URBAN | CROSSROADS

AVENUE L-4 WAREHOUSE

TRAFFIC ANALYSIS

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Reference Number	Agency	Date
14925-04 TA Report	City of Lancaster	August 21, 2023

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
AVTA	Antelope Valley Transit Agency
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
EA	Existing plus Ambient Growth
EAC	Existing plus Ambient Growth plus Cumulative
EAP	Existing plus Ambient Growth plus Project
EAPC	Existing plus Ambient Growth plus Project plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
PCE	Passenger Car Equivalent
PHF	Peak Hour Factor
Project	Avenue L-4 Warehouse
SCAQMD	South Coast Air Quality Management District
TA	Traffic Analysis
v/c	Volume to Capacity
VMT	Vehicle Miles Traveled
vphgpl	Vehicles per Hour Green per Lane

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1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for Avenue L-4 Warehouse (Project), which is located south of Avenue L and west of Sierra Highway in the City of Lancaster, as shown on Exhibit 1-1. The purpose of this TA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and where necessary, identify improvements to achieve acceptable operations consistent with General Plan level of service goals and policies. This traffic study has been prepared in accordance with the City of Lancaster Department of Public Works Local Transportation Assessment Guidelines (dated January 5, 2021) (**City Guidelines**). (1) The City approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

The Project is to construct the following improvement as design features in conjunction with development of the site:

- Project to accommodate a minimum of 1 lane in each direction of travel between the Project's western boundary and the Project's eastern boundary to accommodate site access along W. Avenue L-4.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report.

1.2 PROJECT OVERVIEW

The Project is proposed to consist of a single warehouse building totaling 217,700 square feet (see Exhibit 1-2). For the purposes of this analysis, the Project has been evaluated assuming 32,655 square feet of general light industrial use (15% of the overall square footage) and 185,045 square feet of general warehousing use. The Project is proposed to have passenger car and truck access to Sierra Highway via Avenue L4. Both driveways are assumed to allow for full access (no left turn access restrictions). Exhibit 1-3 depicts the location of the proposed Project in relation to the existing roadway network and the study area intersections.

The Project is anticipated to be developed within a single phase with an Opening Year of 2024. Regional access to the Project site is available from the Sierra Highway to Avenue L to the north or Avenue M to the south. In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) for General Light Industrial (ITE Land Use Code 110) and Warehousing (ITE Land Use Code 150) uses. (2) The proposed Project is anticipated to generate 480 two-way trip-ends per day, with 54 AM peak hour trips and 55 PM peak hour trips (in actual vehicles). The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 1-1: LOCATION MAP

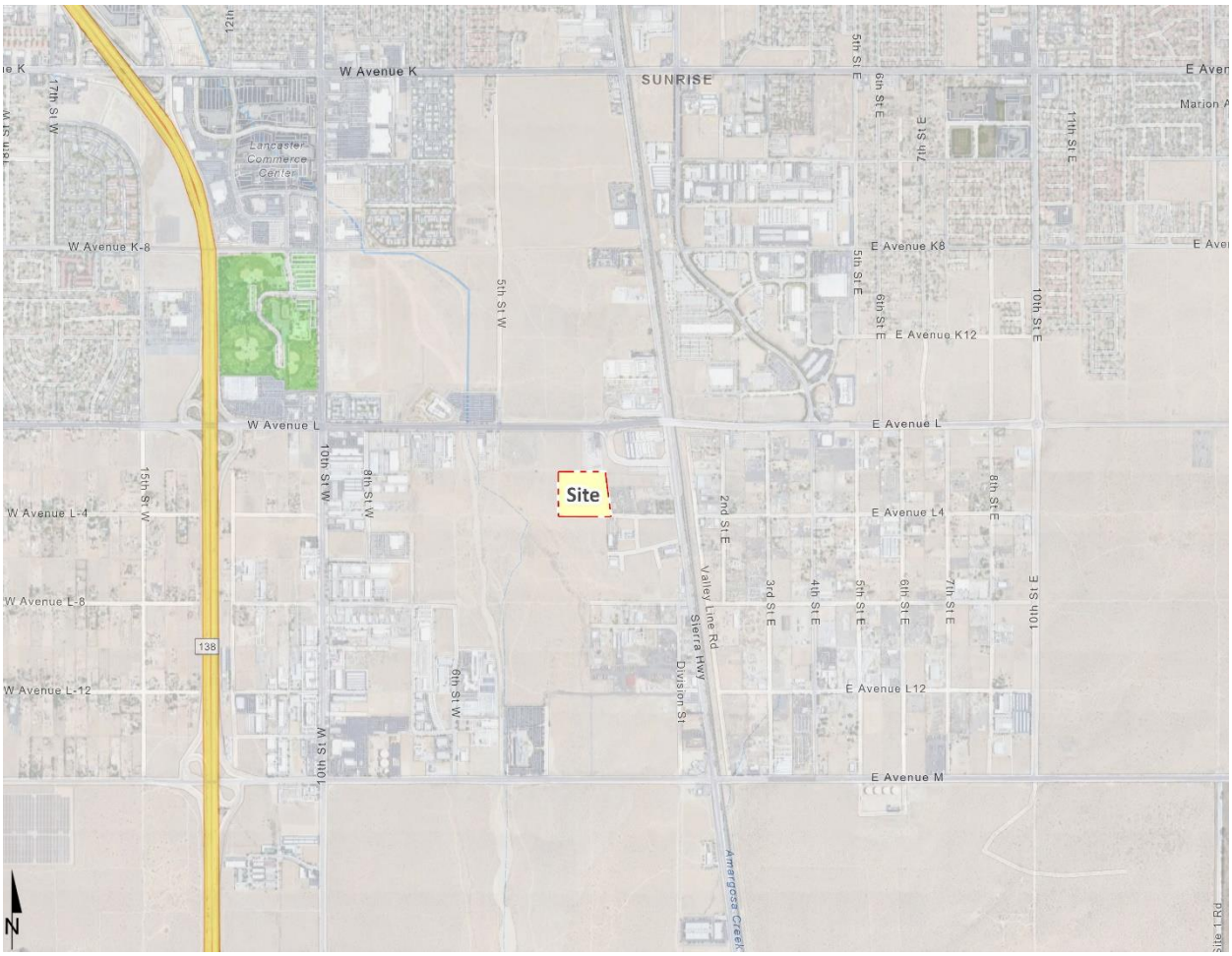


EXHIBIT 1-2: PRELIMINARY SITE PLAN

EXHIBIT 1-3: STUDY AREA

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2023) Conditions
- Existing plus Ambient Growth (EA) (2024) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2024) Conditions
- Existing plus Ambient Growth plus Cumulative (EAC) (2024) Conditions
- Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2024) Conditions

1.3.1 EXISTING (2023) CONDITIONS

Information for Existing (2023) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 EA & EAP (2024) CONDITIONS

The EA & EAP (2024) conditions analysis determines the potential circulation system deficiencies based on a comparison of the EAP traffic conditions to EA conditions. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project for EAP conditions. To account for background traffic growth, an ambient growth factor from Existing (2023) conditions of 2.0% is included for both EA and EAP (2024) traffic conditions. The assumed ambient growth factor is in excess of the minimum growth rate recommended by the City's Guidelines. The EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.3 EAC & EAPC (2024) CONDITIONS

The EAC and EAPC (2024) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. The roadway network is similar to Existing conditions except for new connections to be constructed by the Project for EAPC conditions. To account for background traffic growth, an ambient growth factor from Existing (2023) conditions of 2.0% is included for both EAC and EAPC (2024) traffic conditions. Conservatively, this TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed ambient growth rates; and some of these related projects may not be implemented and operational within the 2024 Opening Year time frame assumed for the Project. The resulting traffic growth utilized in this traffic study (ambient growth factor plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2024 conditions.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Lancaster's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Lancaster staff prior to the preparation of this report. This agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The agreement approved by the City is included in Appendix 1.1 of this TA.

The 3 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with City of Lancaster staff. At a minimum, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips. However, the City's Guidelines indicates that a Local Transportation Assessment may not be required if a project generates fewer than a 100 peak hour trips. The "50 peak hour trip" criteria represent a minimum number of trips at which a typical intersection would have the potential to be substantively affected by a given development proposal. The 50 peak hour trip criterion is a traffic engineering rule of thumb that is accepted and widely used for estimating a potential area of influence (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

#	Intersection	Jurisdiction
1	Sierra Hwy. & Avenue L West	Lancaster
2	Sierra Hwy. & Avenue L East	Lancaster
3	Sierra Hwy. & Avenue L-4	Lancaster

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 3 *Area Conditions*, Section 5 *EA & EAP (2024) Traffic Conditions*, and Section 6 *EAC & EAPC (2024) Conditions* include the detailed analysis. A summary of Level of Service (LOS) results for all analysis scenarios is presented in Table 1-2.

TABLE 1-2: SUMMARY OF LOS

		Existing		EA (2024)		EAP (2024)		EAC (2024)		EAPC (2024)	
#	Intersection	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Sierra Hwy. & Avenue L West	●	●	●	●	●	●	●	●	●	●
2	Sierra Hwy. & Avenue L East	●	●	●	●	●	●	●	●	●	●
3	Sierra Hwy. & Avenue L-4	●	●	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

1.5.1 EXISTING (2023) CONDITIONS

The study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2023) traffic conditions.

1.5.2 EA & EAP (2024) CONDITIONS

The study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours for both EA and EAP (2024) traffic conditions, consistent with Existing (2023) conditions.

1.5.3 EAC & EAPC (2024) CONDITIONS

The study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours for both EAC and EAPC (2024) traffic conditions, consistent with Existing (2023) conditions.

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed Project. The site adjacent recommendations are shown on Exhibit 1-3. The site adjacent queuing analysis worksheets are provided in Appendix 1.2.

Maintain the existing traffic control (side street stop control on Avenue L-4) and intersection geometrics at the intersection of Sierra Highway at Avenue L-4. The intersection as currently designed can accommodate the peak hour queues (no additional vehicle storage required).

Recommendation 1 **–** W. Avenue L-4 is an east-west oriented roadway located on the Project's southern boundary. Project to construct W. Avenue L-4 to accommodate a minimum of one travel lane in each direction from the Project's western boundary to the Project's eastern boundary consistent with the City's standards in order to facilitate site access.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and City of Lancaster sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

There are no off-site improvements identified as all study area intersections are anticipated to operate at an acceptable LOS for all analysis scenarios during all evaluated peak hours.

