

PALMDALE LOGISTICS PARK

TRAFFIC ANALYSIS

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
AVTA	Antelope Valley Transit Authority
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
EA	Existing plus Ambient Growth
EC	Existing plus Cumulative
EAP	Existing plus Ambient Growth plus Project
EPC	Existing 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	Palmdale Logistics Park
TA	Traffic Analysis
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane

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1 INTRODUCTION

This report presents the results of the Traffic Analysis (TA) for Palmdale Logistics Park (Project), which is located on the southwest corner of Division Street and Avenue M in the City of Palmdale, 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. As the City of Palmdale does not have their own traffic study guidelines, this traffic study has been prepared in accordance with the County of Los Angeles' Transportation Impact Analysis Guidelines and consultation with City staff during the traffic study scoping process. (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 improvements as design features in conjunction with development of the site:

- Project to install a traffic signal at the intersections of Street B & Avenue M (#5).
- Project to construct Avenue M at its ultimate half-section width as a Regional Arterial (136-foot right-of-way) from the Project's western boundary to Division Street consistent with the City's standards. It should be noted, the 4th eastbound through lane will remain unstriped until such a time in the future when there is an additional receiving lane along Avenue M, east of Division Street.
- Project to construct Division Street at its ultimate half-section width as a Major Arterial (104-foot right-of-way) from Avenue M to Street A consistent with the City's standards. The Project will provide an additional 12-feet of pavement on the east side of Division Street, from Avenue M to the Project's southern boundary, to facilitate site access.
- Project to construct Street A at its ultimate half-section width as an Industrial Collector (76-foot right-of-way) from Driveway 1 to Division Street consistent with the City's standards. The Project will provide an additional 12-feet of pavement on the south side of Street A, from Driveway 1 to Division Street, to facilitate site access.
- Project to construct Street B at its ultimate full-section width as an Industrial Collector (76-foot right-of-way) from Avenue M to Street A consistent with the City's standards.

