5200 Lone Tree Way United Pacific Gas Station LOS and Site Access Traffic Study

Antioch, California

March 14, 2022

Prepared for:

City of Antioch

Prepared by:

Stantec Consulting Services Inc.

This document entitled 5200 Lone Tree Way United Pacific Gas Station LOS and Site Access Traffic Study was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of City of Antioch (the "Client").

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1.0 INTRODUCTION

Stantec Consulting Services, Inc. (Stantec) has prepared a level of service (LOS) and site access traffic study of the proposed United Pacific Gas Station (Project) located in the City of Antioch, California. The proposed Project consists of a gas station with 8 fuel dispensers, a 3.2 thousand square feet (TSF) convenience store, and a 1.125 TSF car wash on an approximately 2-acre developed site located at 5200 Lone Tree Way. The site's existing use, which consists of multiple buildings, would be demolished in order to construct the Project. Access to the Project would be provided via a proposed driveway at the northwest corner of the site, along Lone Tree Way, and a second proposed driveway at the southeast corner of the site, along Vista Grande Drive. Driveways near these locations already exist, but they are anticipated to be rebuilt to the current specifications and standards of the City based on the Project land use. The Project location map is illustrated in **Figure 1-1** and a Project site plan can be found in **Figure 1-2**.

The following analysis has been performed to estimate the volume of vehicular traffic that will be generated by the Project and identify potential Project-related effects on intersection performance and circulation in the surrounding area. This report also includes an examination of transit, bicycle, and pedestrian facilities in the vicinity of the Project site. An assessment of the Project's impact on vehicle miles of travel (VMT) is provided separately as part of the Project's environmental impact analysis document.

1.1 STUDY AREA

Consistent with Contra Costa Transportation Authority (CCTA) Technical Procedures (see Reference 1 in Section 1.5), intersections with an anticipated distribution of 50 or more Project-generated trips are selected as study intersections. In consultation with City staff, the following two intersections in the vicinity of the Project site were selected to be analyzed along with the Project's two proposed driveways:

1. Vista Grande Drive & Lone Tree Way (Signalized)
2. Vista Grande Drive & Cross Pointe Driveway (Stop Controlled)
3. Site Driveway & Lone Tree Way (Stop Controlled)
4. Vista Grande Drive & Site Driveway (Stop Controlled)

The location of these study intersections and the local roadway network in the vicinity of the Project site is illustrated in the previously referenced **Figure 1-1**.

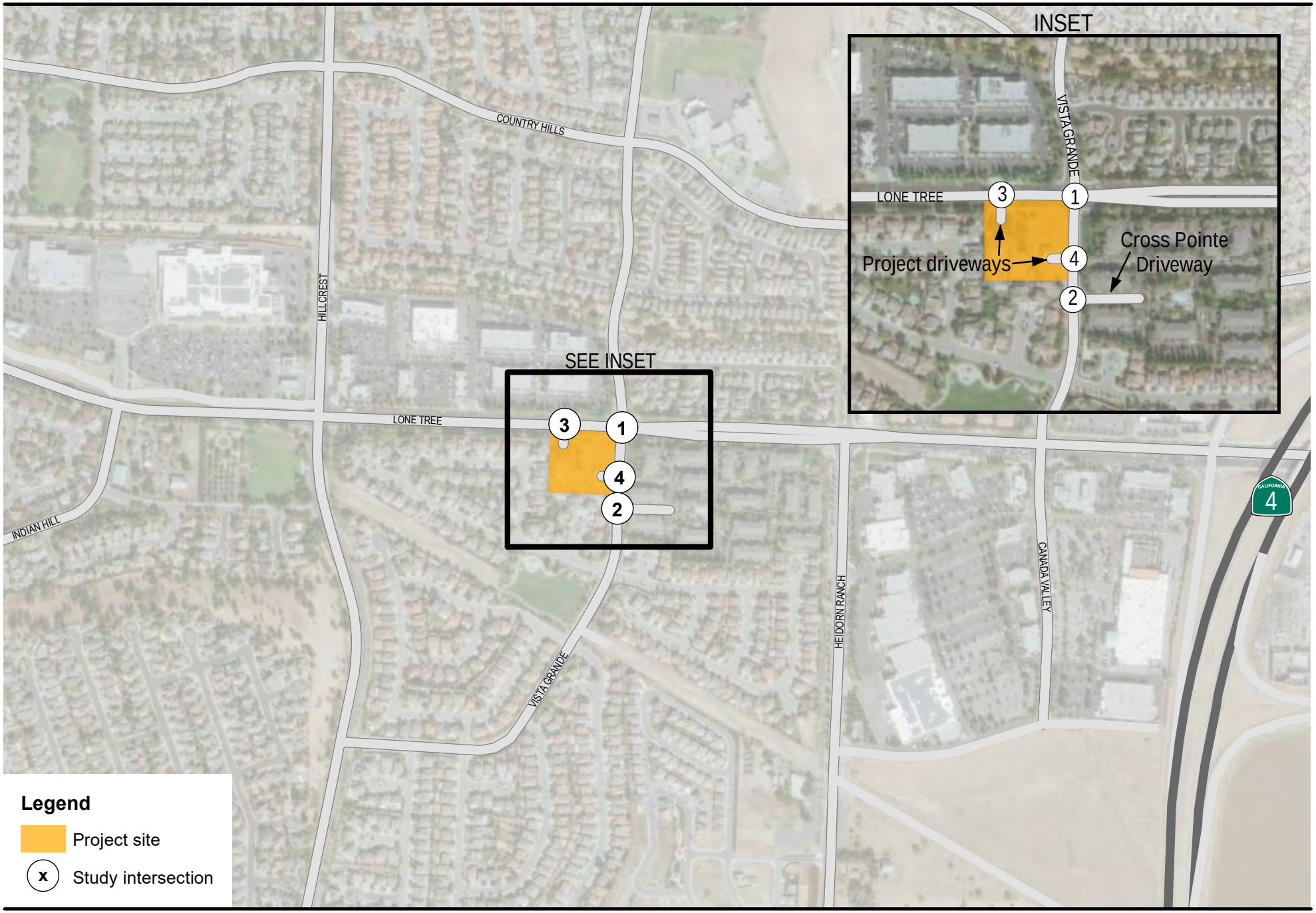

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Figure 1-1

Project Site and Study Area

1.2

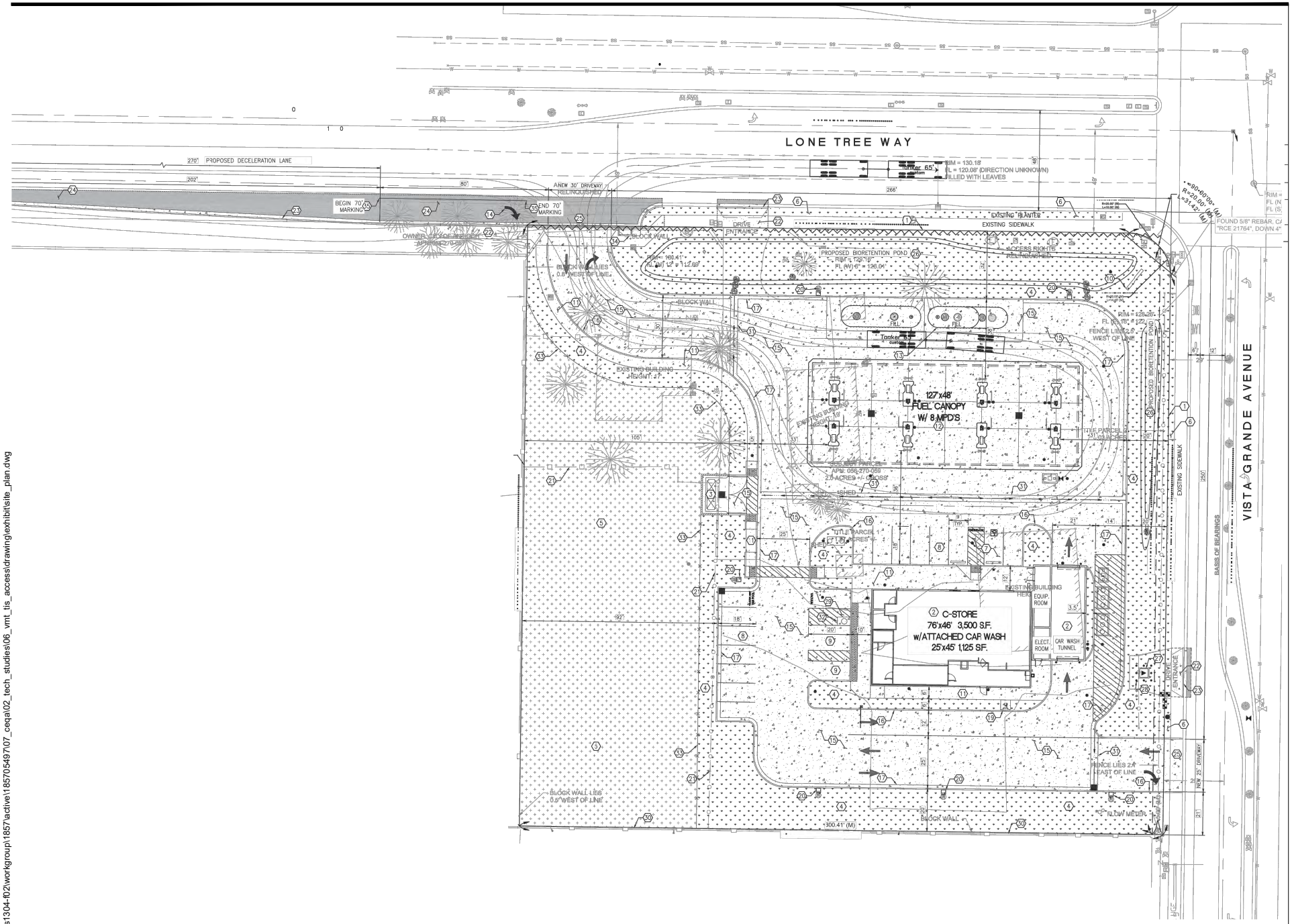

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Figure 1-2

Project Site Plan

1.3

1.2 METHODOLOGY

This transportation analysis evaluates the proposed Project in accordance with the methodologies of the City of Antioch and CCTA, which serves as the Congestion Management Agency (CMA) for Contra Costa County. An assessment of the Project's impact on VMT is provided separately as part of the Project's environmental impact analysis document.

The suburban arterial routes within the study area were evaluated in accordance with the East County Action Plan (ECAP) (see Reference 2 in Section 1.5). The scenarios analyzed in the study are as follows:

- Existing conditions
- Short-term (2025) conditions without Project
- Short-term (2025) conditions plus Project

The existing conditions scenario utilizes observed AM and PM peak hour traffic counts at key study area intersections. Counts were collected in September 2021. Using correction factors due to current traffic conditions affected by the COVID-19 pandemic was considered; however, correction factors were determined to be unnecessary since 2021 traffic counts showed reasonable volume increases relative to historical counts.

For the short-term (2025) conditions, use of a growth factor results in a conservative traffic volume approximation. This methodology is discussed in more detail in Chapter 4.0.

1.3 PERFORMANCE CRITERIA

This traffic study is based on specific performance criteria, which are outlined in the following paragraphs. Where appropriate, improvements are determined for those scenarios in which deficiencies are identified based on the established impact thresholds. As noted above, VMT thresholds of significance are provided separately as part of the Project's environmental impact analysis document.

Defined performance criteria are utilized at study intersections to determine if a proposed project would cause adverse operational impacts. Performance criteria are typically based on two primary measures. The first measure is "capacity", which establishes the vehicle carrying ability of a roadway, and the second is "volume." The volume measure is either in the form of a traffic count (in the case of existing volumes) or a forecast for a future point in time. For arterial roadways in an urban or suburban setting, the intersection of two roadways will typically be the limiting factor regarding the overall capacity of the roadway network.

Methodology outlined in the Highway Capacity Manual, Sixth Edition (HCM) (See Reference 3 in Section 1.5) produces estimates of average vehicle delay as a function of intersection capacity and the volume of traffic passing through the intersection. From this, a corresponding level of service (LOS) is defined. Traffic LOS is designated "A" through "F" with LOS "A" representing free-flow conditions and LOS "F" representing severe traffic congestion. **Table 1-1** summarizes the ranges of vehicle delay that correspond

to LOS “A” through “F” for signalized and unsignalized intersections. The ranges are those defined in the HCM 2010 and are used for estimating intersection LOS.