1.7 QUEUING ANALYSIS

A queuing analysis was conducted for the Project driveways for EAPC (2024) traffic conditions to determine the turn pocket lengths necessary to accommodate near-term 95th percentile queues and to verify if any spillback occurs onto the adjacent intersection, as shown in Table 1-4. As shown, the existing storage lengths are anticipated to accommodate the future 95th percentile peak hour queues at the intersection of Sierra Highway and Avenue L-4. Queuing worksheets are included in Attachment 1.2.

TABLE 1-4: QUEUING ANALYSIS FOR EAPC (2024) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak	PM Peak	AM	PM
Sierra Hwy. & Avenue L-4	NBL	100	33	5	Yes	Yes
	EBL/R	560	41	48	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

1.8 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-4). A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. As shown on Exhibit 1-4, Project driveway 1 is anticipated to accommodate the wide turning radius of heavy trucks as currently designed. The northwest corner at the intersection of Sierra Highway and Avenue L-4 should be modified to provide a 45-foot curb radius.

EXHIBIT 1-4: TRUCK ACCESS (PAGE 1 OF 2)

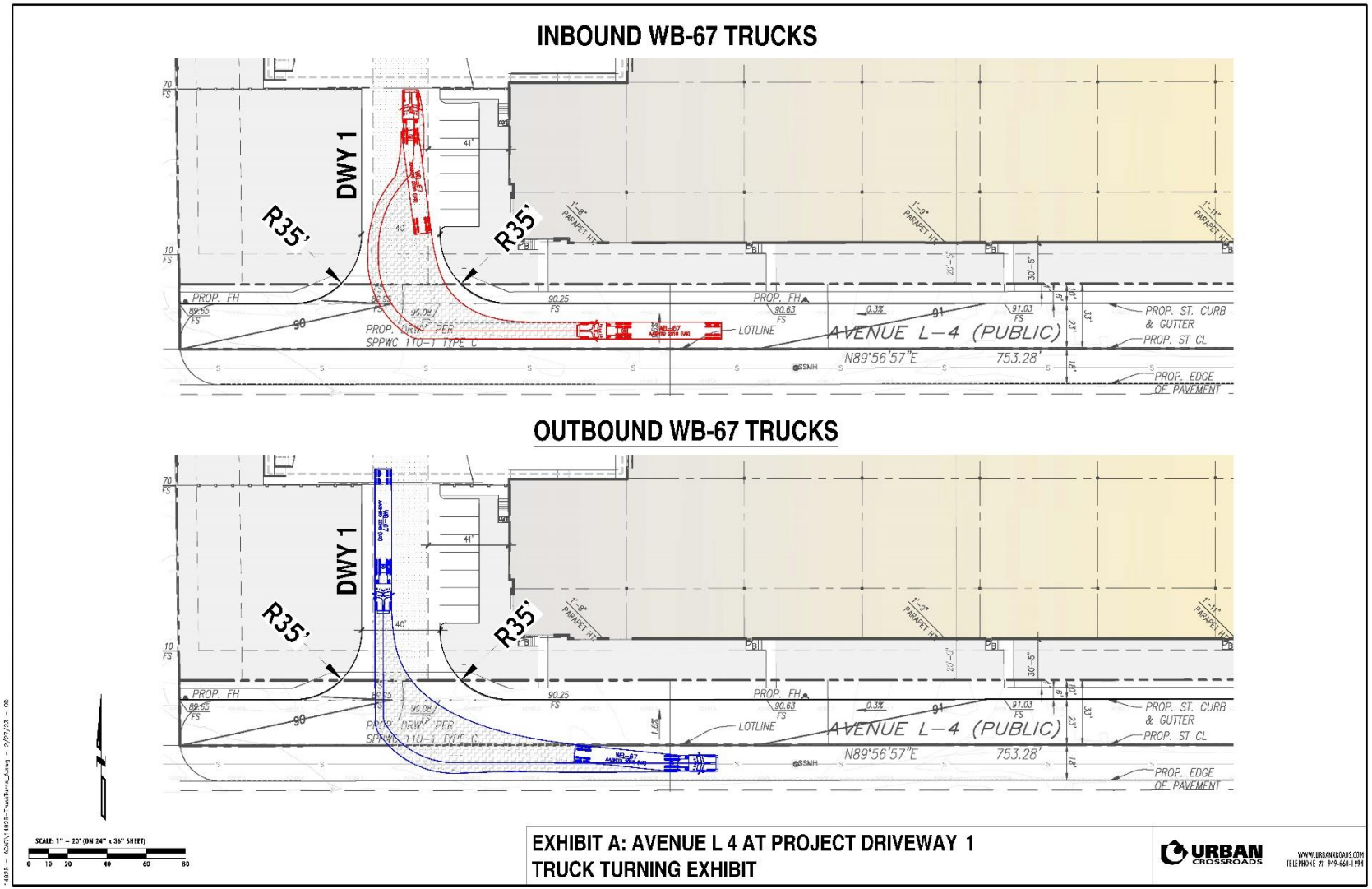
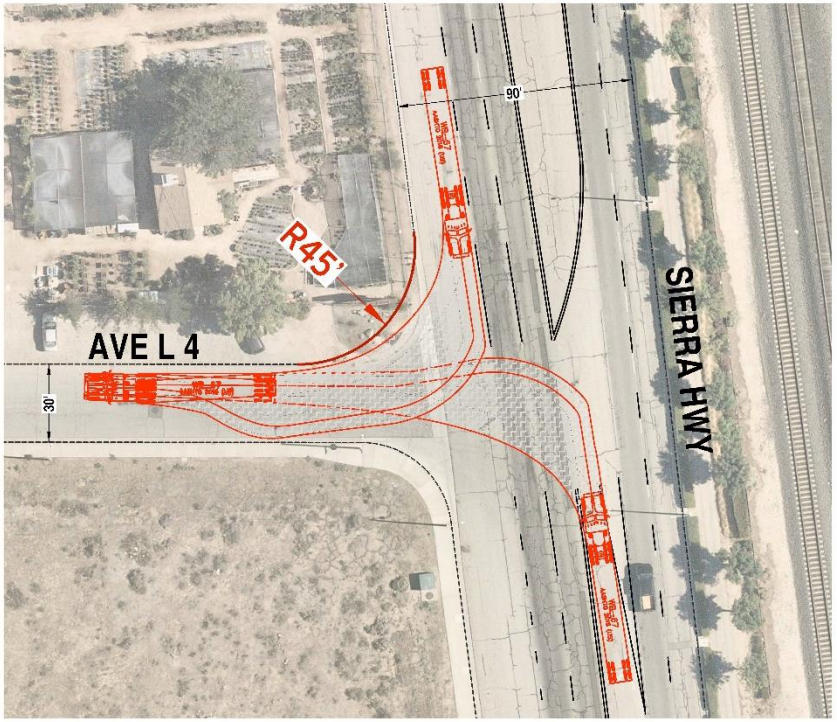
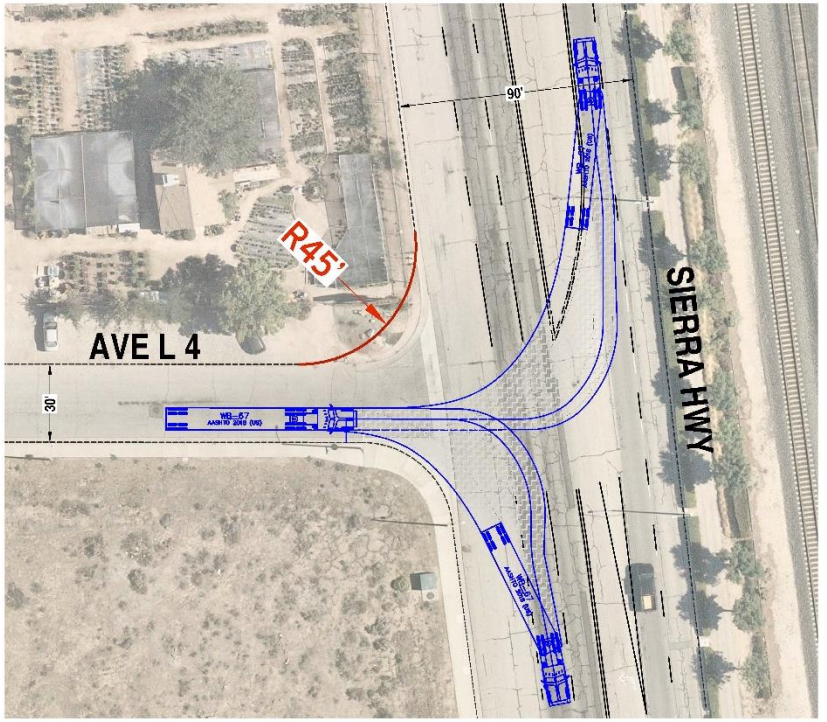


EXHIBIT 1-4: TRUCK ACCESS (PAGE 2 OF 2)

INBOUND WB-67 TRUCKS



OUTBOUND WB-67 TRUCKS



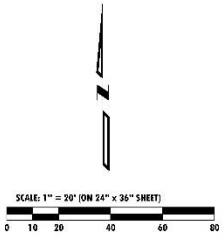


EXHIBIT B: AVENUE L 4 AT SIERRA HIGHWAY
TRUCK TURNING EXHIBIT

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with either the City's or County's Guidelines.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors, such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 6th Edition Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (3) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Lancaster requires signalized intersection operations analysis based on the methodology described in the HCM. (3) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	80.01 and up	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

The traffic modeling and signal timing optimization software package Synchro (Version 11) has been utilized to analyze signalized intersections. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network. Consistent with the Los Angeles County Congestion Management Program (CMP), a saturation flow rate of 1600 vehicles per hour green per lane (vphgpl) has been utilized for all intersections for all scenarios. (4)

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Customary practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak

hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (3)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Lancaster requires the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (3) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2). At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0[1]
Little or no delays.	0 to 10.00	A
Short traffic delays.	10.01 to 15.00	B
Average traffic delays.	15.01 to 25.00	C
Long traffic delays.	25.01 to 35.00	D
Very long traffic delays.	35.01 to 50.00	E
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F

Source: HCM, 6th Edition

[1] If V/C is greater than 1.0 then LOS is F per HCM.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or determine the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (5)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (5) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions and for all future analysis scenarios for existing unsignalized intersections. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. Urban warrants have been used as posted speed limits on the major roadways with unsignalized intersections are 40 miles per hour or below and rural warrants have been used where speeds exceed 40 miles per hour.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. Similarly, the speed limit has been used as the basis for determining the use of Urban and Rural warrants. Traffic signal warrant analyses were performed for the following study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

#	Intersection
3	Sierra Hwy. & Avenue L-4

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *EA & EAP (2024) Traffic Conditions* and Section 6 *EAC & EAPC (2024) Conditions* of this report. It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS)

Minimum Acceptable LOS and associated definitions of intersection deficiencies has been obtained from each of the applicable surrounding jurisdictions.

