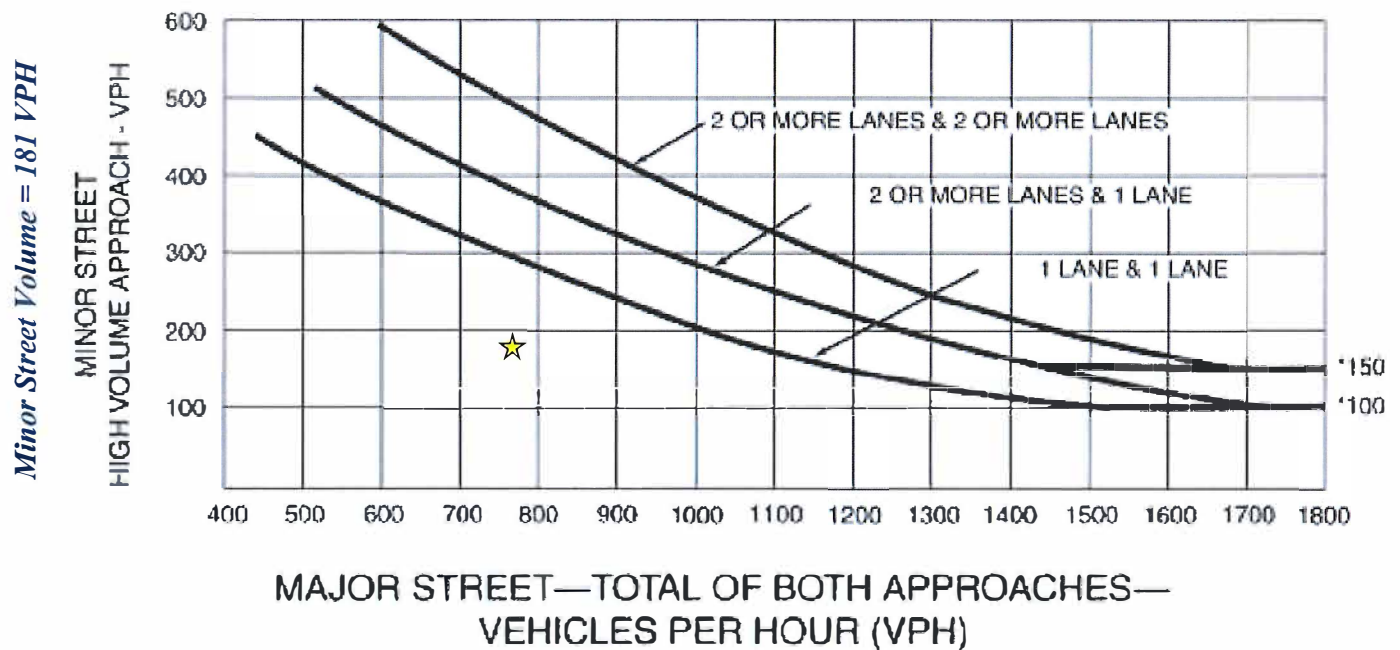
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 485	1214	-
HCM Lane V/C Ratio	-	- 0.206	0.077	-
HCM Control Delay (s)	-	- 14.3	8.2	-
HCM Lane LOS	-	- B	A	-
HCM 95th %tile Q(veh)	-	- 0.8	0.2	-

Peak Hour Warrant (Urban Areas)

Intersection #1: Ahern Road/W. Lehman Rd-I-5 SB Ramp

Scenario: Cumulative plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 772 VPH

★ PM peak hour

*A signal is not warranted for
P.M. Peak Hour*

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↗	↗		↗	↗	
Traffic Vol, veh/h	1	0	11	82	2	55	6	309	6	45	277	2
Future Vol, veh/h	1	0	11	82	2	55	6	309	6	45	277	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	13	93	2	63	7	351	7	51	315	2
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	787	790	316	792	787	355	317	0	0	358	0	0
Stage 1	418	418	-	368	368	-	-	-	-	-	-	-
Stage 2	369	372	-	424	419	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	300	313	706	298	315	671	1199	-	-	1158	-	-
Stage 1	597	577	-	636	608	-	-	-	-	-	-	-
Stage 2	635	605	-	592	576	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	260	297	706	282	299	671	1199	-	-	1158	-	-
Mov Cap-2 Maneuver	260	297	-	282	299	-	-	-	-	-	-	-
Stage 1	594	552	-	632	604	-	-	-	-	-	-	-
Stage 2	570	601	-	556	551	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11			18.9			0.1			1.1		
HCM LOS	B			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1199	-	-	618	282	671	1158	-	-			
HCM Lane V/C Ratio	0.006	-	-	0.022	0.338	0.093	0.044	-	-			
HCM Control Delay (s)	8	-	-	11	24.2	10.9	8.3	-	-			
HCM Lane LOS	A	-	-	B	C	B	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.1	1.4	0.3	0.1	-	-			

HCM 2010 TWSC

1: Ahern Road & W. Lehman Road/I-5 SB Ramp

Timing Plan: PM Peak

Intersection

Int Delay, s/veh 6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↗	↕		↗	↕	
Traffic Vol, veh/h	0	0	18	102	5	74	2	265	4	62	438	1
Future Vol, veh/h	0	0	18	102	5	74	2	265	4	62	438	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	150	195	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	0	0	20	116	6	84	2	301	5	70	498	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	950	949	498	957	948	303	499	0	0	306	0	0
Stage 1	639	639	-	308	308	-	-	-	-	-	-	-
Stage 2	311	310	-	649	640	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	232	253	557	230	253	718	1025	-	-	1211	-	-
Stage 1	451	458	-	685	646	-	-	-	-	-	-	-
Stage 2	683	645	-	445	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	192	238	557	211	238	718	1025	-	-	1211	-	-
Mov Cap-2 Maneuver	192	238	-	211	238	-	-	-	-	-	-	-
Stage 1	450	432	-	684	645	-	-	-	-	-	-	-
Stage 2	597	644	-	404	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	29.6	0.1	1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	557	212	718	1211	-	-
HCM Lane V/C Ratio	0.002	-	-	0.037	0.574	0.117	0.058	-	-
HCM Control Delay (s)	8.5	-	-	11.7	42.6	10.7	8.2	-	-
HCM Lane LOS	A	-	-	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.2	0.4	0.2	-	-