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

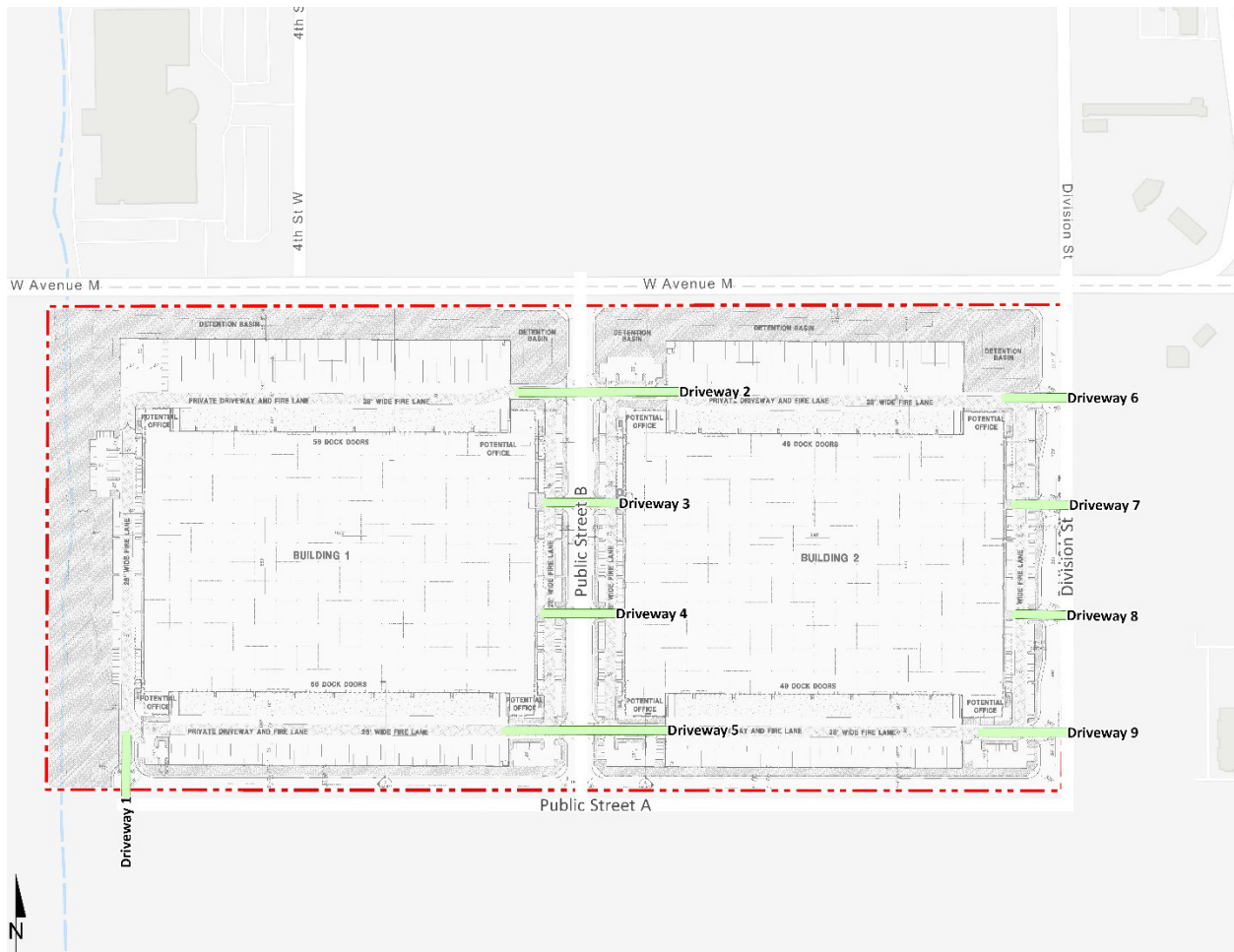
1.2 PROJECT OVERVIEW

The Project is proposed to consist of two warehouse buildings totaling 1,420,070 square feet (see Exhibit 1-2). Building 1 is 716,930 square feet and Building 2 is 703,140 square feet. However, for the purposes of this analysis, the Project has been evaluated assuming 1,072,275 square feet of High-Cube Fulfillment Center (Non-Sort) use (75% of the total square footage) and 357,425 square feet of General Light Industrial use (remaining 25% of the total square footage) for a total of 1,429,700 square feet. There is a new public street proposed that will run north-south between the two buildings (Street B) and a new public street along the southern boundary of both buildings that would connect to Division Street (Street A).

EXHIBIT 1-1: LOCATION MAP



EXHIBIT 1-2: PRELIMINARY SITE PLAN



Building 1 is proposed to have passenger car and truck access to both Street A and Street B. Building 2 would have access to Street B and Division Street. Neither building will have any direct access to Avenue M. 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 SR-14 Freeway and Avenue M and Avenue N interchanges.

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 the following ITE land uses (2):

- High-Cube Fulfillment Center Warehouse (ITE Land Use Code 155)
- General Light Industrial (ITE Land Use Code 110)

The proposed Project is anticipated to generate 3,684 two-way trip-ends per day in actual vehicles, with 422 actual AM peak hour trips and 402 actual PM peak hour trips. 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.

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 (2022) Conditions
- Existing plus Ambient Growth (EA) (2024) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2024) Conditions
- Existing plus Cumulative (EC) (2024) Conditions
- Existing plus Project plus Cumulative (EPC) (2024) Conditions