Per the City of Lancaster's traffic study guidelines, LOS D is considered the minimum acceptable LOS for intersections within the City. (1)

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria has been utilized for the City of Lancaster. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized for signalized intersections:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F).
- For intersections currently operating at unacceptable LOS (LOS E or F), a deficiency will occur if the Project-related increase in average total delay (in seconds) is equal to or greater than 5.0 seconds.

The following will be utilized for unsignalized all-way stop control intersections:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F).
- For intersections currently operating at unacceptable LOS (LOS E or F), a deficiency will occur if the Project-related increase in average total delay (in seconds) is equal to or greater than 3.0 seconds.

The following will be utilized for unsignalized cross-street stop control intersections:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F), and the intersection meets a peak hour traffic signal warrant.
- For intersections currently operating at unacceptable LOS (LOS E or F), a deficiency will occur if the Project-related increase in delay (in seconds) for the worst-case approach is equal to or greater than 10.0 seconds, and the intersection meets a peak hour traffic signal warrant.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

For improvements that do not appear to be in a pre-existing fee programs, a fair share contribution based on the Project's proportional share may be imposed in order to address the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval). The Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

Project Fair Share % = Project Traffic / (EAPC (2024) Total Traffic – Existing (2023) Traffic)

Fair share will be calculated for both the AM and PM peak hours separately and the higher of the two will be utilized.

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Lancaster General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Lancaster staff (Appendix 1.1), the study area includes a total of 3 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF LANCASTER GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of Lancaster. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified in the City of Lancaster Master Plan of Complete Streets, are described subsequently.

Regional Arterials are limited access facilities that provide access to nonlocal through trips with minimal direct access to adjacent land uses. They typically are 8-lane, divided roadway with raised medians within a 120-foot right-of-way.

Major Arterials are primarily intended to serve through, non-local traffic and provide limited local access. They typically are six-lane, divided roadways with raised/landscaped medians within a 100-foot right-of-way.

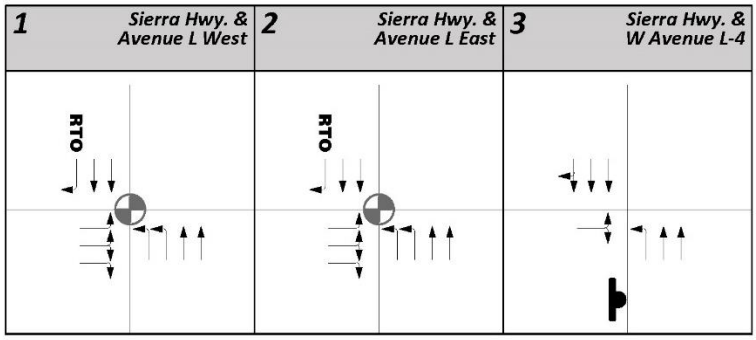
Secondary Arterials provide more local access while also providing a reduced level of non-local though traffic service. Secondary arterials are four-lane, undivided roadways within an 84-foot right-of-way.

Collectors primarily provide access between the arterial network and the neighborhoods and commercial development. These roadways are typically two lanes, undivided without turn lanes at intersections and have a right-of-way of 64-feet.

3.3 BICYCLE & PEDESTRIAN FACILITIES

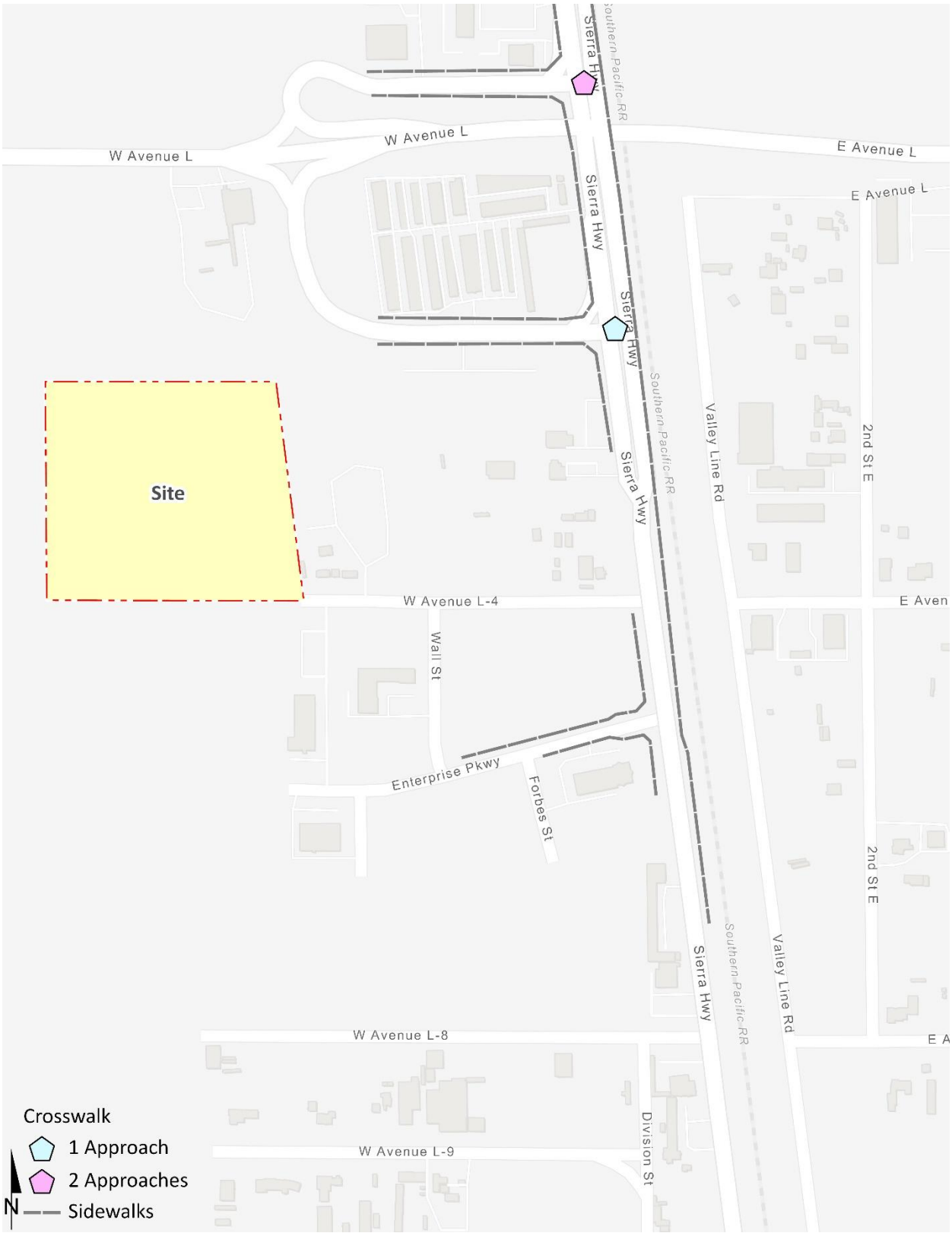
In an effort to promote alternative modes of transportation, the City of Lancaster also includes a bikeway system. Sierra Highway Bikeway is an existing Class I (off-street) bikeway that runs parallel to Sierra Highway and is located near the Project. There is a proposed Class I bike path along Avenue L east of Sierra Highway. Existing pedestrian facilities within the study area are shown on Exhibit 3-2. As shown on Exhibit 3-2, there are limited pedestrian facilities in the vicinity of the Project site. The development of the Project would accommodate pedestrian facilities in the immediate vicinity including along the north side of W. Avenue L-4. Field observations and traffic counts conducted in 2023 indicate light pedestrian and bicycle activity within the study area.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



4	= Number of Lanes		= Traffic Signal
D	= Divided		= Stop Sign
U	= Undivided		= Existing Lane
SPEED LIMIT 25	= Speed Limit (MPH)	RTO	= Right Turn Overlap

EXHIBIT 3-2: EXISTING PEDESTRIAN FACILITIES



3.4 TRANSIT SERVICE

The study area within the City of Lancaster is currently served by Antelope Valley Transit Agency (AVTA), a public transit agency serving various jurisdictions within the Antelope Valley region of Los Angeles County. Based on a review of the existing transit routes within the vicinity of the proposed Project, AVTA Routes 4, 8, and 786 run along Sierra Highway adjacent to the Project site and could potentially serve the Project site. There is an existing stop located on Sierra Highway, just north of W. Avenue L-8. Transit service is reviewed and updated by AVTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the applicant work in conjunction with AVTA to potentially provide bus service to the site. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-3.

3.5 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in May 2022. The traffic counts have been adjusted by 2% to establish 2023 baseline traffic conditions. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

The 2022 weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday ADT volumes are shown on Exhibit 3-4. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