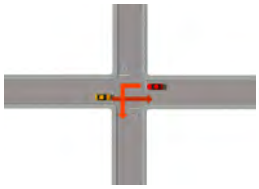
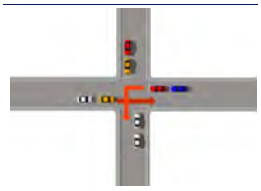
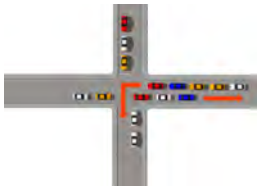
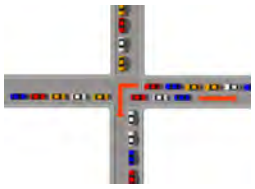
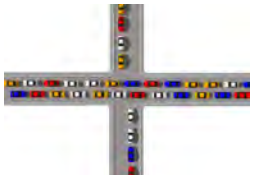
While average daily traffic (ADT) is a useful measure to show general levels of traffic on a facility and to provide data for other related aspects such as noise and greenhouse gas (GHG) emissions, congestion is largely a peak hour or peak period occurrence, and ADT does not reflect peak period conditions effectively. Because of this, ADT is not used here as the basis for capacity evaluation. Instead, this evaluation focuses on the periods when such congestion can occur, specifically the AM and PM peak hours.

For the arterial system, the peak hour is the accepted time period used for operational analysis and a number of techniques are available to define intersection LOS. Both the delay and the LOS are used in determining roadway performance. Certain LOS values are deemed undesirable by the City or other local agency with jurisdiction.

LOS for arterial roadway intersections is determined based on operating conditions during the AM and PM peak hours and the geometric configuration of the intersection. For this study, HCM delay methodology is used to analyze both the signalized intersections and the stop-controlled intersection using Synchro software. For signalized intersections, optimized signal timing/phasing is assumed. The result of these calculations is an estimate of average vehicle delay at the intersection.

The LOS calculation methodology and associated LOS performance standards and thresholds of significance as used in this analysis are summarized in **Table 1-2**.

Table 1-1 Level of Service Descriptions for Signalized and Unsignalized Intersections

LOS	Traffic Flow Description	Signal Control Delay	Stop Control Delay
A	 Minimal or no vehicle delay	≤ 10	≤ 10
B	 Slight delay to vehicles	> 10 – 20	> 10 – 15
C	 Moderate vehicle delays, traffic flow remains stable	> 20 – 35	> 15 – 25
D	 More extensive delays at intersections	> 35 – 55	> 25 – 35
E	 Long queues create lengthy delays	> 55 – 80	> 35 – 50
F	 Severe delays and congestion	> 80	> 50

Source: HCM

Delay = average seconds of delay per vehicle

Table 1-2 Arterial Intersection Performance Criteria

Delay Methodology

Calculation Methodology

Level of service (LOS) based on "average control delay" calculated as follows:

- Synchro/HCM delay-based intersection methodology for traffic signals
- Synchro/HCM delay-based intersection methodology for stop control (approach with highest average delay)

Performance Standard

Signalized Intersections

- High-level LOS D (55 seconds of delay or less) on routes of regional significance

Un-Signalized Intersections

- High-level LOS D (35 seconds of delay or less) on routes of regional significance

Thresholds

Based on the City of Antioch and the ECAP LOS standards, an intersection is considered to be adversely affected if the Project would:

- Worsen a signalized intersection from acceptable LOS D or better under no-project conditions to unacceptable LOS E or F under project conditions
- Add traffic to a signalized intersection on a route of regional significance that operates at an unacceptable LOS E or F under no-project conditions
- Worsen an unsignalized intersection on a route of regional significance from acceptable LOS D or better under no-project conditions to unacceptable LOS E or F under project conditions, and the intersection warrants a traffic signal based on the California Manual of Uniform Traffic Control Devices (CA MUTCD) Peak-Hour Signal Warrant

Abbreviations:
LOS – Level of Service

1.4 DEFINITIONS

Certain terms used throughout this report are defined below to clarify their intended meaning:

ADT	Average Daily Traffic. Generally used to measure the total two-directional traffic volumes passing a given point on a roadway.
LOS	Level of Service. A scale used to evaluate circulation system performance based on intersection ICU values or volume/capacity ratios of arterial segments.
Peak Hour	This refers to the hour during the AM peak period (typically 7 AM - 9 AM) or the PM peak period (typically 4 PM - 6 PM) in which the greatest number of vehicle trips are generated by a given land use or are traveling on a given roadway.
V/C	Volume to Capacity Ratio. This is typically used to describe the percentage of capacity utilized by existing or projected traffic on a segment of an arterial or intersection.
VMT	Vehicle-miles of Travel. A measurement of the amount of travel for vehicles over a given period of time. It is calculated as the sum of the number of miles traveled by each vehicle.

1.5 REFERENCES

1. “Technical Procedures,” Contra Costa Transportation Authority, January 2013.
2. “East County Action Plan for Routes of Regional Significance,” Fehr & Peers, Transplan, and Contra Costa Transportation Authority, May 2015.
3. “Highway Capacity Manual Sixth Edition,” Transportation Research Board, National Research Council, 2016.
4. “Trip Generation 10th Edition,” Institute of Transportation Engineers, 2017.
5. “Trip Generation Handbook 3rd Edition,” Institute of Transportation Engineers, 2017.
6. “Contra Costa Sub-Regional Action Plans for the Routes of Regional Significance Multimodal Traffic Service Objectives (MTSO) Draft 2017 Monitoring Report,” Iteris, Inc., March 2018.

2.0 TRANSPORTATION SETTING

The following chapter describes existing and future traffic conditions in the study area. It includes a description of the study area roadway system, existing traffic volumes and corresponding levels of service as defined by the performance criteria outlined in the previous chapter, public transportation services, and active transportation facilities. Forecasts of baseline future traffic conditions are also presented.

2.1 EXISTING CONDITIONS

2.1.1 Existing Roadway System and Active Transportation

Existing intersection lane configurations for study locations are illustrated in **Figure 2-1**. The following are general descriptions of the roadways in the study area.

Lone Tree Way is described in the City's General Plan as a primary arterial. It begins as A Street in the northern portion of the City and continues south as it transitions to Lone Tree Way after intersecting with State Route 4 (SR 4). Lone Tree Way then proceeds southeast, providing another access point to SR 4 before entering the City of Brentwood and terminating at Brentwood Boulevard. In the immediate vicinity of the Project site, Lone Tree Way is a six-lane roadway with a raised median. While Class II on-street bicycle lanes are not present on this portion of Lone Tree way, Class III bikeways (on-street bicycle routes) exist in each direction along with pedestrian sidewalks. The posted speed limit is 45 miles per hour (MPH).

Vista Grande Drive extends just over a mile, from Canada Valley Road to the northeast to Hillcrest Avenue to the southwest. It is a two-lane roadway with a raised median in the area adjacent to the Project site and provides both pedestrian sidewalks and Class II bicycle lanes. Vista Grande Drive has a posted speed limit of 35 MPH and primarily serves residential areas.

Cross Pointe Driveway is a two-lane private drive and acts as the primary driveway for the Cross Pointe Apartment Homes complex.

The signalized intersection of Vista Grande Drive at Lone Tree Way contains marked pedestrian crosswalks at each of its four legs, while the unsignalized intersection of Vista Grande Drive at Cross Pointe Driveway provides an unmarked crosswalk in the northbound direction on Vista Grande Drive. Existing traffic controls at the two study area intersections are summarized in **Table 2-1**.

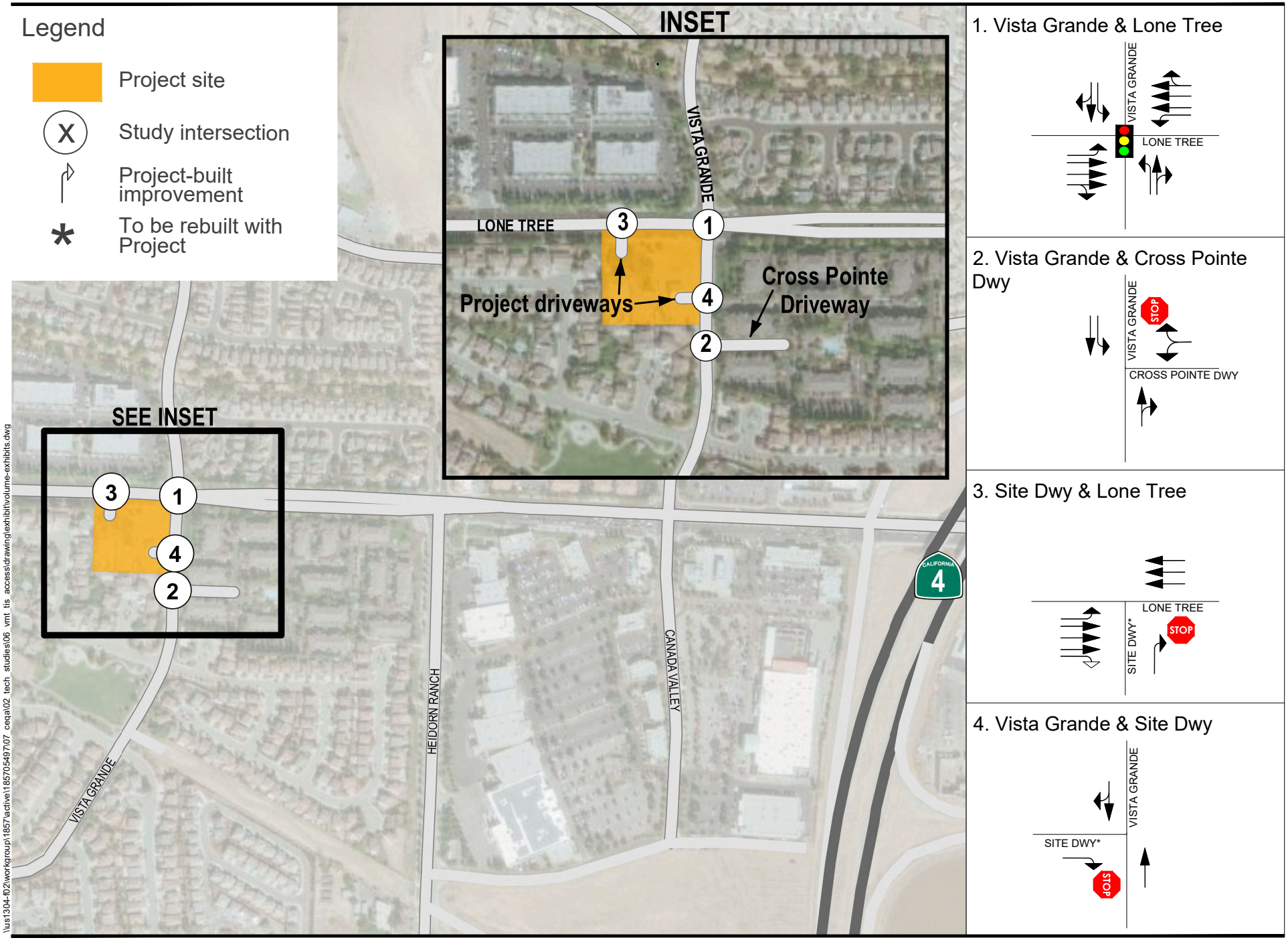


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Figure 2-1

Existing and Future Intersection Lane Configurations

2.1.2 Public Transportation

The nearest public transportation facility is approximately 100 feet east of the Project site. Bus transit services operated by Tri Delta Transit stop in this location and access is provided via three routes: 380 (weekdays only), 384 (weekdays only), and 385 (weekdays only). These routes connect to the Antioch BART station. Route 380 also stops at the Pittsburg/Bay Point BART station, while Routes 384 and 385 stop at the Brentwood Park & Ride facility.

2.1.3 Existing Traffic Volumes and Levels of Service

AM and PM peak hour intersection turning movement counts were collected for the study area intersections (traffic count data sheets are provided in Appendix A). The counts were collected in September 2021 and applying correction factors to the counts was considered due to current traffic conditions affected by the COVID-19 pandemic. However, since the September 2021 counts showed reasonable increases when compared to historical traffic counts within the study area, correction factors were not used.

Existing peak hour turning movement volumes are illustrated in **Figure 2-2** for the AM and PM peak hours. The results of the intersection LOS analysis under existing conditions are shown in **Table 2-1.** Each of the intersections were analyzed using the HCM delay methodology. Detailed LOS calculation worksheets are provided in Appendix B. Delay values for the signalized intersections represents the average delay (in seconds) for all vehicles passing through the intersection. Delay values for stop-controlled intersections represents the average delay (in seconds) for vehicles subject to the stop signs. The results show that all study area intersections currently operate at LOS C or better in both the AM and PM peak hours.