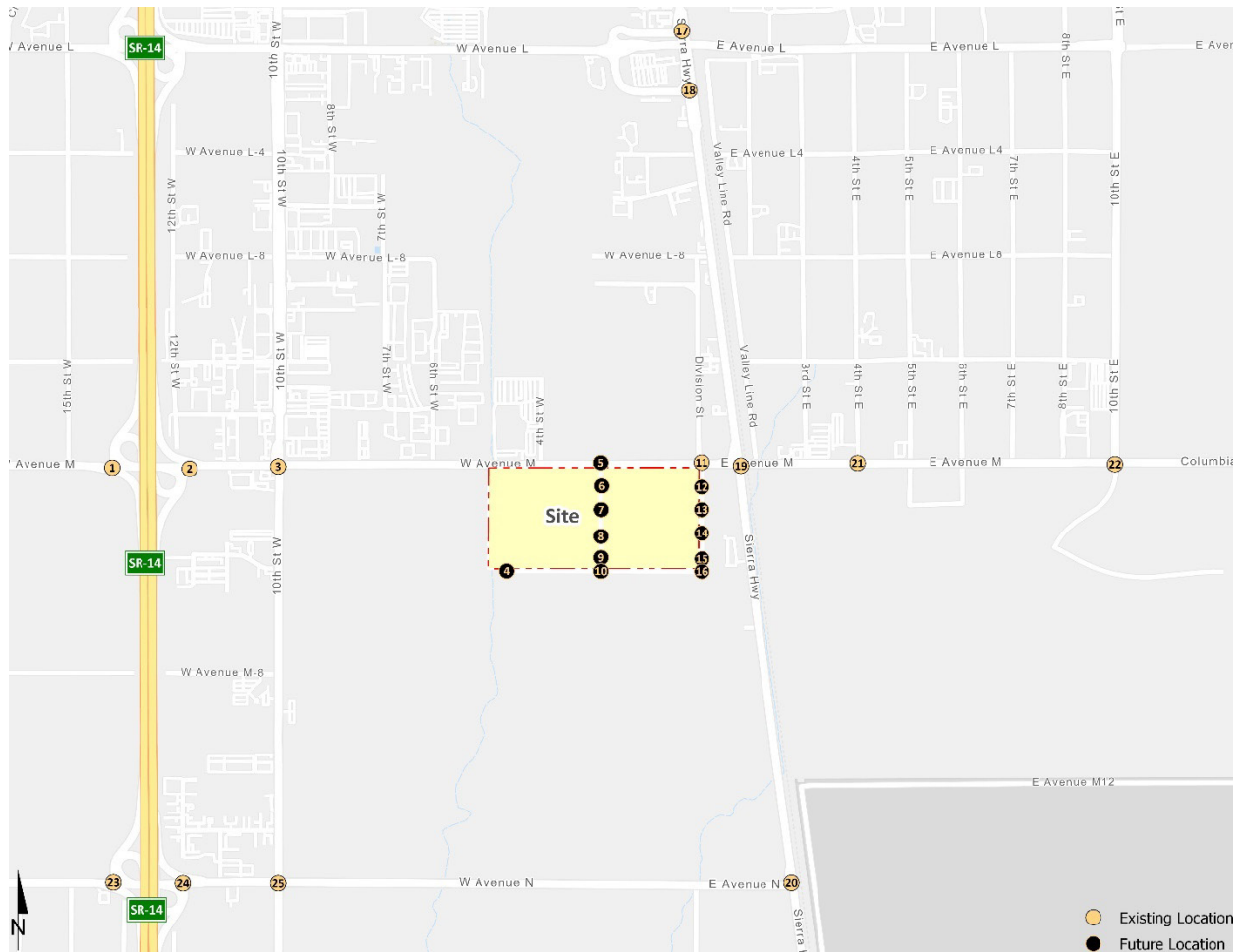
1.3.1 EXISTING (2022) CONDITIONS

Information for Existing (2022) 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 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 (2022) conditions of 4.04% (2 percent per year, compounded over 2 years) is included for both EA and EAP (2024) traffic conditions. The assumed ambient growth factor is based on the requirements per the County of Los Angeles traffic study 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.

EXHIBIT 1-3: STUDY AREA



1.3.3 EC & EPC (2024) CONDITIONS

The EC and EPC (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 EPC conditions. To account for background traffic growth, this TA include traffic generated by other known or probable related projects for EC and EPC traffic conditions.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Palmdale's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Palmdale 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 County is included in Appendix 1.1 of this TA.

The 25 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 Palmdale staff. At a minimum, the study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the County's traffic study guidelines. (1) 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 within Los Angeles County for estimating a potential area of influence (i.e., study area).