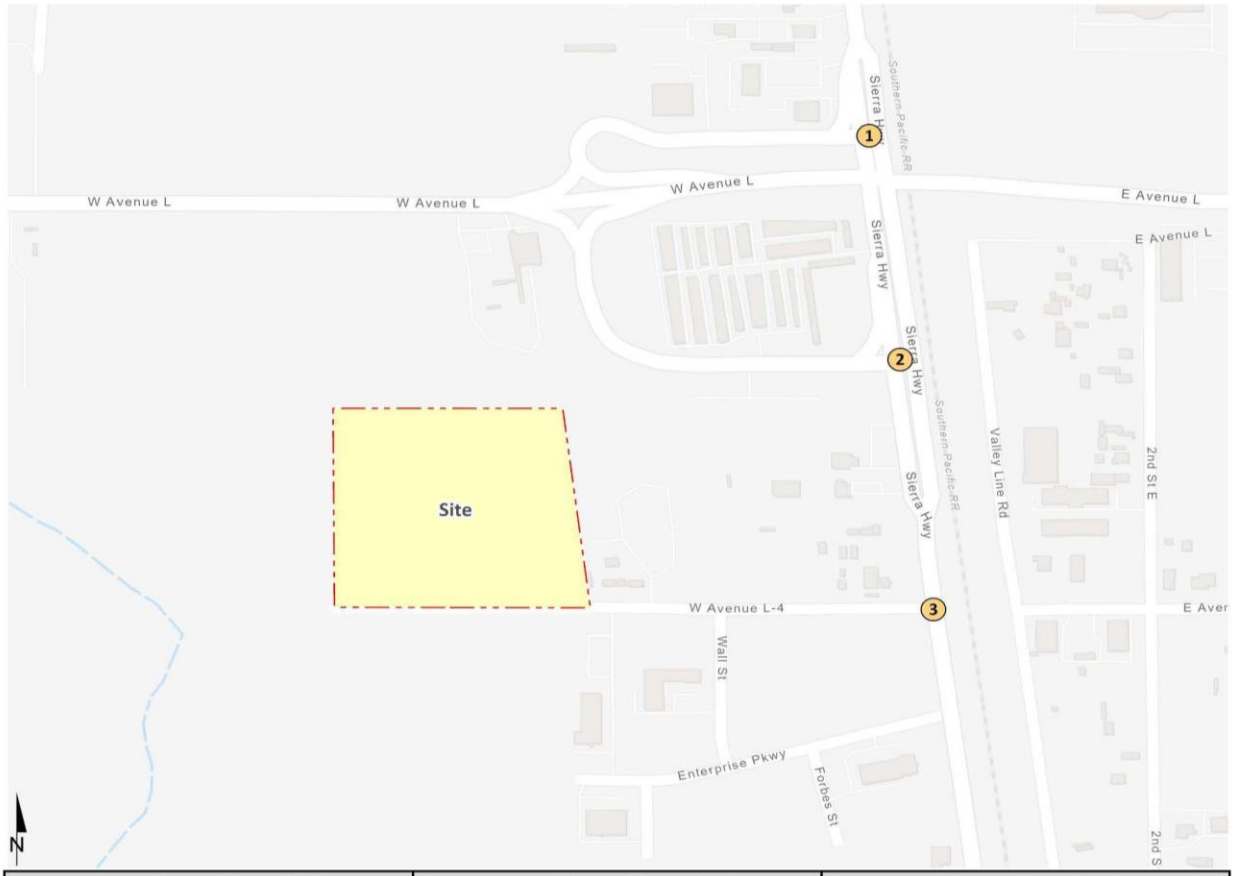
Weekday PM Peak Hour (Approach Volume + Exit Volume) x 13.25 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.55 percent. As such, the above equation utilizing a factor of 13.25 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.55 percent (i.e., 1/0.0755 = 13.25) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday and weekend peak hour intersection volumes, in actual vehicles, are also shown on Exhibit 3-4.

To represent the effect large trucks, buses, and recreational vehicles have on traffic flow, all trucks were converted into passenger car equivalent (PCE). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is also much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For this analysis, the following PCE factors have been used to estimate each turning movement: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks. These factors are consistent with the values recommended for use in the City's Guidelines.

EXHIBIT 3-3: EXISTING TRANSIT ROUTES

EXHIBIT 3-4: EXISTING (2023) TRAFFIC VOLUMES (ACTUAL VEHICLES)



1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
21,650				*24,100*				*25,500*			*13,650*
	↲ 62(94)	← 532(736)			↲ 14(17)	← 625(886)			↲ 14(5)	← 672(11)	← 0(1028)
14(16) ↳	↰ 73(125)	→ 699(787)		52(73) ↳	↰ 24(40)	→ 720(839)		5(7) ↳	↰ 5(2)	→ 740(872)	
107(167) ↴			*24,100*	61(158) ↴			*25,500*	3(8) ↴			*11,850*
5,350				*3,850*				*300*			

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

3.6 INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1, which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours under Existing (2023) traffic conditions. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2023) CONDITIONS

#	Intersection	Traffic Control[2]	Delay[1] (secs.) AM	Delay[1] (secs.) PM	Level of Service AM	Level of Service PM
1	Sierra Hwy. & Avenue L West	TS	9.9	11.2	A	B
2	Sierra Hwy. & Avenue L East	TS	9.7	11.2	A	B
3	Sierra Hwy. & Avenue L-4	CSS	16.3	10.6	C	B

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

2 TS = Traffic Signal; CSS = Cross-street Stop

3.7 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. There are no unsignalized study area intersections that currently meet a traffic signal warrant under Existing (2023) traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of a single warehouse building totaling 217,700 square feet. For the purposes of this analysis, the Project has been evaluated assuming 32,655 square feet of general light industrial use (15% of the overall square footage) and 185,045 square feet of general warehousing use The Project is proposed to have passenger car and truck access to Sierra Highway via Avenue L4. Both driveways are assumed to allow for full access (no left turn access restrictions). The Project is anticipated to be developed in one phase with an opening year of 2024.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the ITE Trip Generation Manual (11th Edition, 2021) was used to estimate the trip generation. (2) Trip generation rates are summarized in Table 4-1 for actual vehicles. For purposes of the traffic study, the following ITE land use codes and vehicle mixes are proposed:

- ITE land use code 110 (General Light Industrial) has been used to derive site specific trip generation estimates for the proposed Project (15% of the overall building square footage). A light industrial facility is a free-standing facility devoted to an individual use that has an emphasis on activities other than manufacturing. Typically, there is minimum office space. The vehicle mix has been obtained from the ITE's Trip Generation Manual. The truck percentages were further broken down by axle type per the following South Coast Air Quality Management District (SCAQMD) recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.
- ITE land use code 150 (Warehousing) has been used to derive site specific trip generation estimates for the proposed Project (remaining 85% of the overall building square footage). A warehouse is primarily devoted to the storage of materials but may also include office and maintenance areas. The vehicle mix has been obtained from the ITE's Trip Generation Manual. The truck percentages were further broken down by axle type per the following SCAQMD recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

TABLE 4-1: TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates									
General Light Industrial[3]	TSF	110	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars (AM=98.6%, PM=98.5%, Daily=94.9%)			0.645	0.085	0.730	0.086	0.554	0.640	4.620
2-Axle Trucks (AM=0.23%, PM=0.25%, Daily=0.85%)			0.001	0.001	0.002	0.001	0.001	0.002	0.042
3-Axle Trucks (AM=0.29%, PM=0.31%, Daily=1.05%)			0.001	0.001	0.002	0.001	0.001	0.002	0.052
4+-Axle Trucks (AM=0.88%, PM=0.94%, Daily=3.20%)			0.004	0.002	0.006	0.003	0.003	0.006	0.157
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars (AM=88.2%, PM=83.3%, Daily=64.9%)			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks (AM=1.97%, PM=2.79%, Daily=5.86%)			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks (AM=2.44%, PM=3.46%, Daily=7.27%)			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks (AM=7.39%, PM=10.45%, Daily=21.97%)			0.007	0.006	0.013	0.010	0.009	0.019	0.376

[1] Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

[3] Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

NOTE: PCE factors: 2-axle trucks = 1.5, 3-axle trucks = 2.0, and 4+-axle = 3.0.

The trip generation summary illustrating daily and peak hour trip generation estimates for the proposed Project in actual vehicles and PCE are shown in Table 4-2. The proposed Project is anticipated to generate 480 two-way vehicle trip-ends per day with 54 AM peak hour trips and 55 PM peak hour (see Table 4-2).

PCE factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The following PCE factors have been used: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks. The Project is anticipated to generate 664 two-way PCE trip-ends per day with 62 PCE AM peak hour trips and 63 PCE PM peak hour trips (see Table 4-2).

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:									
General Light Industrial (15%)	32.655	TSF							
Passenger Cars:			21	3	24	3	18	21	150
2-axle Trucks:			0	0	0	0	0	0	2
3-axle Trucks:			0	0	0	0	0	0	2
4+-axle Trucks:			0	0	0	0	0	0	6
Total Truck Trips (Actual Vehicles):			0	0	0	0	0	0	10
Total Trips (Actual Vehicles)[2]			21	3	24	3	18	21	160
Warehousing (85%)	185.045	TSF							
Passenger Cars:			22	6	28	6	21	27	206
2-axle Trucks:			0	0	0	1	0	1	20
3-axle Trucks:			0	0	0	1	1	2	24
4+-axle Trucks:			1	1	2	2	2	4	70
Total Truck Trips (Actual Vehicles):			1	1	2	4	3	7	114
Total Trips (Actual Vehicles)[2]			23	7	30	10	24	34	320
Passenger Cars			43	9	52	9	39	48	356
Trucks			1	1	2	4	3	7	124
Total Trips (Actual Vehicles)[2]			**44**	**10**	**54**	**13**	**42**	**55**	**480**
Passenger Car Equivalent (PCE):									
General Light Industrial (15%)	32.655	TSF							
Passenger Cars:			21	3	24	3	18	21	152
2-axle Trucks:			0	0	0	0	0	0	2
3-axle Trucks:			0	0	0	0	0	0	4
4+-axle Trucks:			0	0	1	0	0	1	16
Total Truck Trips (PCE):			0	0	0	0	0	0	22
Total Trips (PCE)[2]			21	3	24	3	18	21	174
Warehousing (85%)	185.045	TSF							
Passenger Cars:			22	6	28	6	21	27	206
2-axle Trucks:			1	0	1	1	1	2	28
3-axle Trucks:			1	1	2	1	1	2	46
4+-axle Trucks:			4	3	7	6	5	11	210
Total Truck Trips (PCE):			6	4	10	8	7	15	284
Total Trips (PCE)[2]			28	10	38	14	28	42	490
Passenger Cars			43	9	52	9	39	48	358
Trucks			6	4	10	8	7	15	306
Total Trips (PCE)[2]			**49**	**13**	**62**	**17**	**46**	**63**	**664**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. In addition, truck routes for neighboring agencies have been taken into consideration in the development of the trip distribution patterns for heavy trucks. Exhibits 4-1 and 4-2 show the Project truck and passenger car trip distribution patterns, respectively.

4.3 MODAL SPLIT

The potential for Project trips to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project weekday ADT and weekday peak hour intersection turning movement volumes, in actual vehicles, are shown on Exhibits 4-3.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 2% per year, compounded annually, for 2024 traffic conditions. The total ambient growth is 2.0% for 2024 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in conjunction with traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. 2024 traffic volumes are provided in Section 5 and Section 6 of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine With Project forecasts.