Table 2-1 Intersection LOS Summary – Existing Conditions

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Vista Grande Drive & Lone Tree Way	Signal	23.9	C	25.6	C
2. Vista Grande Drive & Cross Pointe Driveway	TWSC	9.5	A	9.2	A
3. Site Driveway & Lone Tree Way	TWSC	12.3	B	14.7	B
4. Vista Grande Drive & Site Driveway	TWSC	9.1	A	9.5	A
Note: LOS – Level of Service Delay – Average Vehicle Delay (seconds) (total vehicle delay for signalized intersections and side street vehicle delay for TWSC intersections) TWSC – Two-Way Stop Control					

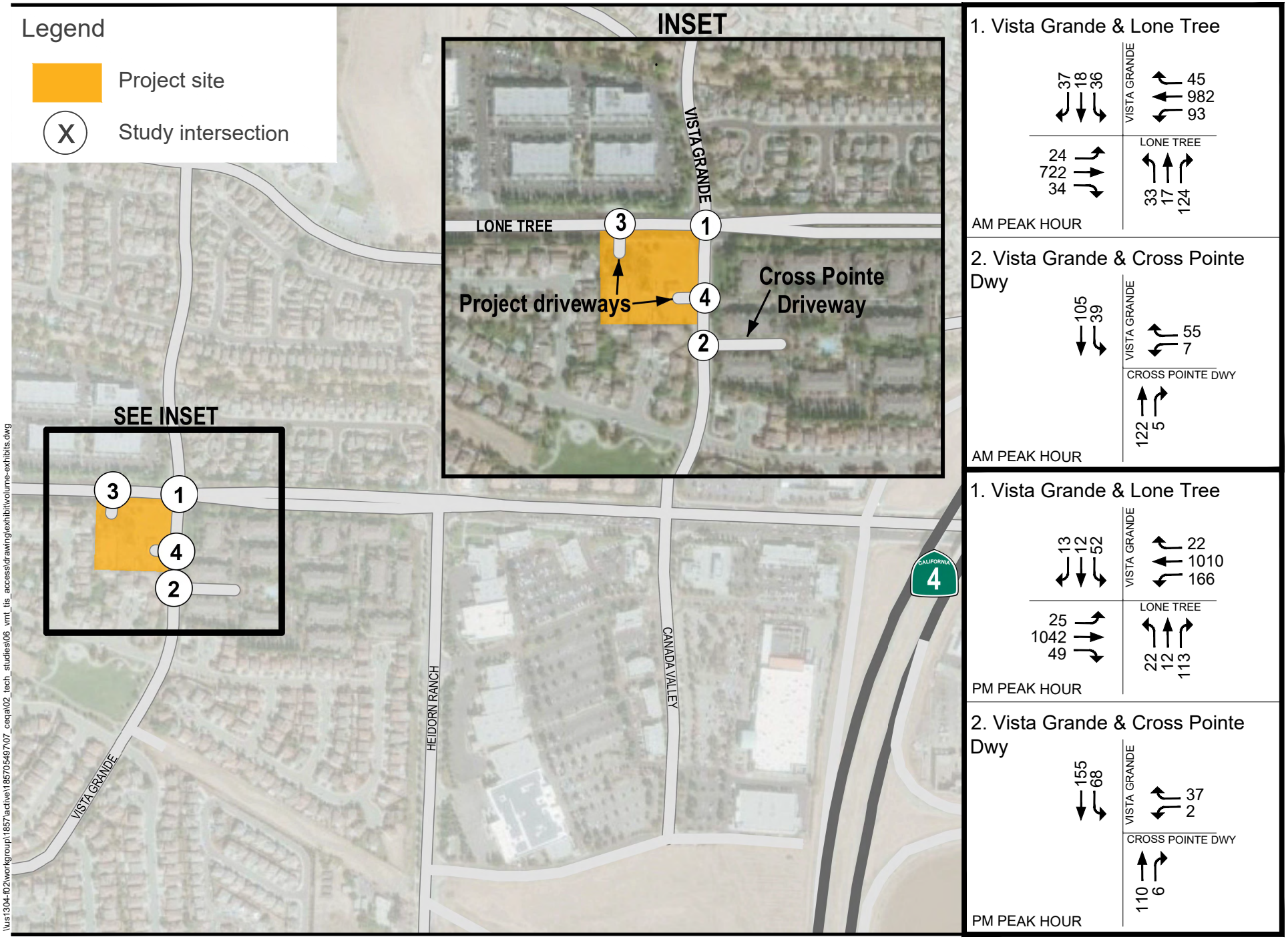

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Figure 2-2

Existing Intersection Peak Hour Volumes

2.2 FUTURE CONDITIONS

The following future condition scenario is analyzed in this report:

2.2.1 Short-Term (2025) Conditions

The proposed Project is expected to be constructed by year 2023, however, to provide a more cautious approach to approximating growth in traffic, year 2025 is used to represent the short-term scenario. Cumulative projects in the area were reviewed, but given the small geographical footprint of the Project, no projects were found in its immediate vicinity. An annual growth rate of 4.15 percent was derived from the City's general plan forecasted growth for Lone Tree Way adjacent to the Project site. This growth rate was compounded from year 2021 to year 2025 for a total of approximately 16.6 percent traffic growth on the study area roadways.

For this analysis, all movements at the intersection of Vista Grande Drive & Lone Tree Way were adjusted with the selected growth rate. In contrast, only the through-moving northbound and southbound volumes at Vista Grande Drive & Cross Pointe Driveway were adjusted with the growth rate given the unlikely scenario of added traffic entering or exiting Cross Pointe Driveway.

For the short-term (2025) plus Project scenario, Project-generated trips, which are discussed in more detail in Chapter 3.0, were distributed among the year 2025 roadway network. Existing roadway configurations within the study area are assumed to remain unchanged except for Project related improvements, such as the 270-foot deceleration lane taper along eastbound Lone Tree Way at the Project driveway

3.0 PROJECT DESCRIPTION

This section describes the Project in terms of its transportation characteristics. Trip generation is summarized and the distribution of the Project's trips on the adjoining roadway network is presented.

3.1 PROJECT TRIP GENERATION

Trip generation estimates were prepared using standardized ITE Trip Generation Manual, 10th Edition trip generation rates for the Special Trade Contractor (180) for the existing use and Super Convenience Market/Gas Station (960) for the proposed use. The ITE Trip Generation Handbook, 3rd Edition was used to derive rates for pass-by and diverted trips. Due to the nature of the Project's land use, few net new trips are created, and much of the Project-generated trips are either pass-by or diverted trips. Pass-by trips are trips that make a stop at the Project site but would still be traveling on roadways adjacent to the site if the Project were to remain unbuilt (i.e., the starting point, ending point, and general path of these trips is unchanged with and without the Project). Diverted trips are similar to pass-by trips, however these trips will disrupt their general path to stop at the Project site. As shown in **Table 3-1**, the proposed Project is expected to generate approximately 496 net new average daily trips (ADT), with 69 net new trips occurring during the AM peak hour and 34 net new trips occurring during the PM peak hour.

Table 3-1 Project Trip Generation Summary

Trip Rates (Proposed Land Use)	Amount	Units	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
Super Convenience Market/Gas Station (960)	-	VFP	14.04	14.04	28.08	11.48	11.48	22.96	230.52
Special Trade Contractor (180)	-	TSF	1.21	0.45	1.66	0.63	1.34	1.97	10.22
Trip Generation									
AGS Project (Market/Station)	16.0	VFP	225	225	449	184	184	367	3688
Existing Use (Special Trade Contractor)	6.0	TSF	7	3	10	4	8	12	61
Net Project Trips	-	-	218	222	439	180	176	355	3627
Pass-by trips	-	-	*138*	*138*	*277*	*103*	*103*	*207*	*2180*
Diverted trips	-	-	*47*	*47*	*94*	*57*	*57*	*115*	*951*
Net new trips			32	37	69	19	15	34	496

Trip Rate Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017, with ITE code in parentheses

Pass-by/diverted trip rate source: Institute of Transportation Engineers (ITE) Trip Generation Handbook, 3rd Edition

ADT - Average Daily Trips

VFP - Vehicle Fueling Positions

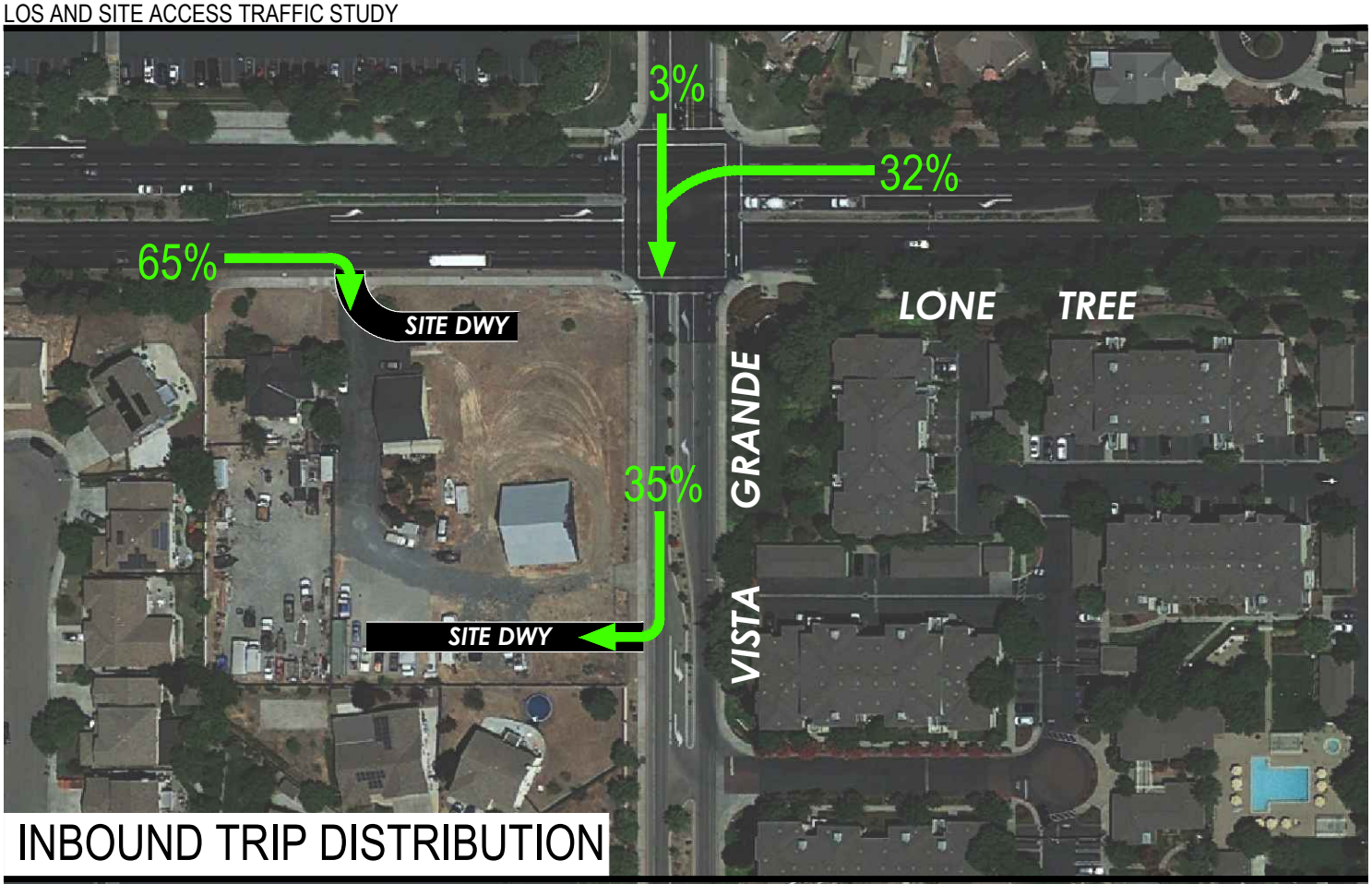
3.2 PROJECT TRIP DISTRIBUTION

Access to the Project would be provided by two proposed right-in/right-out (RIRO) driveways. The first of which, at 30-feet wide, would be located at the northwest corner of the site along Lone Tree Way, and the latter would be 25-feet wide and located at the southeast corner of the site along Vista Grande Drive.

Trip distribution percentages were determined based on the observed distribution pattern from the collected traffic counts, surrounding land uses, and configuration of the proposed Project driveways. Approximately 65 percent of the Project trips are anticipated to enter the site from eastbound Lone Tree Way, and 35 percent of trips would enter the site from southbound Vista Grande Drive. However, due to the accessibility limitations of RIRO driveways, 80 percent of trips are expected to exit eastbound on Lone Tree Way, while only 20 percent of trips are expected to exit southbound on Vista Grande Drive. Approximately 15 percent of outbound trips are expected to make a U-turn at the Lone Tree Way/Vista Grande Drive intersection due to the RIRO driveways.