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Los Angeles CMP was most recently updated in 2010. (3) There are no study area intersections identified as a Los Angeles County CMP intersection.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

#	Intersection	Jurisdiction	CMP Facility?
1	SR-14 SB Ramps & Avenue M	County, Lancaster, Caltrans	No
2	SR-14 NB Ramps & Avenue M	Palmdale, Lancaster, Caltrans	No
3	10th St. & Avenue M	Palmdale, Lancaster	No
4	Driveway 1 & Street A	Palmdale	No
5	Street B & Avenue M	Palmdale, Lancaster	No
6	Street B & Driveway 2	Palmdale	No
7	Street B & Driveway 3	Palmdale	No
8	Street B & Driveway 4	Palmdale	No
9	Street B & Driveway 5	Palmdale	No
10	Street B & Street A	Palmdale	No
11	Division St. & Avenue M	Palmdale, Lancaster	No
12	Division St. & Driveway 6	Palmdale	No
13	Division St. & Driveway 7	Palmdale	No
14	Division St. & Driveway 8	Palmdale	No
15	Division St. & Driveway 9	Palmdale	No
16	Division St. & Street A	Palmdale	No
17	Sierra Hwy. & Avenue L West	Lancaster	No
18	Sierra Hwy. & Avenue L East	Lancaster	No
19	Sierra Hwy. & Avenue M	Palmdale, Lancaster	No
20	Sierra Hwy. & Avenue N	Palmdale	No
21	4th St. & Avenue M/Columbia Wy.	Palmdale, Lancaster	No
22	10th St. & Columbia Wy.	Palmdale, Lancaster	No
23	SR-14 SB Ramps & Avenue N	County, Caltrans	No
24	SR-14 NB Ramps & Avenue N	Palmdale, Caltrans	No
25	10th St. & Avenue N	Palmdale	No

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 *EC & EPC (2024) Conditions* includes the detailed analysis. A summary of the Level of Service (LOS) results for all analysis scenarios is presented in Table 1-2.

TABLE 1-2: SUMMARY OF LOS

# Intersection	Existing		EA (2024)		EAP (2024)		EC (2024)		EPC (2024)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1 SR-14 SB Ramps & Avenue M	●	●	●	●	●	●	●	●	●	●
2 SR-14 NB Ramps & Avenue M	●	●	●	●	●	●	●	●	●	●
3 10th St. & Avenue M	●	●	●	●	●	●	●	●	●	●
4 Driveway 1 & Street A	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
5 Street B & Avenue M	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
6 Street B & Driveway 2	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
7 Street B & Driveway 3	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
8 Street B & Driveway 4	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
9 Street B & Driveway 5	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
10 Street B & Street A	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
11 Division St. & Avenue M	●	●	●	●	●	●	●	●	●	●
12 Division St. & Driveway 6	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
13 Division St. & Driveway 7	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
14 Division St. & Driveway 8	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
15 Division St. & Driveway 9	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
16 Division St. & Street A	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●
17 Sierra Hwy. & Avenue L West	●	●	●	●	●	●	●	●	●	●
18 Sierra Hwy. & Avenue L East	●	●	●	●	●	●	●	●	●	●
19 Sierra Hwy. & Avenue M	●	●	●	●	●	●	●	●	●	●
20 Sierra Hwy. & Avenue N	●	●	●	●	●	●	●	●	●	●
21 4th St. & Avenue M/Columbia Wy.	●	●	●	●	●	●	●	●	●	●
22 10th St. & Columbia Wy.	●	●	●	●	●	●	●	●	●	●
23 SR-14 SB Ramps & Avenue N	●	●	●	●	●	●	●	●	●	●
24 SR-14 NB Ramps & Avenue N	●	●	●	●	●	●	●	●	●	●
25 10th St. & Avenue N	●	●	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

1.5.1 EXISTING (2022) CONDITIONS

The following study area intersections are currently operating at an unacceptable LOS during the peak hours under Existing (2022) traffic conditions:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM peak hour only
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM peak hour; LOS E PM peak hour
- 10th Street & Columbia Way (#22) – LOS F PM peak hour only
- SR-14 SB Ramps & Avenue N (#23) – LOS E PM peak hour only
- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS E PM peak hour only

1.5.2 EA & EAP (2024) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM peak hour; LOS E PM peak hour
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM peak hour; LOS E PM peak hour
- 10th Street & Avenue M (#3) – LOS E PM peak hour only
- Sierra Highway & Avenue M (#19) – LOS E PM peak hour only
- 10th Street & Columbia Way (#22) – LOS F PM peak hour only
- SR-14 SB Ramps & Avenue N (#23) – LOS E PM peak hour only
- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS E PM peak hour only

With the addition of Project traffic, there are no additional study area intersections anticipated to operate at an unacceptable LOS during peak hours under EAP (2024) traffic conditions. The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for the signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. As such, no intersection improvements have been recommended for the intersection of SR-14 Southbound Ramps at Avenue N.