EXHIBIT 4-1: PROJECT (TRUCK) TRIP DISTRIBUTION

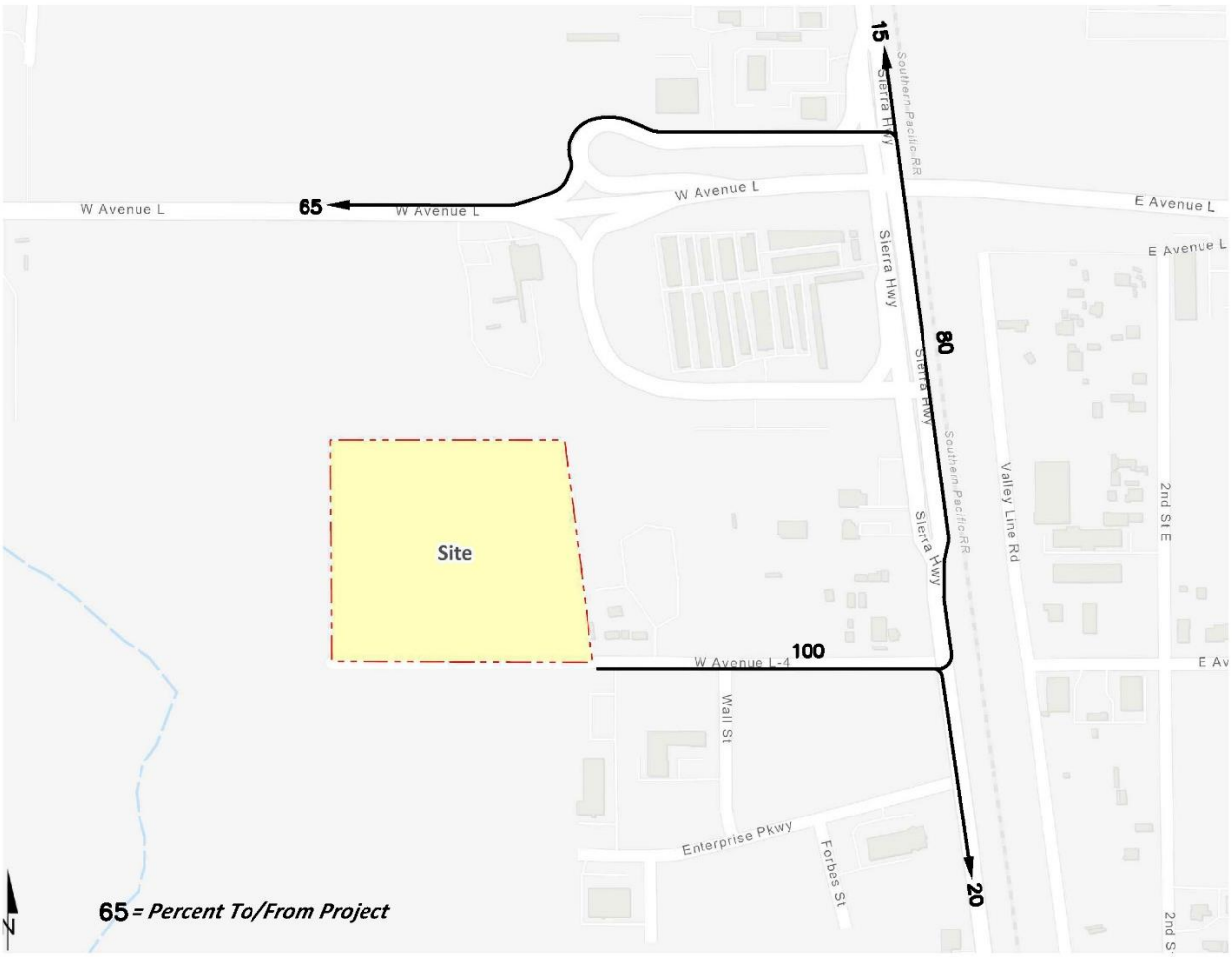


EXHIBIT 4-2: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION

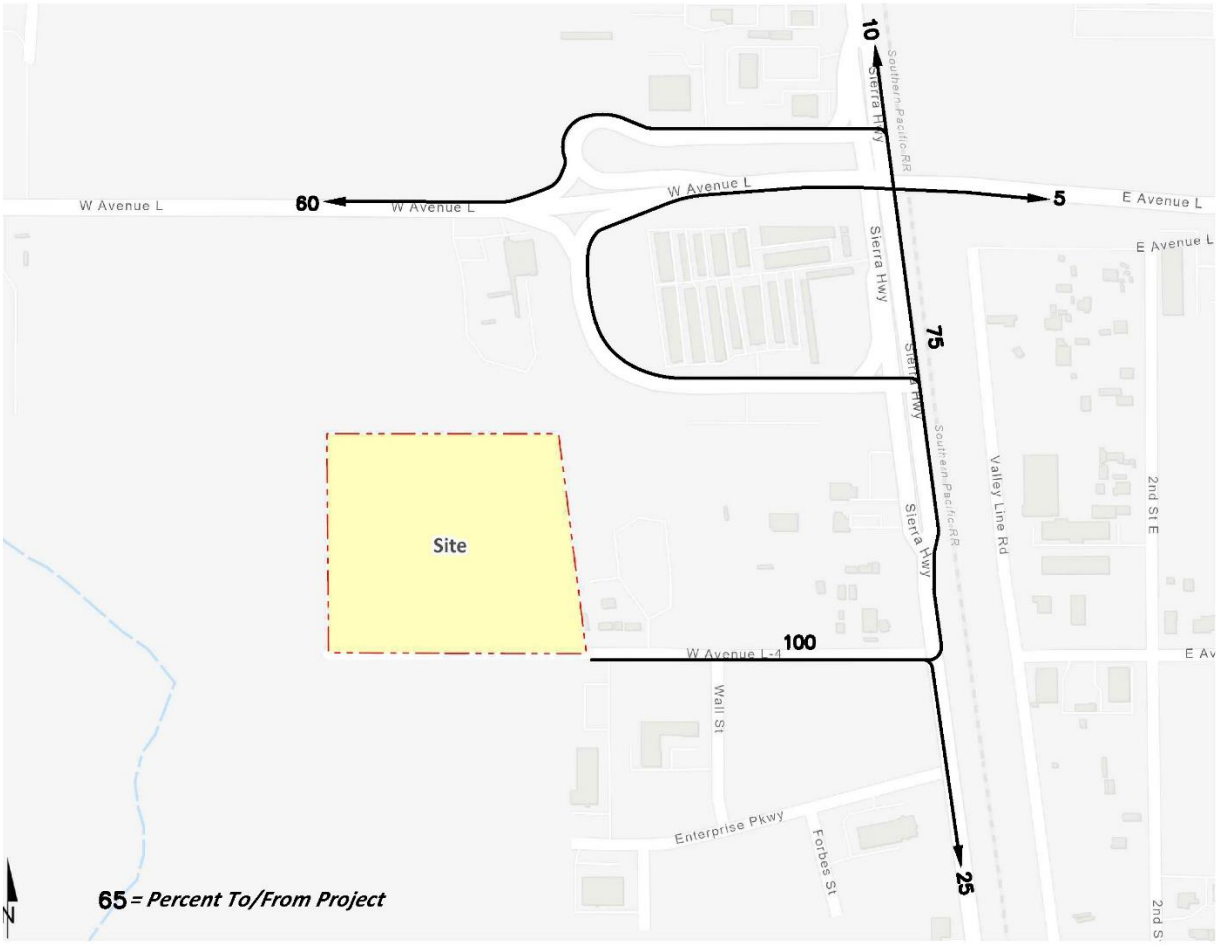


EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES (ACTUAL VEHICLES)

1 Sierra Hwy. & Avenue L West	2 Sierra Hwy. & Avenue L East	3 Sierra Hwy. & Avenue L-4
Nominal ← 4(2) 2(0) ↲ 6(25) ↰ 1(4) ↱ 150 200	200 ← 7(2) 26(8) ↲ 0(2) ↰ 7(30) ↱ 150 350	350 ↳ 33(10) 8(32) ↳ 2(10) ↲ 11(3) ↰ 500 100

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Lancaster and City of Palmdale. The cumulative projects listed are those that would generate traffic and would contribute traffic to study area intersections. Exhibit 4-4 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to the Without Project forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-3 are reflected as part of the background traffic. In an effort to conduct a conservative analysis, the cumulative projects are added in conjunction with the ambient growth identified in Section 4.5 *Background Traffic*. The Cumulative Only ADT and peak hour intersection turning movement volumes, in actual vehicles, are shown on Exhibit 4-5.

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast EA (2024), EAP (2024), EAC (2024), and EAPC (2024) traffic conditions. An ambient growth factor accounts for background (area-wide) traffic increases that occur over time up to the year 2024 from the year 2023. Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2024 roadway networks are similar to the Existing conditions roadway network, with the exception of future driveways proposed to be developed by the Project. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- EA (2024)
  - Existing 2023 volumes
  - Ambient growth traffic (2.0%)

- EAP (2024)
  - Existing 2023 volumes
  - Ambient growth traffic (2.0%)
  - Project traffic

- EAC (2024)
  - Existing 2023 volumes
  - Ambient growth traffic (2.0%)
  - Cumulative Development traffic

- EAPC (2024)
  - Existing 2023 volumes
  - Ambient growth traffic (2.0%)
  - Cumulative Development traffic
  - Project traffic