Since many of the Project trips are pass-by and diverted, most of the trips entering and exiting the Project site were proportionately redistributed from existing volumes otherwise present on the roadway system. For this reason, some intersection movements, such as westbound through-moving and right-turn traffic at Vista Grande Drive & Lone Tree Way, have been reduced to represent pass-by trips, which will instead use the westbound left-turn to access the RIRO site driveway. While a significant portion of Project trips are diverted from other roadways, because of the focused study area these diverted trips are treated as new trips for the purpose of this analysis.

The Project's trip distribution percentages are illustrated in **Figure 3-1** and Project-Only intersection peak hour volumes are shown in **Figure 3-2**.



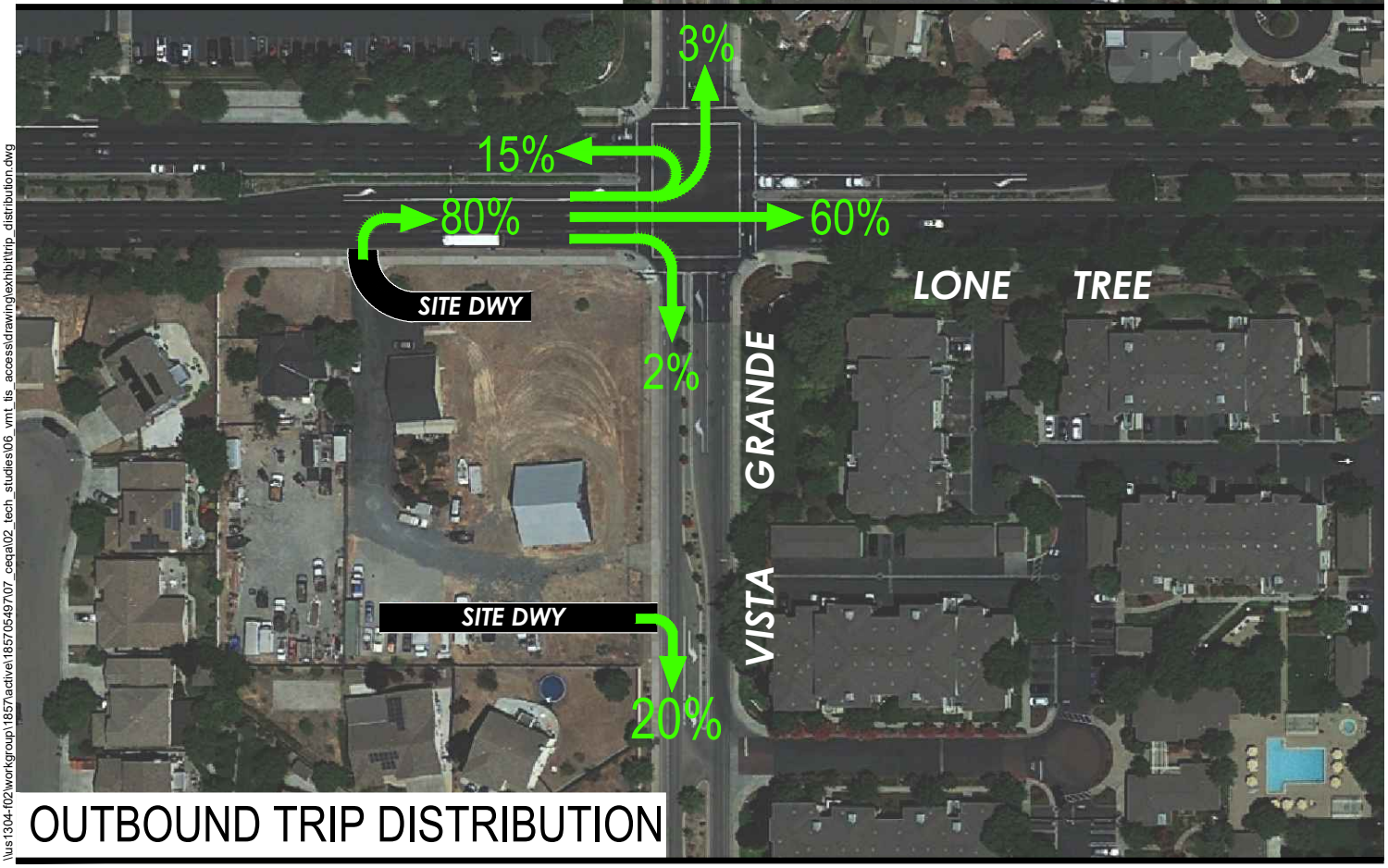


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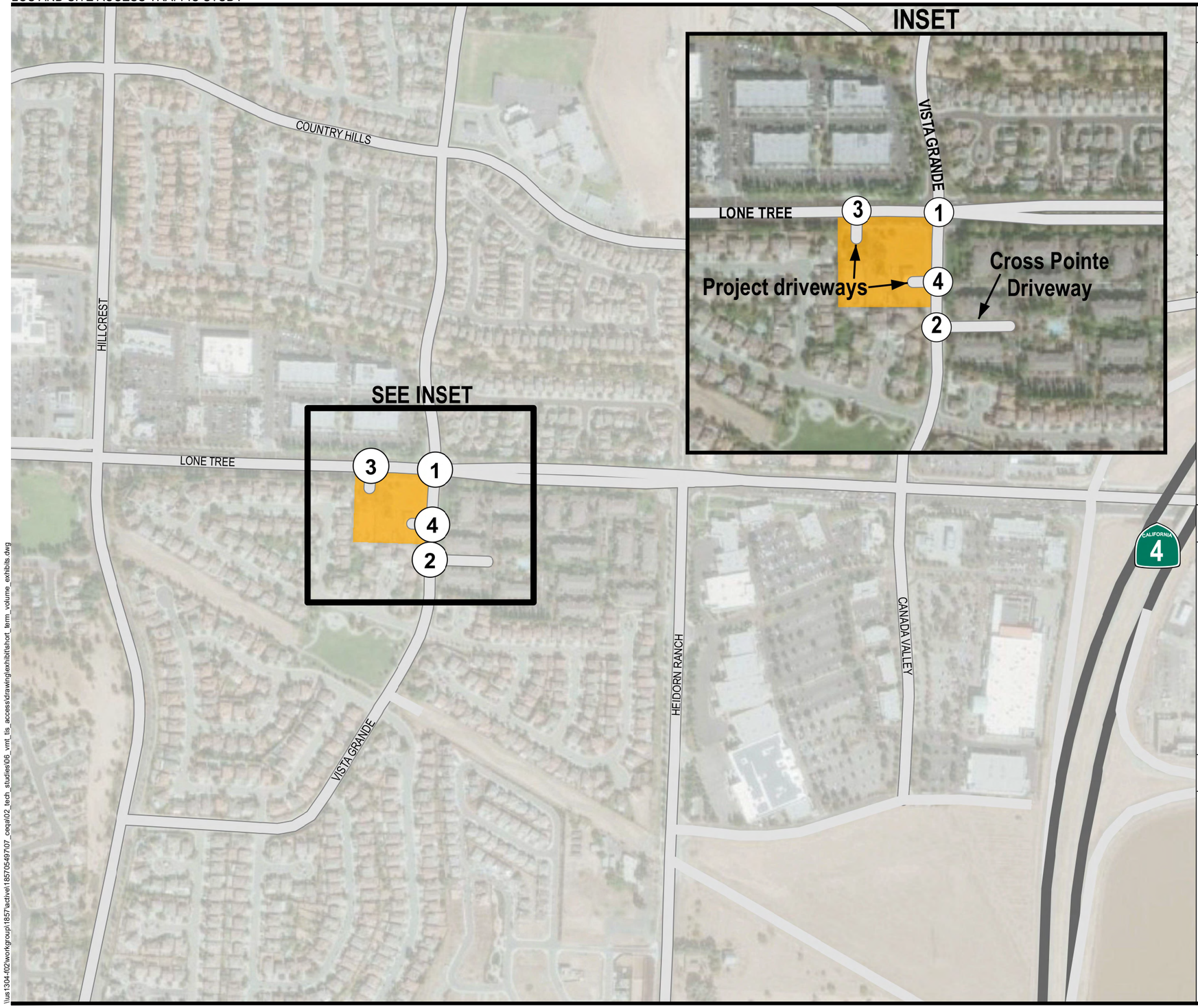
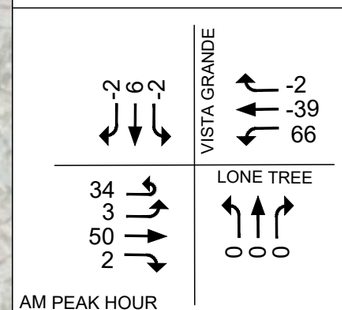
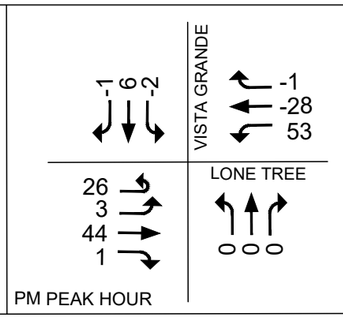
Figure 3-1
Project Trip Distribution



1. Vista Grande & Lone Tree





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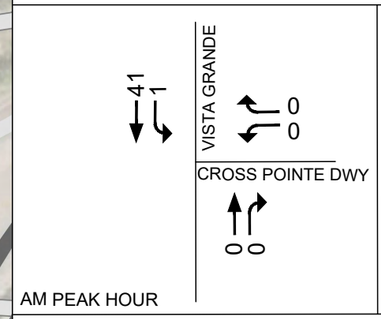
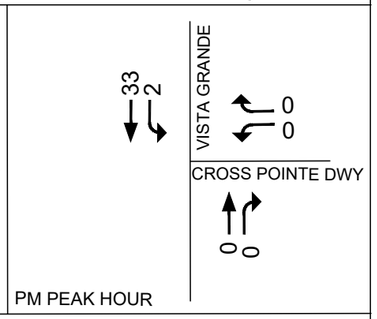
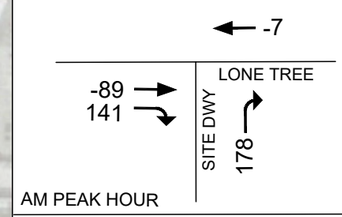
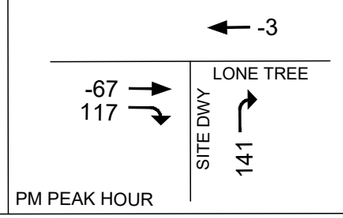


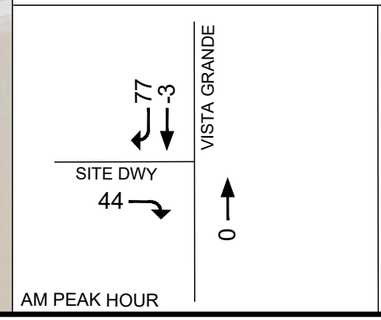


3. Site Dwy & Lone Tree





4. Vista Grande & Site Dwy



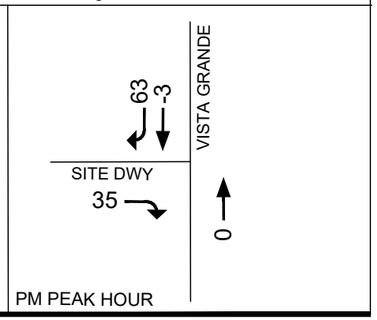


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Figure 3-2
Project-Only Intersection Peak Hour Volumes

4.0 INTERSECTION ANALYSIS

This chapter presents future traffic volumes and evaluates intersection LOS at the study area intersections. Any significant, negative changes in LOS are discussed in this chapter and if necessary, intersection improvements are identified.