1.5.3 EC & EPC (2024) CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM and PM peak hours
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM and PM peak hours
- 10th Street & Avenue M (#3) – LOS F AM and PM peak hours
- Sierra Highway & Avenue M (#19) – LOS F AM and PM peak hours
- 4th Street & Avenue N (#21) – LOS F AM and PM peak hours
- 10th Street & Columbia Way (#22) – LOS F AM and PM peak hours
- SR-14 SB Ramps & Avenue N (#23) – LOS E AM and PM peak hours

- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS F PM peak hour only

The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for both signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. As such, no intersection improvements have been recommended for the intersection of SR-14 Southbound Ramps at Avenue N.

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 1-4. The site adjacent queuing analysis worksheets are provided in Appendix 1.2.

Recommendation 1 – Driveway 1 & Street A (#4) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach and construct a shared left-right turn lane (Project driveway).
- Project to construct an eastbound shared left-through lane.
- Project to construct a westbound shared through-right turn lane.

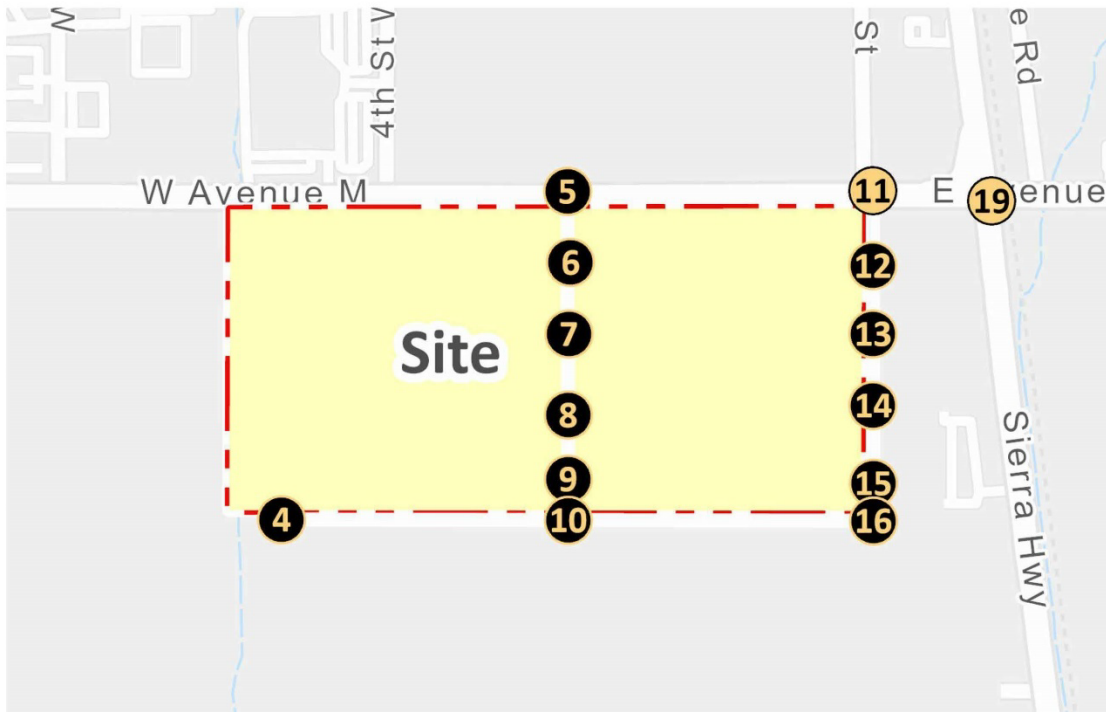
Recommendation 2 – Street B & Avenue M (#5) – The following improvements are necessary to accommodate site access:

- Project to install a traffic signal.
- Project to construct a northbound shared left-right turn lane.
- Project to construct an eastbound shared through-right turn lane. It should be noted, a 4th through lane will be striped at some time in the future when Avenue M is widened to the east with additional receiving lanes.
- Project to construct a westbound left turn lane with a minimum of 150-feet of storage.