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

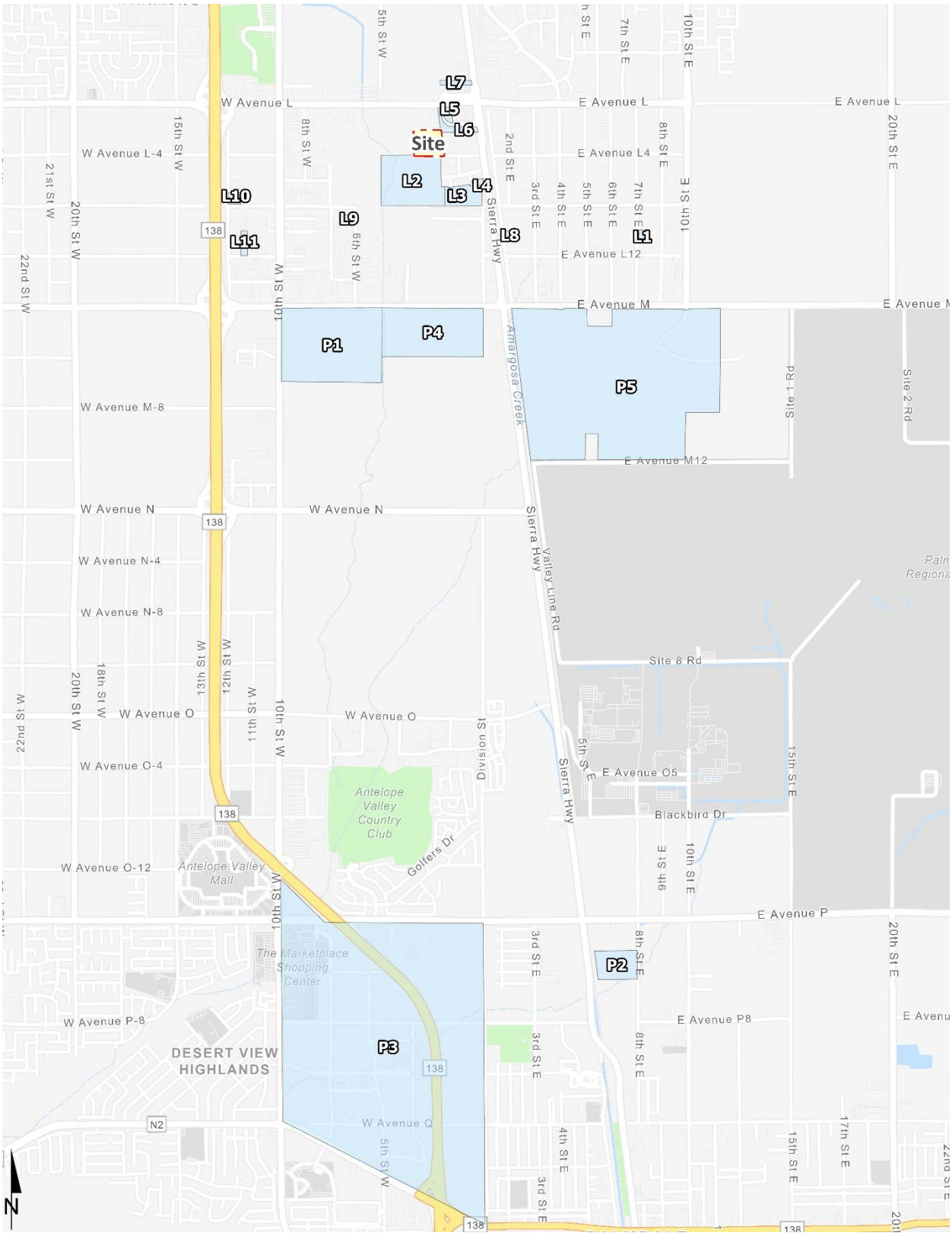
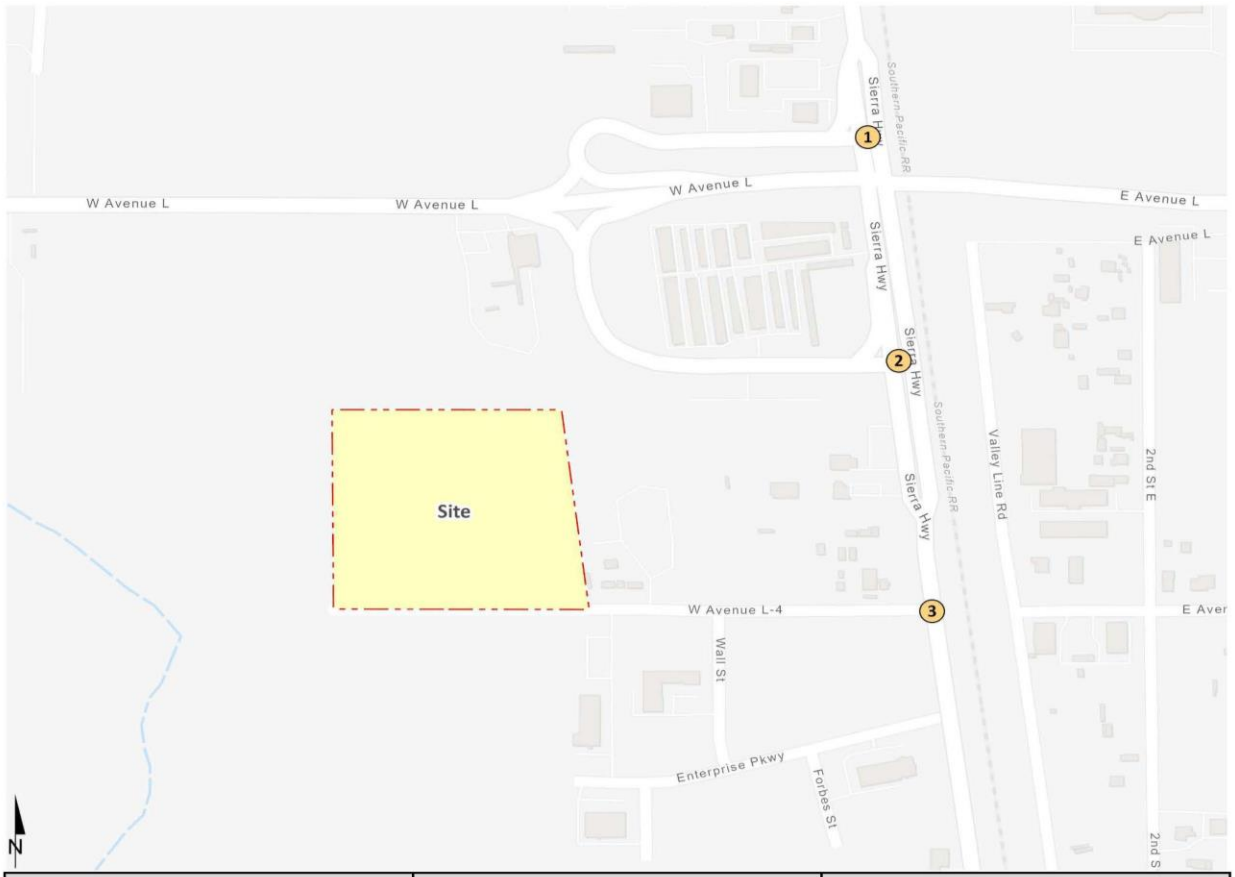


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES (ACTUAL VEHICLES)



1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
2,200				3,300				4,700			
	← 163(114)				↲ 1(1) ← 169(119)				← 334(217)		
		↰	↱			↰	↱				
	8(6) ↲	56(152)	79(141) ↱		3(8) ↳ 132(88) ↲	5(12)	132(284) ↱			144(328) ↱	
1,100			3,300	1,200			4,350				4,700

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 4-3: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name / Case Number	Land Use	Quantity	Units[1]
L1	CUP 18-06	Cannabis Cultivation and Manufacturing Facility	31.705	TSF
L2	49-acre Warehouse Project	Warehousing	956.800	TSF
L3	Forbes & Marketplace	Warehousing	233.600	TSF
L4	CUP 20-04	Cannabis Cultivation and Manufacturing Facility	22.843	TSF
L5	SPR 22-02	Warehousing	28.895	TSF
L6	SPR 22-03	Mini Storage Facility	93.465	TSF
L7	DR 21-175	Warehousing	7.000	TSF
L8	CUP 19-04	Cannabis Cultivation and Manufacturing Facility	22.000	TSF
L9	SPR 22-07	Industrial	17.000	TSF
L10	SPR 22-08	Warehousing	20.872	TSF
L11	SPR 21-16	Industrial	19.488	TSF
P1	Palmdale Warehouse Project	Industrial	1,117.314	TSF
		Commercial	98.794	TSF
		Business Park	743.650	TSF
P2	8th Street Industrial	High-Cube Fulfillment (Non-Sort)	384.8	TSF
P3	Palmdale Trade and Commerce Center	Post Market Auto Sales/Service	300.000	TSF
		Off-Price/Promotion Centers	756.000	TSF
		Retail	1,645.000	TSF
		Commercial Office	2,177.000	TSF
		Industrial	2,767.000	TSF
		Hotel	82.000	TSF
P4	Palmdale Logistics Park	General Light Industrial	357.425	TSF
		High-Cube Fulfillment (Non-Sort)	1,072.275	TSF
P5	Antelope Valley Commerce Center	General Light Industrial	106.308	TSF
		Warehousing	926.919	TSF
		High-Cube Fulfillment (Sort)	680.420	TSF
		High-Cube Cold Storage	1,165.313	TSF
		High-Cube Fulfillment (Non-Sort)	3,495.938	TSF
		Manufacturing	202.666	TSF
		High-Cube Parcel Hub	1,685.770	TSF
		Commercial Retail	55.190	TSF
		Fast-Food without Drive-Thru Window	2.450	TSF
		Fast-Food with Drive-Thru Window	2.235	TSF
		Coffee/Donut Shop with Drive-Thru	1.985	TSF

[1] TSF = Thousand Square Feet

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5 EA AND EAP (2024) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EA and EAP (2024) conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EA and EAP (2024) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2024) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).

5.2 EA (2024) GROWTH TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2023) traffic volumes plus an ambient growth factor of 2.0%. The weekday ADT volumes and peak hour volumes, in actual vehicles, which can be expected for EA (2024) traffic conditions are shown on Exhibit 5-1.

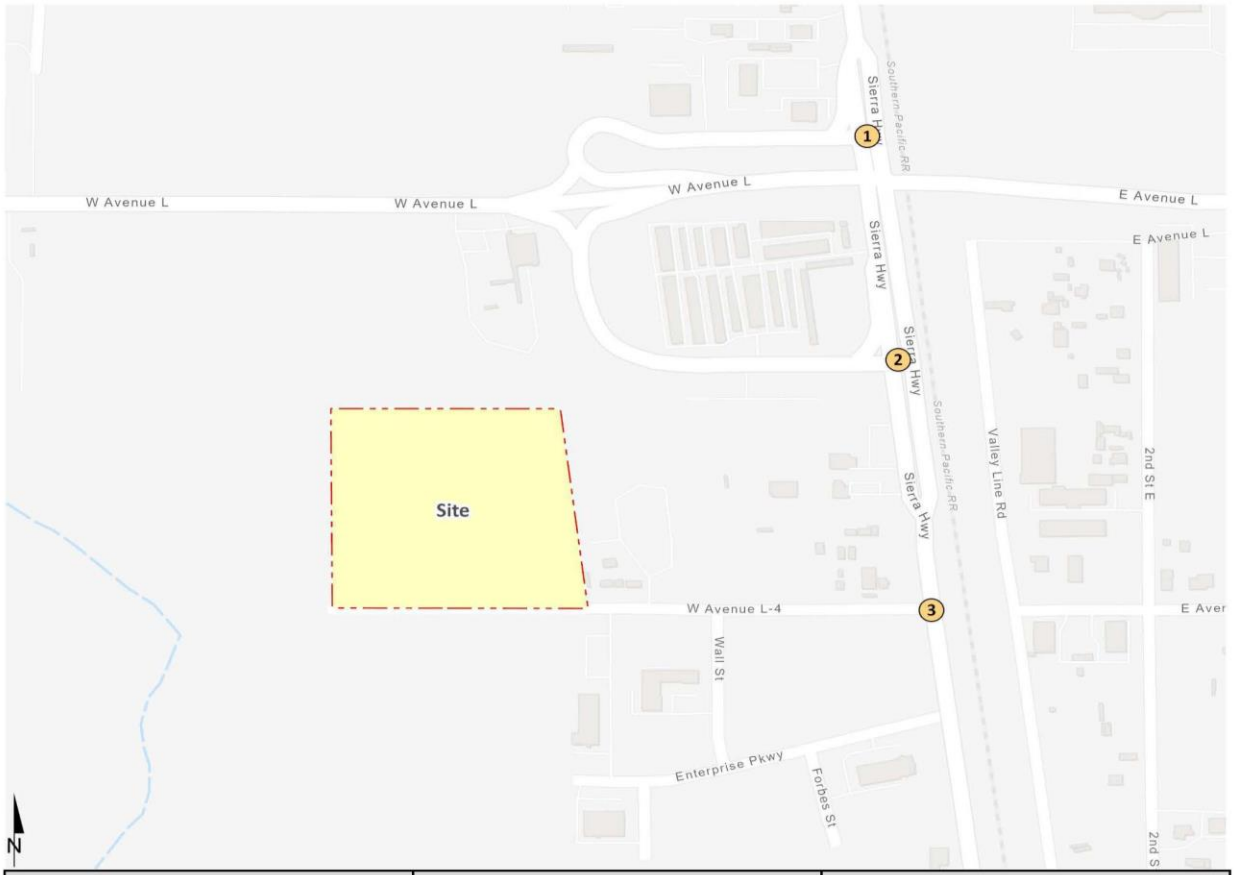
5.3 EAP (2024) GROWTH TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2023) traffic volumes plus an ambient growth factor of 2.0% and the addition of Project traffic. The weekday ADT volumes and peak hour volumes, in actual vehicles, which can be expected for EAP (2024) traffic conditions are shown on Exhibit 5-2.