4.1 SHORT-TERM (2025) ANALYSIS

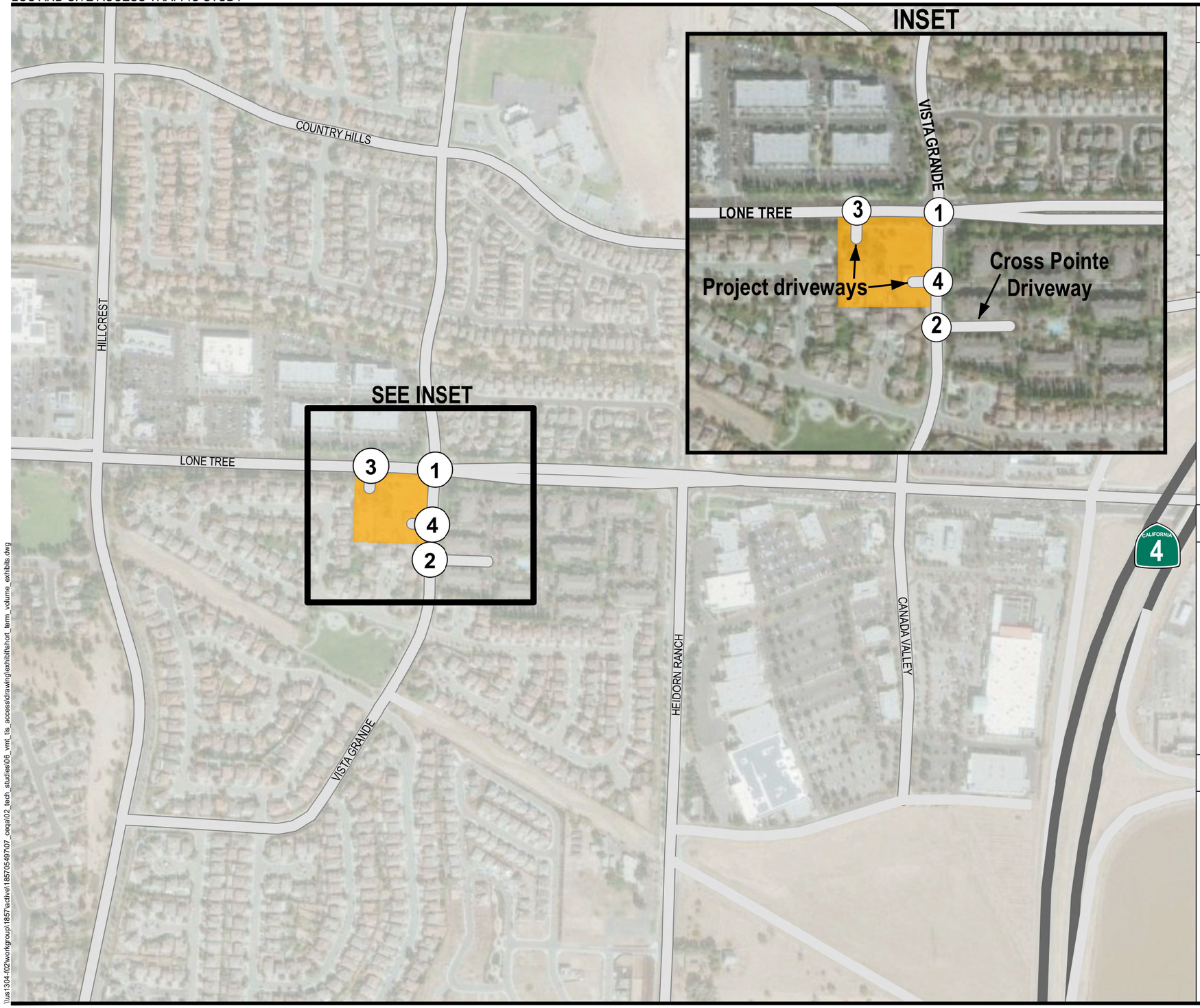
The Project is evaluated in the near term under the short-term (2025) conditions. Short-term (2025) plus Project volumes were derived by incrementally adding the net new Project-generated peak hour trips and redistributing existing trips to represent pass-by and diverted trips, presented in Section 3.1, to the baseline Short-Term (2025) volumes.

Figure 4-1 shows the short-term (2025) without Project conditions peak hour volumes at the two study intersections and two site access driveways. Likewise, **Figure 4-2** shows peak hour volumes for the same intersections and driveways in the short-term (2025) plus Project scenario. **Table 4-1** summarizes the change in LOS and intersection delay (in seconds) due to the Project.

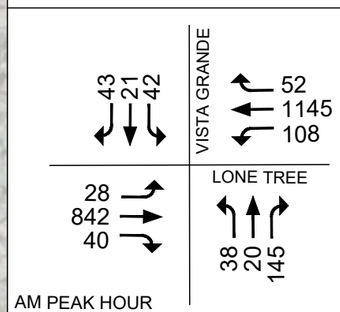
Table 4-1 Intersection LOS Summary – Short-Term (2025)

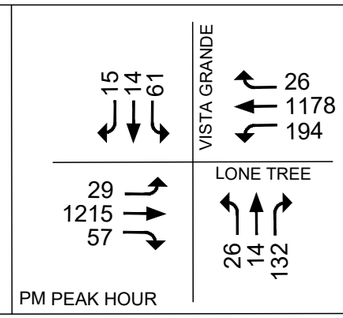
Intersection	Traffic Control	Short-term (2025) without Project				Short-term (2025) plus Project				Difference	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Vista Grande Drive & Lone Tree Way	Signal	24.1	C	28.4	C	29.8	C	31.9	C	5.7	3.5
2. Vista Grande Drive & Cross Pointe Driveway	Signal	9.7	A	9.4	A	9.7	A	9.4	A	0.0	0.0
3. Site Driveway & Lone Tree Way	TWSC	13.1	B	16.3	C	17.6	C	24.2	C	4.5	7.9
4. Vista Grande Drive & Site Driveway	TWSC	9.2	A	9.8	A	9.7	A	10.3	B	0.5	0.5

As shown in **Table 4-1**, above, all study intersections are forecast to operate at LOS C or better with the Project.

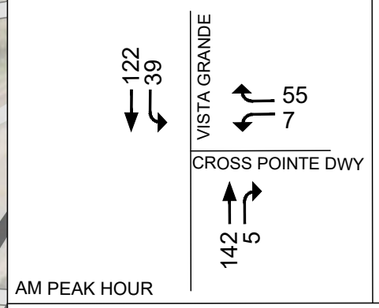


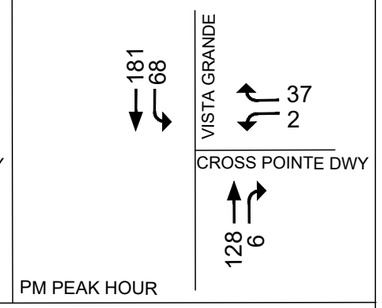
1. Vista Grande & Lone Tree



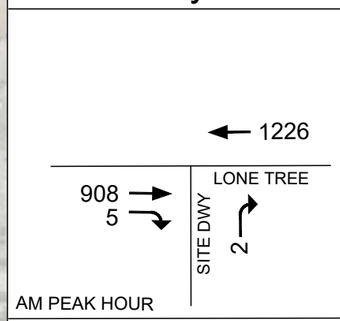


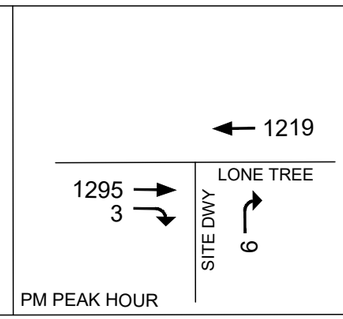
2. Vista Grande & Cross Pointe Dwy



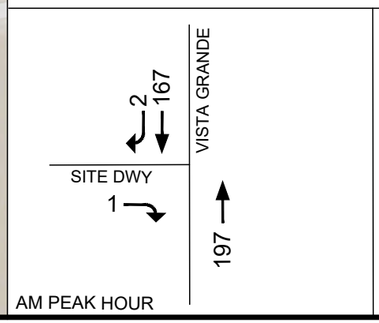


3. Site Dwy & Lone Tree





4. Vista Grande & Site Dwy



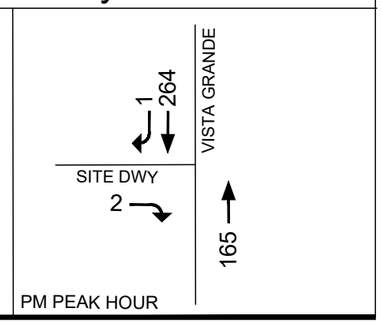


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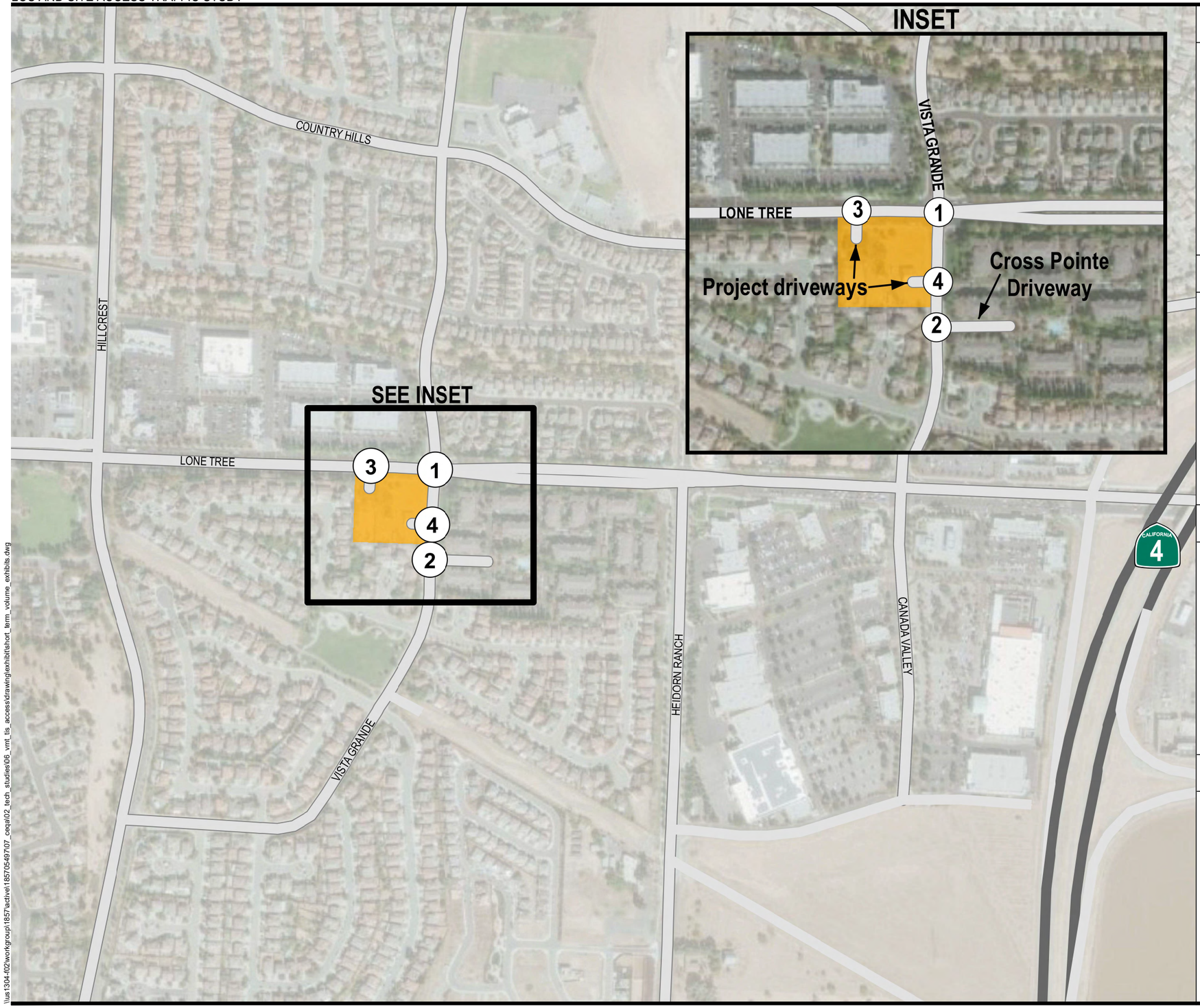
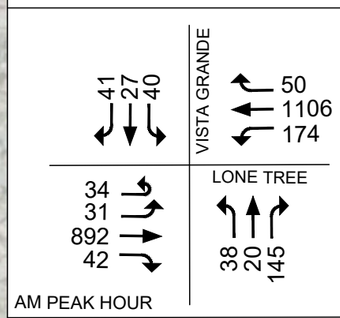
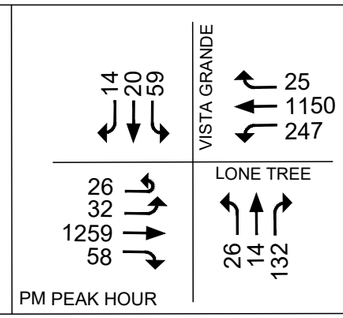
Figure 4-1