Recommendation 3 – Street B & Driveway 2 (#6) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through-right turn lane.
- Project to construct a southbound shared left-through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-through-right turn lane (Project Driveway).
- Project to install a stop control on the westbound approach and construct a shared left-through-right turn lane (Project Driveway).

EXHIBIT 1-4: SITE ACCESS RECOMMENDATIONS



4	Driveway 1 & Street A	5	Street B & Avenue M	6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4
9	Street B & Driveway 5	10	Street B & Street A	11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7
14	Division St. & Driveway 8	15	Division St. & Driveway 9	16	Division St. & Street A	= New Traffic Signal = Stop Sign = Stop Sign Improvement = Existing Lane = Lane Improvement 100' = Recommended Turn Pocket Length			

Recommendation 4 – Street B & Driveway 3 (#7) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through-right turn lane.
- Project to construct a southbound shared left-through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-through-right turn lane (Project Driveway).
- Project to install a stop control on the westbound approach and construct a shared left-through-right turn lane (Project Driveway).

Recommendation 5 – Street B & Driveway 4 (#8) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through-right turn lane.
- Project to construct a southbound shared left-through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-through-right turn lane (Project Driveway).
- Project to install a stop control on the westbound approach and construct a shared left-through-right turn lane (Project Driveway).

Recommendation 6 – Street B & Driveway 5 (#9) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through-right turn lane.
- Project to construct a southbound shared left-through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-through-right turn lane (Project Driveway).
- Project to install a stop control on the westbound approach and construct a shared left-through-right turn lane (Project Driveway).

Recommendation 7 – Street B & Street A (#10) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach and construct a shared left-right turn lane.
- Project to construct an eastbound shared left-through lane.
- Project to construct a westbound shared through-right turn lane.

Recommendation 8 – Division Street & Avenue M (#11) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the northbound approach and construct a right turn lane.
- Project to construct an eastbound right turn lane. It should be noted, the eastbound right turn lane will be restriped to a through lane and a 4th through lane will be striped at some time in the future when Avenue M is widened to the east with additional receiving lanes.

Recommendation 9 – Division Street & Driveway 6 (#12) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through lane.
- Project to construct a southbound shared through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-right turn lane (Project Driveway).

Recommendation 10 – Division Street & Driveway 7 (#13) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through lane.
- Project to construct a southbound shared through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-right turn lane (Project Driveway).

Recommendation 11 – Division Street & Driveway 8 (#14) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through lane.
- Project to construct a southbound shared through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-right turn lane (Project Driveway).

Recommendation 12 – Division Street & Driveway 9 (#15) – The following improvements are necessary to accommodate site access:

- Project to construct a northbound shared left-through lane.
- Project to construct a southbound shared through-right turn lane.
- Project to install a stop control on the eastbound approach and construct a shared left-right turn lane (Project Driveway).

Recommendation 13 – Division Street & Street A (#16) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach and construct a right turn lane.
- Project to construct an eastbound left turn lane

Recommendation 14 – Avenue M is an east-west oriented roadway located on the Project's northern boundary. Project to construct Avenue M at its ultimate half-section width as a Regional Arterial (136-foot right-of-way) from the Project's western boundary to Division Street consistent with the City's standards. It should be noted, the 4th eastbound through lane will remain unstriped until such time in the future when there is an additional receiving lane along Avenue M, east of Division Street.

Recommendation 15 – Division Street is a north-south oriented roadway located on the Project's eastern boundary. Project to construct Division Street at its ultimate half-section width as a Major

Arterial (104-foot right-of-way) from Avenue M to Street A consistent with the City's standards. The Project will provide an additional 12-feet of pavement on the east side of Division Street, from Avenue to M to the Project's southern boundary, to facilitate site access.

Recommendation 16 – Street A is an east-west oriented roadway located on the Project's southern boundary. Project to construct Street A at its ultimate half-section width as an Industrial Collector (76-foot right-of-way) from Driveway 1 to Division Street consistent with the City's standards. The Project will provide an additional 12-feet of pavement on the south side of Street A, from Driveway 1 to Division Street, to facilitate site access.

Recommendation 17 – Street B is a north-south oriented roadway that bisects the Project site. Project to construct Street B at its ultimate full-section width as an Industrial Collector (76-foot right-of-way) from Avenue M to Street A consistent with the City's standards.