5.4 INTERSECTION OPERATIONS ANALYSIS

EA and EAP (2024) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1 for EA (2024) traffic conditions, which indicates the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours, consistent with Existing (2023) conditions. Similarly, the intersections are anticipated to continue to operate at an acceptable LOS with the addition of Project traffic under EAP (2024) traffic conditions. The intersection operations analysis worksheets for EA and EAP (2024) traffic conditions are included in Appendix 5.1 and Appendix 5.2 of this TA, respectively.

EXHIBIT 5-1: EA (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES)

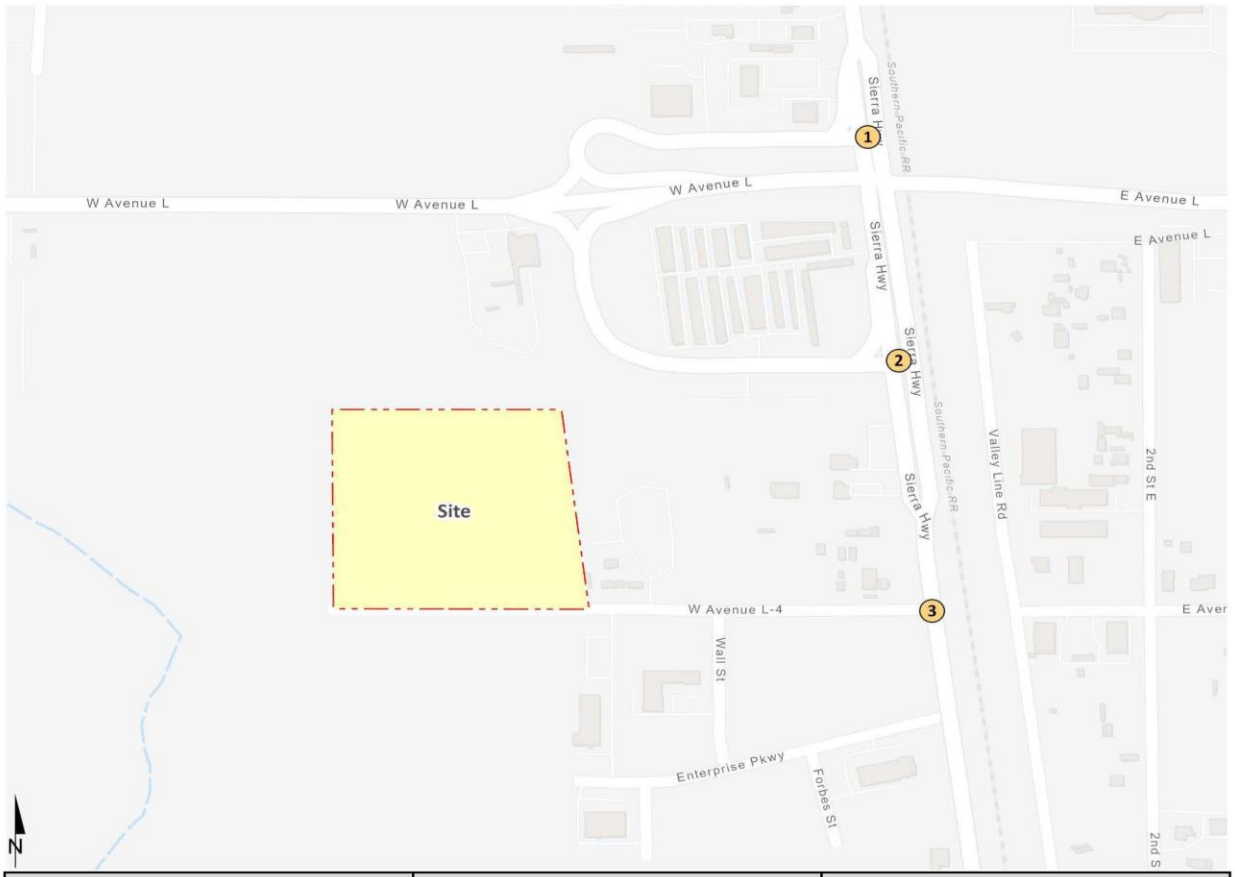


1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
22,100				24,550				26,000			13,900
↲ 63(96)	← 543(751)			↲ 15(18)	← 638(904)			↲ 15(5)	← 686(11)	↳ 0(1049)	
15(17) ↳	↰	↱		53(75) ↳	↰	↱		5(7) ↳	↰	↱	
109(171) ↲	75(128)	713(803)		62(161) ↲	25(41)	735(856)		3(8) ↲	5(2)	754(890)	
5,450			24,550	3,900			26,000	300			12,100

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 5-2: EAP (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES)



1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
22,150				24,750				26,350			13,900
↲ 63(96)	← 547(753)			↲ 15(18)	← 645(906)			↲ 48(15)	← 686(11)	↳ 0(1049)	
15(17) ↳	↰	→		53(75) ↳	↰	→		13(39) ↳	↰	→	
111(171) ↲	81(153)	714(807)		88(169) ↲	25(43)	742(886)		5(18) ↲	16(5)	754(890)	
5,600			24,750	4,050			26,350	800			12,200

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 5-1: INTERSECTION ANALYSIS FOR EA & EAP (2024) CONDITIONS

#	Intersection	Traffic Control[2]	EA (2024) Delay[1] (secs.) AM	EA (2024) Delay[1] (secs.) PM	EA (2024) Level of Service AM	EA (2024) Level of Service PM	EAP (2024) Delay[1] (secs.) AM	EAP (2024) Delay[1] (secs.) PM	EAP (2024) Level of Service AM	EAP (2024) Level of Service PM
1	Sierra Hwy. & Avenue L West	TS	10.3	11.3	B	B	10.4	11.5	B	B
2	Sierra Hwy. & Avenue L East	TS	9.7	11.1	A	B	10.2	11.2	B	B
3	Sierra Hwy. & Avenue L-4	CSS	16.5	10.6	C	B	18.3	12.0	C	B

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements

2 TS = Traffic Signal; CSS = Cross-street Stop

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EA and EAP (2024) traffic conditions are based on peak hour volume-based traffic signal warrants. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under either EA or EAP (2024) traffic conditions (see Appendix 5.3 and Appendix 5.4, respectively).

5.6 DEFICIENCIES AND IMPROVEMENTS

Improvements needed to achieve acceptable LOS have been identified at intersections or off-ramps that are currently operating at a deficient LOS under EAP (2024) traffic conditions. As shown previously in Table 5-1, all study area intersections are anticipated to operate at an acceptable LOS during the peak hours under EAP (2024) traffic conditions. As such, no improvements have been identified.

6 EAC AND EAPC (2024) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EAC and EAPC (2024) traffic conditions and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAC and EAPC (2024) Projects conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAC and EAPC (2024) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).
- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC (2024) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).

6.2 EAC (2024) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.0% and the addition of traffic generated by cumulative development projects. The weekday ADT and weekday peak hour intersection turning movement volumes, in actual vehicles, which can be expected for EAC (2024) traffic conditions are shown on Exhibit 6-1.