Short-Term (2025) without Project Intersection Peak Hour Volumes

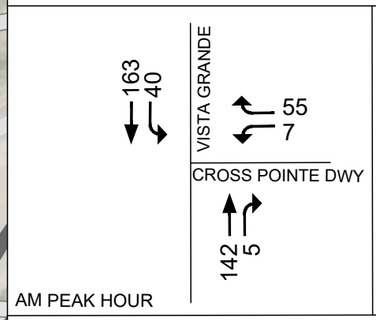


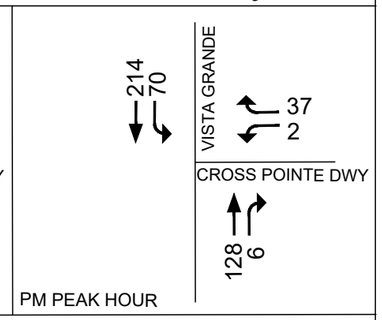
1. Vista Grande & Lone Tree



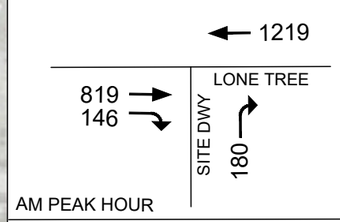


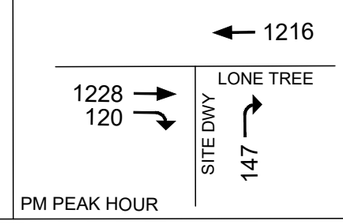
2. Vista Grande & Cross Pointe Dwy



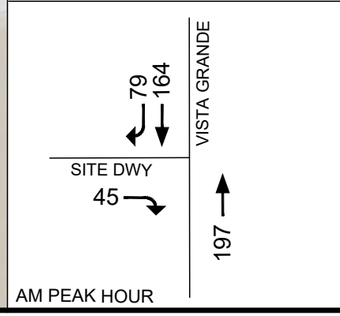


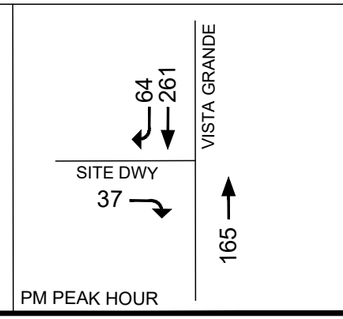
3. Site Dwy & Lone Tree





4. Vista Grande & Site Dwy





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N

Figure 4-2
Short-Term (2025) with Project Intersection Peak Hour Volumes

5.0 SUMMARY

A LOS and site access traffic study has been prepared for the proposed United Pacific Gas Station at 5200 Lone Tree Way, a proposed gas station with a convenience store and attached car wash in the City of Antioch, California. The Project consists of 8 fuel dispensers, 3.2 TSF of convenience store, and 1.125 TSF of car wash on a 2-acre developed lot. Project traffic was analyzed in the Short-Term scenario to examine operations of the study area roadways. Traffic counts were collected in September 2021.

The Project would generate 69 net new vehicle trips in the AM peak hour, 34 net new vehicle trips in the PM peak hour, and 496 net new daily vehicle trips. To ensure proper access to the Project site, two RIRO driveways are proposed to intersect with both Lone Tree Way and Vista Grande Drive. A dedicated right-turn would be provided on Lone Tree Way to separate right-turning Project traffic from the through lane. The proposed driveways are planned to be under stop-control.

Under short-term (2025) conditions, each study area location is forecast to operate at an acceptable LOS C or better with and without the Project. Therefore, the increase in traffic volumes attributable to the Project is not anticipated to result in any adverse conditions on the existing circulation system. Roadway improvements other than those required for Project access are not considered necessary.

Appendix A TRAFFIC COUNTS

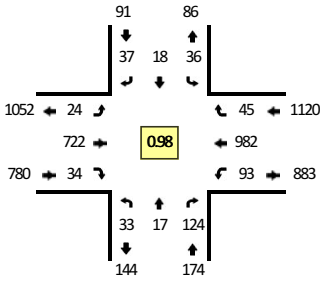
Type of peak hour being reported: Intersection Peak

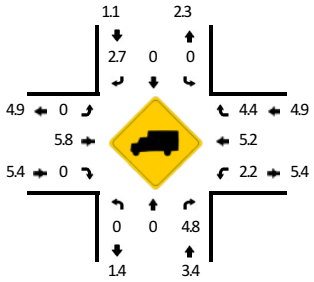
Method for determining peak hour: Total Entering Volume

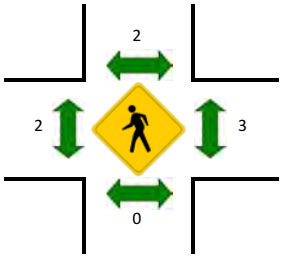
LOCATION: Vista Grande Dr -- Lone Tree Wy
CITY/STATE: Antioch, CA

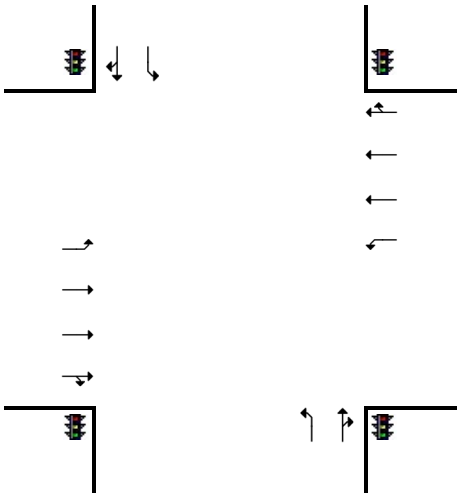
QC JOB #: 15554901
DATE: Tue, Sep 28 2021

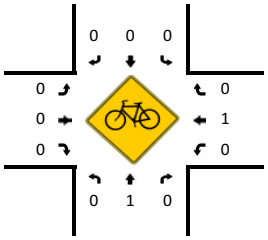
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

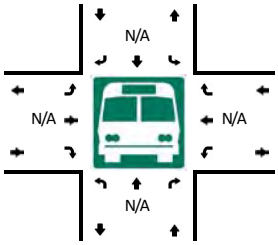


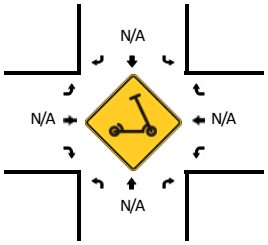












15-Min Count Period Beginning At	Vista Grande Dr (Northbound)				Vista Grande Dr (Southbound)				Lone Tree Wy (Eastbound)				Lone Tree Wy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	28	0	6	2	3	0	3	104	1	0	11	111	3	0	275	
7:15 AM	8	2	28	0	6	5	3	0	2	99	1	1	17	129	6	0	307	
7:30 AM	10	5	35	0	6	6	6	0	6	169	6	0	17	194	2	1	463	
7:45 AM	12	10	32	0	12	4	13	0	7	191	9	0	24	221	10	0	545	1590
8:00 AM	9	3	32	0	13	6	7	0	7	187	14	0	21	246	10	0	555	1870
8:15 AM	7	2	25	0	7	7	8	0	6	166	6	0	21	251	13	1	520	2083
8:30 AM	5	2	35	0	4	1	9	0	4	178	5	0	26	264	12	0	545	2165
8:45 AM	10	1	28	0	4	1	10	0	13	191	7	0	16	229	10	0	520	2140

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	36	12	128	0	52	24	28	0	28	748	56	0	84	984	40	0	2220
Heavy Trucks	0	0	8		0	0	0		0	36	0		8	84	0		136
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 10/6/2021 1:49 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

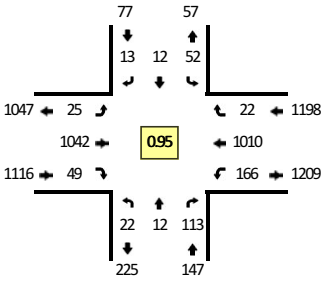
Type of peak hour being reported: Intersection Peak

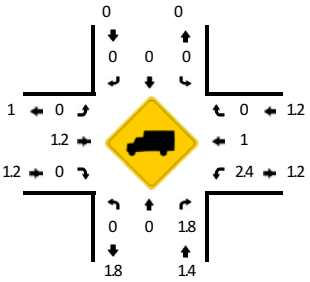
Method for determining peak hour: Total Entering Volume

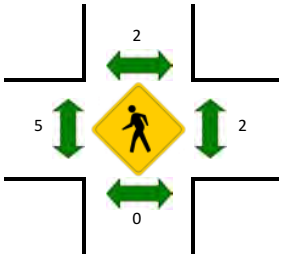
LOCATION: Vista Grande Dr -- Lone Tree Wy
CITY/STATE: Antioch, CA

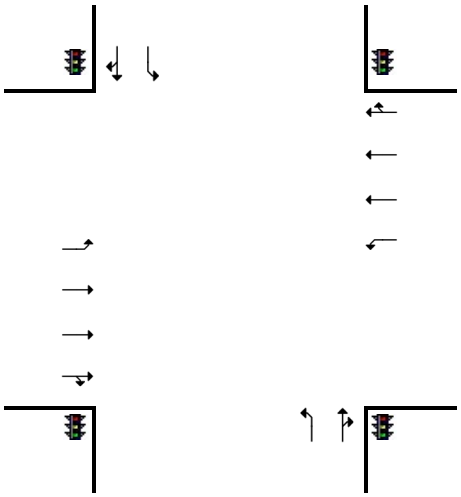
QC JOB #: 15554902
DATE: Tue, Sep 28 2021

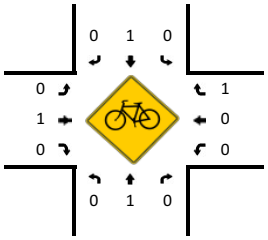
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

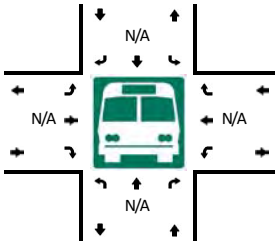


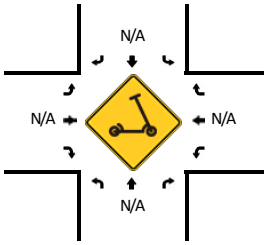












15-Min Count Period Beginning At	Vista Grande Dr (Northbound)				Vista Grande Dr (Southbound)				Lone Tree Wy (Eastbound)				Lone Tree Wy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	1	23	0	7	1	4	0	6	241	13	1	46	255	7	1	616	
4:15 PM	9	0	27	0	10	1	5	0	3	231	12	0	29	243	8	0	578	
4:30 PM	3	4	24	0	10	3	5	0	3	248	6	0	33	237	7	1	584	
4:45 PM	4	2	23	0	17	3	3	0	7	265	16	1	40	266	4	0	651	2429
5:00 PM	6	2	32	0	11	4	2	0	6	280	7	1	45	224	8	0	628	2441
5:15 PM	5	3	25	0	10	2	3	0	3	260	12	0	49	288	4	1	665	2528
5:30 PM	7	5	33	0	14	3	5	0	7	237	14	0	30	232	6	1	594	2538
5:45 PM	7	1	24	0	2	7	7	0	6	209	3	1	44	261	5	0	577	2464

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	20	12	100	0	40	8	12	0	12	1040	48	0	196	1152	16	4	2660
Heavy Trucks	0	0	8		0	0	0		0	4	0		16	4	0		32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 10/6/2021 1:49 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Vista Grande Dr -- Cross Pointe Dwy
CITY/STATE: Antioch, CA

QC JOB #: 15554903
DATE: Tue, Sep 28 2021

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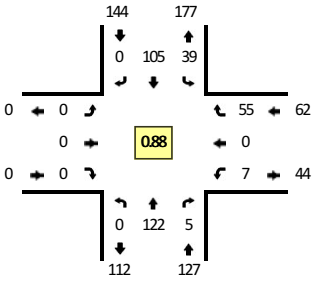
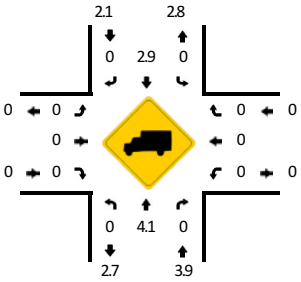
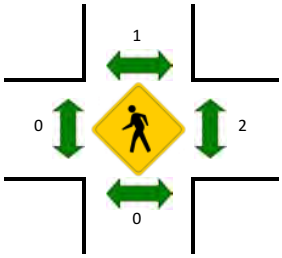
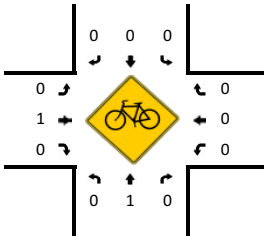
Peak 15-Min: 7:45 AM -- 8:00 AM