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 Palmdale sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

A summary of the off-site intersection improvements is provided in Table 1-3. As shown in Table 1-3, the Project will construct the improvements identified, as discussed in Section 1.6.1 *Site Adjacent and Site Access Recommendations*.

1.7 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 1-5). A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. As shown on Exhibit 1-5, the following curb radius changes are necessary in order to accommodate the ingress and egress of heavy trucks:

- Driveway 1 at Street A should be modified to provide a 45-foot curb radius on the northeast corner.
- Driveway 2 at Street B should be modified to provide a 45-foot curb radius on the northwest corner and 35-foot radius on the northeast corner.
- Driveway 5 at Street B should be modified to provide a 45-foot curb radius on the northwest corner and 35-foot radius on the northeast corner.
- Driveway 6 at Division Street should be modified to provide a 45-foot curb radius on the northwest corner.
- Driveway 9 at Division Street should be modified to provide a 45-foot curb radius on the northwest corner.

TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

# Intersection Location	Jurisdiction	Analysis Scenario		Improvements in DIF ^{1,2}
		EAP (2024)	EPC (2024)	
1 SR-14 SB Ramps & Avenue M	County, Lancaster, Caltrans	Install a Traffic Signal	Same	No
2 SR-14 NB Ramps & Avenue M	Palmdale, Lancaster, Caltrans	Install a Traffic Signal	Same	Yes
3 10th St. & Avenue M	Palmdale, Lancaster	Add 3rd NB through lane ³	Same	No
		Add NB right turn lane ³	Same	No
		Restripe the EB approach to provide one left turn lane, two through lanes, and one shared through-right turn lane (requires receiving lanes on opposite side) ³	Same	Yes
		Restripe the WB approach to provide one left turn lane, two through lanes, and one shared through-right turn lane (requires receiving lanes on opposite side) ³	Same	Yes
19 Sierra Hwy. & Avenue M	Palmdale, Lancaster	Modify the traffic signal and implement overlap phasing on the northbound right turn lane	Same	Yes
20 Sierra Hwy. & Avenue N	Palmdale	None	Modify the traffic signal and implement overlap phasing on the southbound right turn lane	Yes
21 4th St. & Avenue M/Columbia Wy.	Palmdale, Lancaster	None	Install a Traffic Signal	Yes
22 10th St. & Columbia Wy.	Palmdale, Lancaster	Install a Traffic Signal ⁴	Same	No
			Add 2 NB left turn lanes ⁴	No
			Restripe SB with left and shared through-right turn lane ⁴	No
			Add EB right turn lane ⁴	No
24 SR-14 NB Ramps & Avenue N	Palmdale, Caltrans	Install a Traffic Signal	Same	Yes
25 10th St. & Avenue N	Palmdale	Modify the traffic signal and implement overlap phasing on the northbound right turn lane	Same	Yes