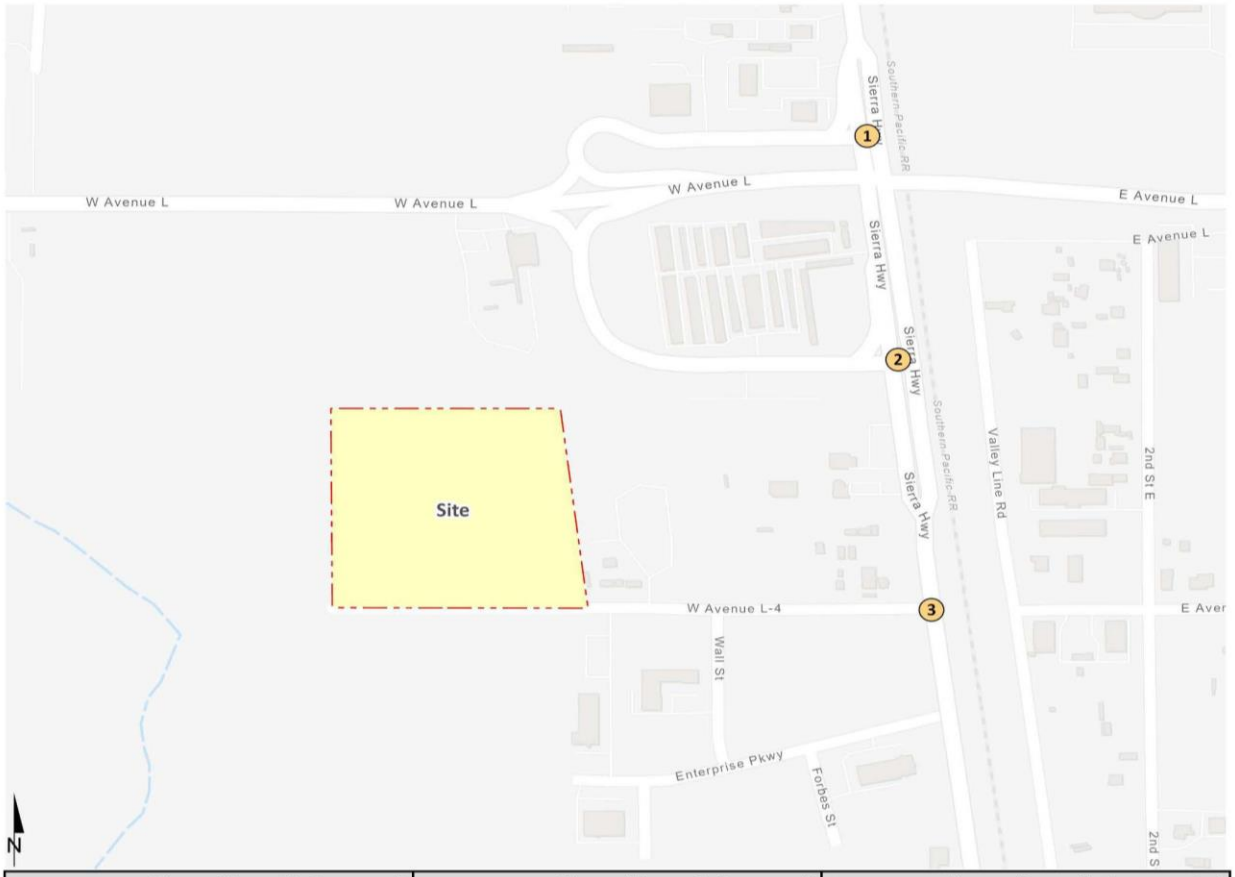
6.3 EAPC (2024) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.0%, the addition of traffic generated by cumulative development projects, and the addition of Project traffic. The weekday ADT and weekday peak hour intersection turning movement volumes, in actual vehicles, which can be expected for EAPC (2024) traffic conditions are shown on Exhibit 6-2.

6.4 INTERSECTION OPERATIONS ANALYSIS

EAC and EAPC (2024) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 6-1 for EAC (2024) traffic conditions, which indicates that the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours. Similarly, the intersections are anticipated to continue to operate at an acceptable LOS with the addition of Project traffic under EAPC (2024) traffic conditions. The intersection operations analysis worksheets for EAC and EAPC (2024) traffic conditions are included in Appendix 6.1 and Appendix 6.2 of this TA, respectively.

EXHIBIT 6-1: EAC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES)

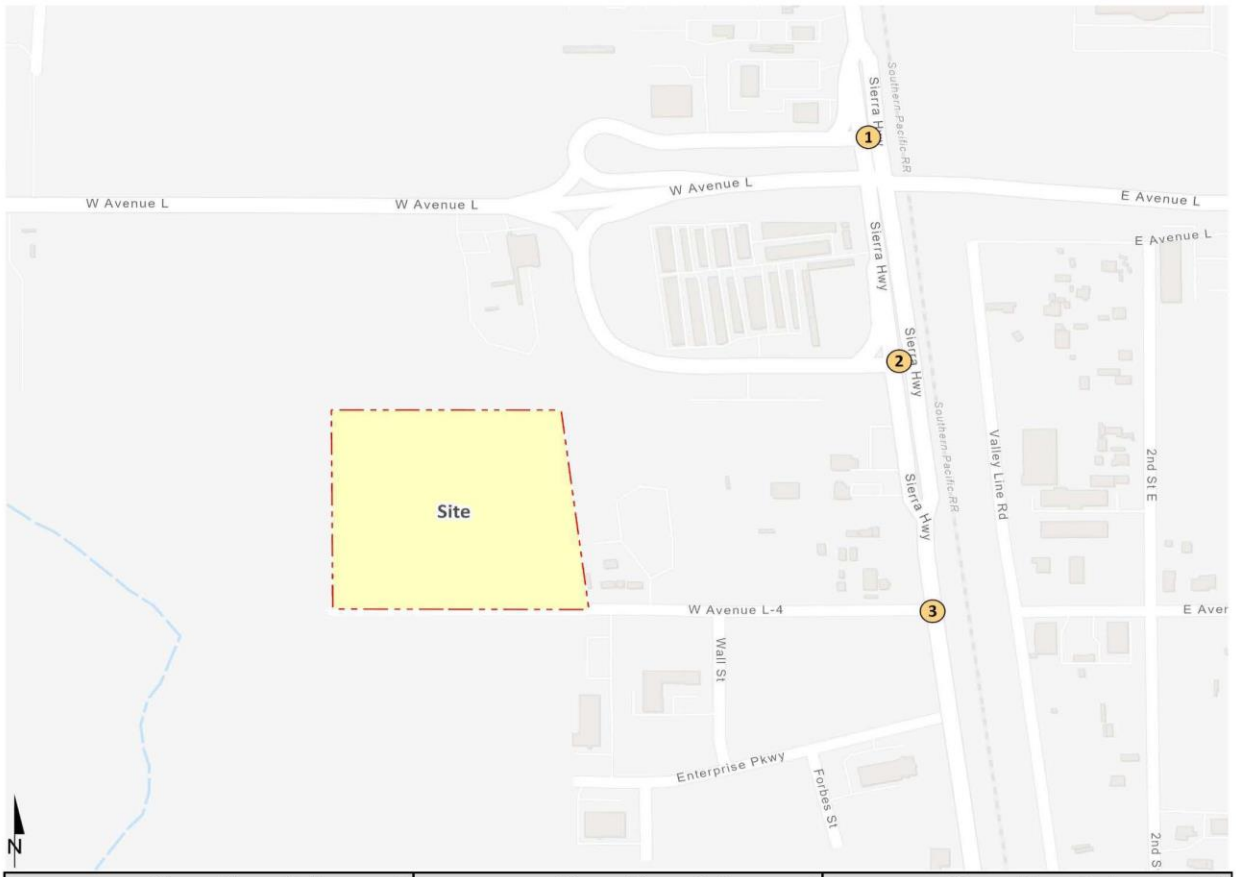


1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
											13,900
	24,300				***27,900***				***30,700***		
	↲ 63(96)	↓ 706(865)			↲ 16(19)	↓ 807(1023)			↲ 15(5)	↓ 1020(228)	↳ 0(1049)
15(17) ↳	↰	→		56(83) ↳	↰	→		5(7) ↳	↰	→	
117(177) ↲	131(280)	792(944)	***27,900***	194(249) ↲	30(53)	867(1140)	***30,350***	3(8) ↲	5(2)	898(1218)	***16,800***
6,550				***5,100***				***300***			

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: EAPC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES)



1 Sierra Hwy. & Avenue L West				2 Sierra Hwy. & Avenue L East				3 Sierra Hwy. & Avenue L-4			
											13,900
24,350	63(96) ↲	710(867) ↓		28,100	16(19) ↲	814(1025) ↓		31,100	48(15) ↲	1020(228) ↓	0(1049) ↳
15(17) ↳		↰	↑	56(83) ↳		↰	↑	13(39) ↳		↰	↑
119(177) ↴		137(305)	793(948)	220(257) ↴		30(55)	874(1170)	5(18) ↴		16(5)	898(1218)
6,700			28,100	5,250			30,700	800			16,900

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

TABLE 6-1: INTERSECTION ANALYSIS FOR EAC & EAPC (2024) CONDITIONS

			EAC (2024)				EAPC (2024)			
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Sierra Hwy. & Avenue L West	TS	11.4	13.6	B	B	11.5	14.1	B	B
2	Sierra Hwy. & Avenue L East	TS	11.4	12.1	B	B	11.5	12.2	B	B
3	Sierra Hwy. & Avenue L-4	CSS	25.2	12.6	D	B	30.0	15.4	D	C

1 Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. HCM delay reported in seconds.

2 TS = Traffic Signal; CSS = Cross-street Stop

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The traffic signal warrant analysis for EAC and EAPC (2024) traffic conditions are based on peak hour volume-based traffic signal warrants. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under either EAC or EAPC (2024) traffic conditions (see Appendix 6.3 and Appendix 6.4, respectively).

6.6 DEFICIENCIES AND IMPROVEMENTS

Improvements needed to achieve acceptable LOS have been identified at intersections or off-ramps that are currently operating at a deficient LOS under EAP (2024) traffic conditions. As shown previously in Table 5-1, all study area intersections are anticipated to operate at an acceptable LOS during the peak hours under EAP (2024) traffic conditions. As such, no improvements have been identified.

7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Lancaster are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Fee programs applicable to the Project are described below.

7.1 DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is subject to City of Lancaster development impact fee (DIF) in an effort by the City to address development throughout the City. The DIF program consists various components: Traffic Signal Impact Fees, Traffic Impact Fees, Los Angeles County Traffic Impact Fee, Planned Local Drainage Facilities Fees, Urban Structure Program Fees, Dwelling Unit Fees (Park In Lieu), Biological Impact Fee, and Open Space Fee. Eligible facilities for funding by the City DIF program are identified by the City.

Per the City of Lancaster's Municipal Code 15.64.030: In order to implement the goals, objectives, policies and specific actions of the general plan of the city, the capital improvement program and the city's annually adopted budget; to protect the health, safety and general welfare of the city's population; to mitigate impacts of new development on the level of service capacity in existing facilities; and to ensure that the burdens of financing capital improvements and operational services are borne by the development projects benefited thereby, and except as otherwise expressly set forth elsewhere in this municipal code, every person constructing any new residential, commercial or industrial development shall pay to the city prior to issuance by the city of a building permit the development impact fees set forth herein below and such other development impact fees as the city council may adopt by resolution or ordinance as necessary and appropriate from time to time.

Additionally, the City of Lancaster Planning Commission has recently adopted the Vehicle Miles Traveled (VMT) Mitigation Impact Fee in early 2023. The program allows developers to mitigate project specific VMT via a set fee per vehicle mile traveled. The intent of the fee is for developers to pay their fair share of the Citywide improvements and mitigate any impact to VMT, subject to VMT analysis under the California Environmental Quality Act (CEQA).

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8 REFERENCES

1. **City of Lancaster.** *Local Transportation Assessment Guidelines.* City of Lancaster : Department of Public Works, January 5, 2021.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.
3. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
4. **Los Angeles County.** *2010 Congestion Management Program.* County of Los Angeles : Los Angeles County Metropolitan Transportation Authority, 2010.
5. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (CA MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CA MUTCD).* 2014, Updated March 30, 2021 (Revision 6).

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