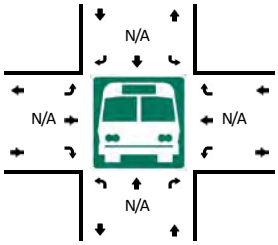


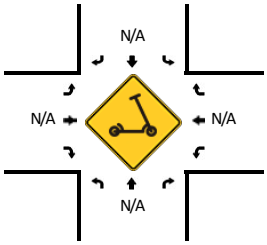


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	Vista Grande Dr (Northbound)				Vista Grande Dr (Southbound)				Cross Pointe Dwy (Eastbound)				Cross Pointe Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	19	0	0	1	14	0	0	0	0	0	0	1	0	10	0	45	
7:15 AM	0	29	0	0	5	18	0	0	0	0	0	0	0	0	13	0	65	
7:30 AM	0	29	0	0	5	23	0	0	0	0	0	0	1	0	18	0	76	
7:45 AM	0	36	0	0	11	26	0	0	0	0	0	0	3	0	19	0	95	281
8:00 AM	0	27	1	0	12	28	0	0	0	0	0	0	3	0	17	0	88	324
8:15 AM	0	28	1	0	7	28	0	0	0	0	0	0	1	0	6	0	71	330
8:30 AM	0	31	3	0	9	23	0	0	0	0	0	0	0	0	13	0	79	333
8:45 AM	0	29	0	0	4	20	0	0	0	0	0	0	2	0	8	0	63	301

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	144	0	0	44	104	0	0	0	0	0	0	12	0	76	0	380
Heavy Trucks	0	8	0		0	0	0		0	0	0		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

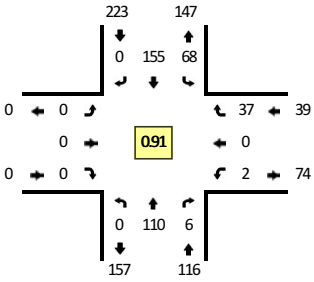
Report generated on 10/6/2021 1:49 PM

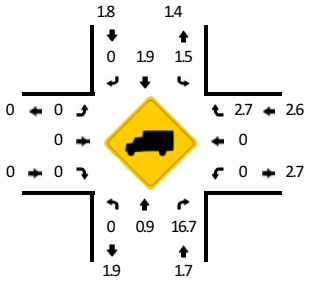
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

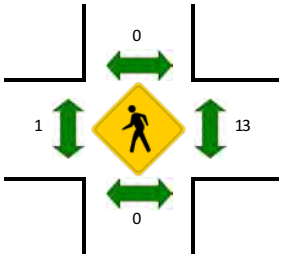
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

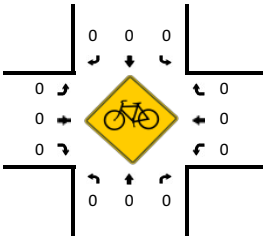
LOCATION: Vista Grande Dr -- Cross Pointe Dwy | **QC JOB #:** 15554904
CITY/STATE: Antioch, CA | **DATE:** Tue, Sep 28 2021

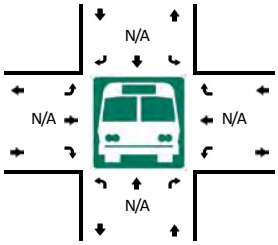
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

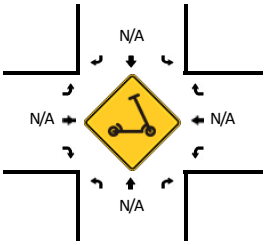












15-Min Count Period Beginning At	Vista Grande Dr (Northbound)				Vista Grande Dr (Southbound)				Cross Pointe Dwy (Eastbound)				Cross Pointe Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	28	0	0	18	41	0	0	0	0	0	0	0	0	6	0	93	
4:15 PM	0	25	2	0	13	29	0	0	0	0	0	0	1	0	9	0	79	
4:30 PM	0	25	1	0	10	31	0	0	0	0	0	0	0	0	6	0	73	
4:45 PM	0	21	1	0	21	38	0	0	0	0	0	0	1	0	6	0	88	333
5:00 PM	0	33	4	0	16	43	0	0	0	0	0	0	0	0	8	0	104	344
5:15 PM	0	25	0	0	18	40	0	0	0	0	0	0	0	0	10	0	93	358
5:30 PM	0	31	1	0	13	34	0	0	0	0	0	0	1	0	13	0	93	378
5:45 PM	0	25	1	0	16	37	0	0	0	0	0	0	0	0	6	0	85	375

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	132	16	0	64	172	0	0	0	0	0	0	0	0	32	0	416
Heavy Trucks	0	0	4		4	12	0		0	0	0		0	0	0		20
Buses																	
Pedestrians		0				0				0				40			40
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 10/6/2021 1:49 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B INTERSECTION LOS WORKSHEETS

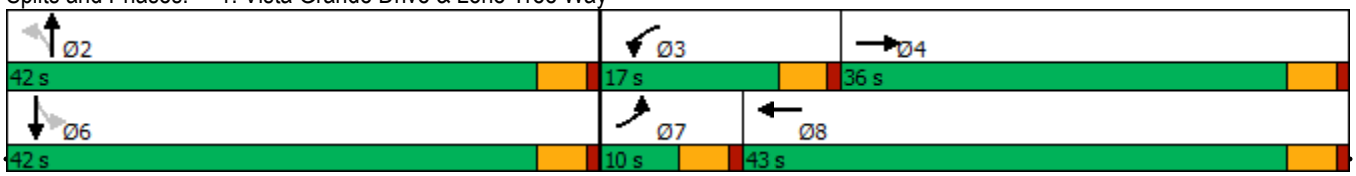
Existing Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	722	34	93	982	45	33	17	124	36	18	37
Future Volume (vph)	24	722	34	93	982	45	33	17	124	36	18	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	200		0	130		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			60			60			60		
Satd. Flow (prot)	1805	4872	0	1770	4907	0	1805	1580	0	1805	1672	0
Flt Permitted	0.950			0.950			0.720			0.665		
Satd. Flow (perm)	1805	4872	0	1770	4907	0	1368	1580	0	1264	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			9			127			38	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		315			1072			289			592	
Travel Time (s)		4.8			16.2			5.6			11.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	6%	0%	2%	5%	4%	0%	0%	5%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	772	0	95	1048	0	34	144	0	37	56	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Total Split (s)	10.0	36.0		17.0	43.0		42.0	42.0		42.0	42.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)	5.6	19.9		9.4	27.6		38.0	38.0		38.0	38.0	
Actuated g/C Ratio	0.07	0.25		0.12	0.35		0.49	0.49		0.49	0.49	
v/c Ratio	0.19	0.62		0.45	0.60		0.05	0.17		0.06	0.07	
Control Delay	41.5	28.6		41.1	22.6		14.0	4.5		14.1	7.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.5	28.6		41.1	22.6		14.0	4.5		14.1	7.3	
LOS	D	C		D	C		B	A		B	A	
Approach Delay		29.0			24.1			6.3			10.0	
Approach LOS		C			C			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 95
Actuated Cycle Length: 78.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 23.9 — Intersection LOS: C
Intersection Capacity Utilization 51.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	55	122	5	39	105
Future Vol, veh/h	7	55	122	5	39	105
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	8	63	139	6	44	119

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	349	142	0	0	145	0
Stage 1	142	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	652	911	-	-	1450	-
Stage 1	890	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	632	911	-	-	1450	-
Mov Cap-2 Maneuver	632	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	868	1450	-
HCM Lane V/C Ratio	-	-	0.081	0.031	-
HCM Control Delay (s)	-	-	9.5	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↱
Traffic Vol, veh/h	778	5	0	1052	0	2
Future Vol, veh/h	778	5	0	1052	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	846	5	0	1143	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	426
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	493
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	493
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	493	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-
HCM Control Delay (s)	12.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	177	144	2
Future Vol, veh/h	0	1	0	177	144	2
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	192	157	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	158	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	887	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	887	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	0	0
HCM LOS	A		

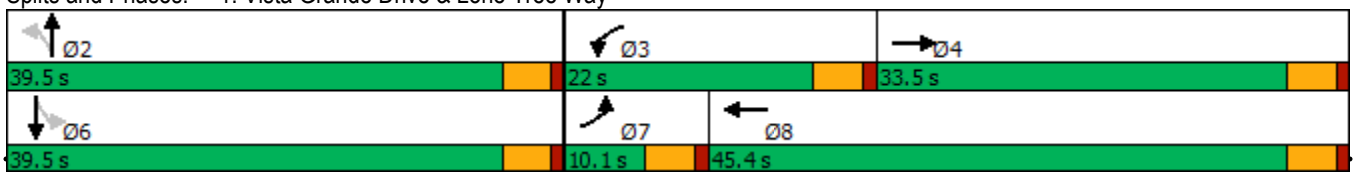
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	887	-	-
HCM Lane V/C Ratio	-	0.001	-	-
HCM Control Delay (s)	-	9.1	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Existing Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1042	49	166	1010	22	22	12	113	52	12	13
Future Volume (vph)	25	1042	49	166	1010	22	22	12	113	52	12	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	200		0	130		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			60			60			60		
Satd. Flow (prot)	1805	5102	0	1770	5121	0	1805	1614	0	1805	1752	0
Flt Permitted	0.950			0.950			0.740			0.673		
Satd. Flow (perm)	1805	5102	0	1770	5121	0	1406	1614	0	1279	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			119			14	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		315			1072			289			592	
Travel Time (s)		4.8			16.2			5.6			11.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1149	0	175	1086	0	23	132	0	55	27	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Total Split (s)	10.1	33.5		22.0	45.4		39.5	39.5		39.5	39.5	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)	5.6	26.0		13.5	40.2		35.2	35.2		35.2	35.2	
Actuated g/C Ratio	0.06	0.29		0.15	0.46		0.40	0.40		0.40	0.40	
v/c Ratio	0.23	0.76		0.65	0.46		0.04	0.18		0.11	0.04	
Control Delay	47.0	32.2		47.3	17.7		19.0	5.7		19.7	12.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.0	32.2		47.3	17.7		19.0	5.7		19.7	12.6	
LOS	D	C		D	B		B	A		B	B	
Approach Delay		32.5			21.8			7.6			17.4	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 88.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 25.6		Intersection LOS: C	
Intersection Capacity Utilization 57.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	37	110	6	68	155
Future Vol, veh/h	2	37	110	6	68	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	17	2	2
Mvmt Flow	2	41	121	7	75	170

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	445	125	0	0	128	0
Stage 1	125	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	-	-	2.218	-
Pot Cap-1 Maneuver	574	923	-	-	1458	-
Stage 1	906	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	545	923	-	-	1458	-
Mov Cap-2 Maneuver	545	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	891	1458	-
HCM Lane V/C Ratio	-	-	0.048	0.051	-
HCM Control Delay (s)	-	-	9.2	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↱
Traffic Vol, veh/h	1110	3	0	1045	0	6
Future Vol, veh/h	1110	3	0	1045	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1207	3	0	1136	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	605
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	378
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	378
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	378	-	-	-
HCM Lane V/C Ratio	0.017	-	-	-
HCM Control Delay (s)	14.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	147	223	1
Future Vol, veh/h	0	2	0	147	223	1
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	160	242	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	243	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	796	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	796	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	796	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	9.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

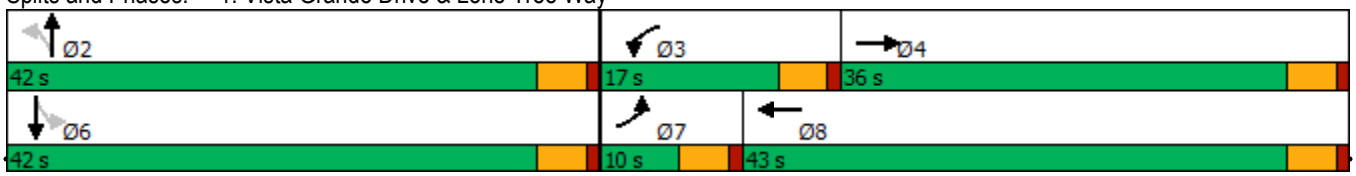
Short-Term (2025) without Project

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	842	40	108	1145	52	38	20	145	42	21	43
Future Volume (vph)	28	842	40	108	1145	52	38	20	145	42	21	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	200		0	130		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			60			60			60		
Satd. Flow (prot)	1805	4872	0	1770	4907	0	1805	1580	0	1805	1672	0
Flt Permitted	0.950			0.950			0.715			0.644		
Satd. Flow (perm)	1805	4872	0	1770	4907	0	1358	1580	0	1224	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			9			148			44	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		315			1072			289			592	
Travel Time (s)		4.8			16.2			5.6			11.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	6%	0%	2%	5%	4%	0%	0%	5%	0%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	900	0	110	1221	0	39	168	0	43	65	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Total Split (s)	10.0	36.0		17.0	43.0		42.0	42.0		42.0	42.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)	5.6	23.8		10.0	32.1		38.1	38.1		38.1	38.1	
Actuated g/C Ratio	0.07	0.29		0.12	0.39		0.46	0.46		0.46	0.46	
v/c Ratio	0.24	0.64		0.51	0.64		0.06	0.21		0.08	0.08	
Control Delay	45.6	28.4		45.1	22.4		16.3	5.0		16.5	8.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	45.6	28.4		45.1	22.4		16.3	5.0		16.5	8.2	
LOS	D	C		D	C		B	A		B	A	
Approach Delay		28.9			24.3			7.1			11.5	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 82.9			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 24.1		Intersection LOS: C	
Intersection Capacity Utilization 56.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	55	142	5	39	122
Future Vol, veh/h	7	55	142	5	39	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	8	63	161	6	44	139

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	391	164	0	0	167	0
Stage 1	164	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	617	886	-	-	1423	-
Stage 1	870	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	598	886	-	-	1423	-
Mov Cap-2 Maneuver	598	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	790	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	840	1423	-
HCM Lane V/C Ratio	-	-	0.084	0.031	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	908	5	0	1226	0	2
Future Vol, veh/h	908	5	0	1226	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	987	5	0	1333	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	496
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	444
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	444
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	444	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	13.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	197	167	2
Future Vol, veh/h	0	1	0	197	167	2
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	214	182	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	183	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	859	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	859	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	859	-	-
HCM Lane V/C Ratio	-	0.001	-	-
HCM Control Delay (s)	-	9.2	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

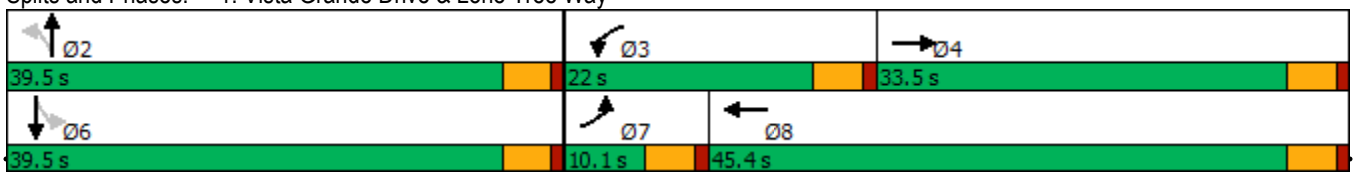
Short-Term (2025) without Project

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1215	57	194	1178	26	26	14	132	61	14	15
Future Volume (vph)	29	1215	57	194	1178	26	26	14	132	61	14	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	200		0	130		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			60			60			60		
Satd. Flow (prot)	1805	5102	0	1770	5121	0	1805	1614	0	1805	1754	0
Flt Permitted	0.950			0.950			0.737			0.642		
Satd. Flow (perm)	1805	5102	0	1770	5121	0	1400	1614	0	1220	1754	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			4			139			16	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		315			1072			289			592	
Travel Time (s)		4.8			16.2			5.6			11.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	2%	1%	0%	0%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	1339	0	204	1267	0	27	154	0	64	31	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		
Total Split (s)	10.1	33.5		22.0	45.4		39.5	39.5		39.5	39.5	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)	5.6	28.1		14.6	41.4		35.1	35.1		35.1	35.1	
Actuated g/C Ratio	0.06	0.31		0.16	0.45		0.38	0.38		0.38	0.38	
v/c Ratio	0.28	0.85		0.72	0.55		0.05	0.22		0.14	0.05	
Control Delay	49.3	36.1		51.5	19.8		19.6	5.5		20.8	12.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	49.3	36.1		51.5	19.8		19.6	5.5		20.8	12.4	
LOS	D	D		D	B		B	A		C	B	
Approach Delay		36.4			24.2			7.6			18.0	
Approach LOS		D			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 91.4			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	37	128	6	68	181
Future Vol, veh/h	2	37	128	6	68	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	17	2	2
Mvmt Flow	2	41	141	7	75	199

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	494	145	0	0	148	0
Stage 1	145	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	-	-	2.218	-
Pot Cap-1 Maneuver	538	900	-	-	1434	-
Stage 1	887	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	510	900	-	-	1434	-
Mov Cap-2 Maneuver	510	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	866	1434	-
HCM Lane V/C Ratio	-	-	0.049	0.052	-
HCM Control Delay (s)	-	-	9.4	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↱
Traffic Vol, veh/h	1295	3	0	1219	0	6
Future Vol, veh/h	1295	3	0	1219	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1408	3	0	1325	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	706
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	324
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	324
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	324	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	16.3	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	165	264	1
Future Vol, veh/h	0	2	0	165	264	1
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	179	287	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	288	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	751	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	751	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	751	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	9.8	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

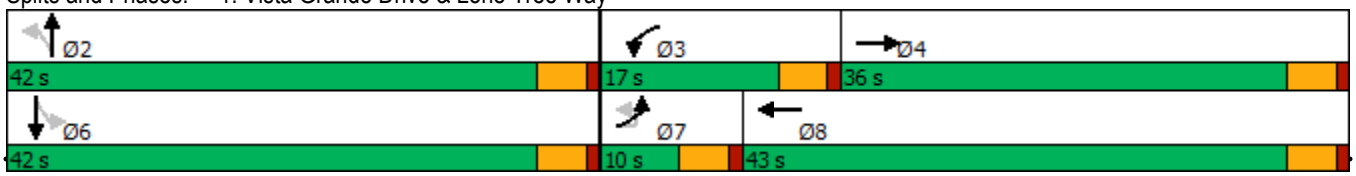
Short-Term (2025) with Project

AM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	34	31	892	42	174	1106	50	38	20	145	40	27
Future Volume (vph)	34	31	892	42	174	1106	50	38	20	145	40	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		210		0	200		0	130		0	120	
Storage Lanes		1		0	1		0	1		0	1	
Taper Length (ft)		40			60			60			60	
Satd. Flow (prot)	0	1786	4872	0	1770	4912	0	1805	1580	0	1805	1698
Flt Permitted		0.727			0.950			0.711			0.641	
Satd. Flow (perm)	0	1367	4872	0	1770	4912	0	1351	1580	0	1218	1698
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)			8			9			148			42
Link Speed (mph)			45			45			35			35
Link Distance (ft)			315			1072			289			592
Travel Time (s)			4.8			16.2			5.6			11.5
Peak Hour Factor	0.92	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	0%	6%	0%	2%	5%	4%	0%	0%	5%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	953	0	178	1180	0	39	168	0	41	70
Turn Type	custom	Prot	NA		Prot	NA		Perm	NA		Perm	NA
Protected Phases		7	4		3	8			2			6
Permitted Phases	7							2			6	
Total Split (s)	10.0	10.0	36.0		17.0	43.0		42.0	42.0		42.0	42.0
Total Lost Time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Act Effct Green (s)		5.5	23.9		11.8	30.2		37.7	37.7		37.7	37.7
Actuated g/C Ratio		0.06	0.27		0.14	0.35		0.43	0.43		0.43	0.43
v/c Ratio		0.80	0.71		0.74	0.69		0.07	0.22		0.08	0.09
Control Delay		98.0	31.2		57.2	26.2		16.9	5.0		17.1	9.0
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		98.0	31.2		57.2	26.2		16.9	5.0		17.1	9.0
LOS		F	C		E	C		B	A		B	A
Approach Delay			35.7			30.2			7.3			12.0
Approach LOS			D			C			A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 87			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 29.8		Intersection LOS: C	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	41
Future Volume (vph)	41
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.98
Heavy Vehicles (%)	3%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Total Split (s)	
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	55	142	5	40	163
Future Vol, veh/h	7	55	142	5	40	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	8	63	161	6	45	185

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	439	164	0	0	167	0
Stage 1	164	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	579	886	-	-	1423	-
Stage 1	870	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	560	886	-	-	1423	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	751	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	831	1423	-
HCM Lane V/C Ratio	-	-	0.085	0.032	-
HCM Control Delay (s)	-	-	9.7	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	819	146	0	1219	0	180
Future Vol, veh/h	819	146	0	1219	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	70	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	890	159	0	1325	0	196

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	445
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	479
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	479
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	479	-	-	-
HCM Lane V/C Ratio	0.408	-	-	-
HCM Control Delay (s)	17.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	45	0	197	164	79
Future Vol, veh/h	0	45	0	197	164	79
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	49	0	214	178	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	221	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	819	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	819	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	819	-	-
HCM Lane V/C Ratio	-	0.06	-	-
HCM Control Delay (s)	-	9.7	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

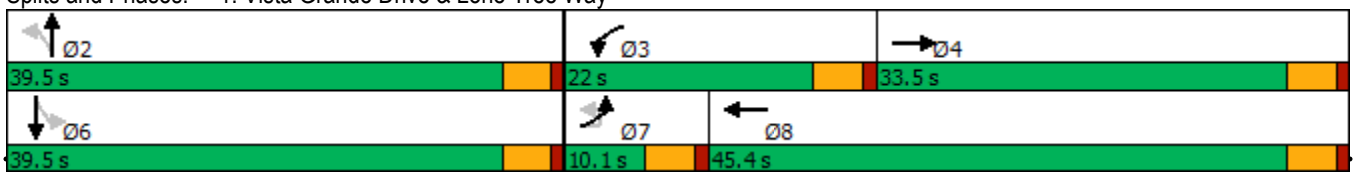
Short-Term (2025) with Project

PM Peak Hour

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	26	32	1259	58	247	1150	25	26	14	132	59	20
Future Volume (vph)	26	32	1259	58	247	1150	25	26	14	132	59	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		210		0	200		0	130		0	120	
Storage Lanes		1		0	1		0	1		0	1	
Taper Length (ft)		40			60			60			60	
Satd. Flow (prot)	0	1789	5102	0	1770	5121	0	1805	1614	0	1805	1780
Flt Permitted		0.909			0.950			0.734			0.639	
Satd. Flow (perm)	0	1712	5102	0	1770	5121	0	1395	1614	0	1214	1780
Right Turn on Red				Yes			Yes			Yes		
Satd. Flow (RTOR)			7			4			139			15
Link Speed (mph)			45			45			35			35
Link Distance (ft)			315			1072			289			592
Travel Time (s)			4.8			16.2			5.6			11.5
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	0%	1%	0%	2%	1%	0%	0%	0%	2%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	1386	0	260	1237	0	27	154	0	62	36
Turn Type	custom	Prot	NA		Prot	NA		Perm	NA		Perm	NA
Protected Phases		7	4		3	8			2			6
Permitted Phases	7							2			6	
Total Split (s)	10.1	10.1	33.5		22.0	45.4		39.5	39.5		39.5	39.5
Total Lost Time (s)		4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5
Act Effct Green (s)		5.6	28.7		16.4	41.7		35.0	35.0		35.0	35.0
Actuated g/C Ratio		0.06	0.31		0.18	0.45		0.37	0.37		0.37	0.37
v/c Ratio		0.61	0.88		0.84	0.54		0.05	0.22		0.14	0.05
Control Delay		69.5	39.1		61.3	20.5		19.8	5.6		21.1	13.5
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay		69.5	39.1		61.3	20.5		19.8	5.6		21.1	13.5
LOS		E	D		E	C		B	A		C	B
Approach Delay			40.4			27.6			7.7			18.3
Approach LOS			D			C			A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 93.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 31.9		Intersection LOS: C	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Vista Grande Drive & Lone Tree Way



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	14
Future Volume (vph)	14
Ideal Flow (vphpl)	1900
Storage Length (ft)	0
Storage Lanes	0
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	Yes
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Total Split (s)	
Total Lost Time (s)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	37	128	6	70	214
Future Vol, veh/h	2	37	128	6	70	214
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	1	17	2	2
Mvmt Flow	2	41	141	7	77	235

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	534	145	0	0	148	0
Stage 1	145	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.12	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	-	-	2.218	-
Pot Cap-1 Maneuver	510	900	-	-	1434	-
Stage 1	887	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	482	900	-	-	1434	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	887	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	862	1434	-
HCM Lane V/C Ratio	-	-	0.05	0.054	-
HCM Control Delay (s)	-	-	9.4	7.7	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	1228	120	0	1216	0	147
Future Vol, veh/h	1228	120	0	1216	0	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	70	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1335	130	0	1322	0	160

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	668
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	344
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	344
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	344	-	-	-
HCM Lane V/C Ratio	0.464	-	-	-
HCM Control Delay (s)	24.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2.4	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	37	0	165	261	64
Future Vol, veh/h	0	37	0	165	261	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	0	179	284	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	319	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	722	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	722	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	722	-	-
HCM Lane V/C Ratio	-	0.056	-	-
HCM Control Delay (s)	-	10.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-