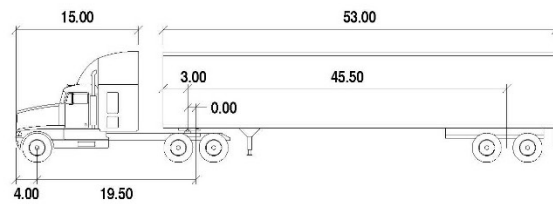
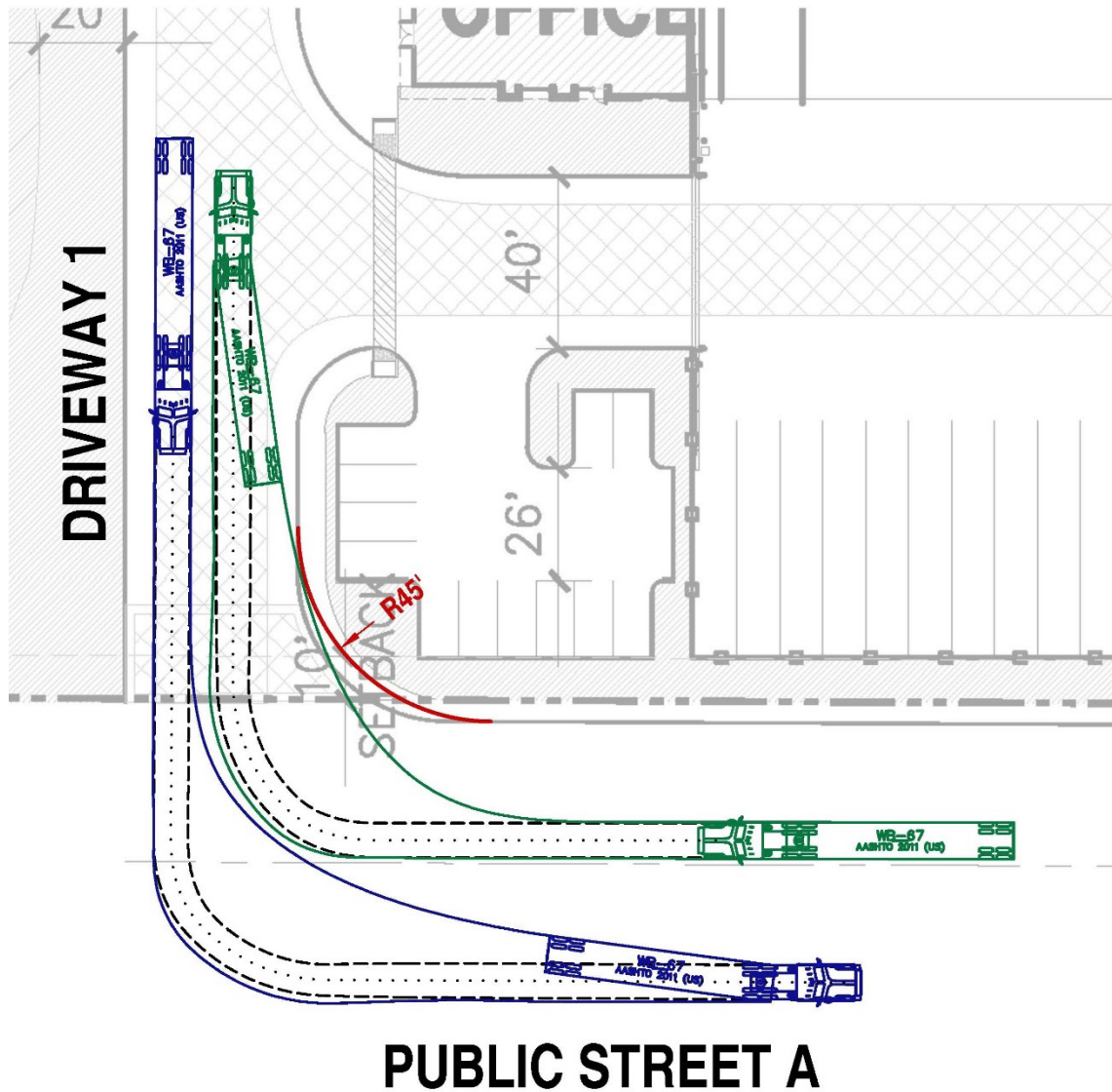
¹ Improvements (intersection, roadway segments, or signal installation/upgrade) included wholly or partially in City DIF program have been identified as such and denoted "Yes."

² Program improvements constructed by Project may be eligible for fee credit (at the discretion of the City). In lieu fee payment is at the discretion of the City.

³ Consistent with proposed Palmdale Warehouse frontage improvements (located on the southeast corner of 10th St. and Avenue M).

⁴ Consistent with access proposed for the Antelope Valley Commerce Center project (southwest corner of 10th Street & Avenue M/Columbia Way).

EXHIBIT 1-5: TRUCK ACCESS (PAGE 1 OF 7)



WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DRIVEWAY 2

PUBLIC STREET B

WB-67
AASHTO 2011 (US)

R45'

POTENTIAL

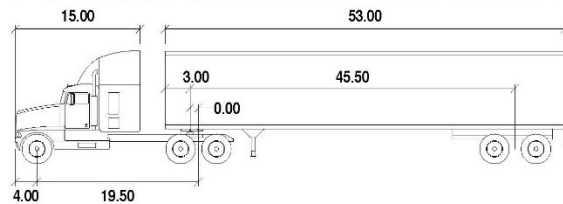
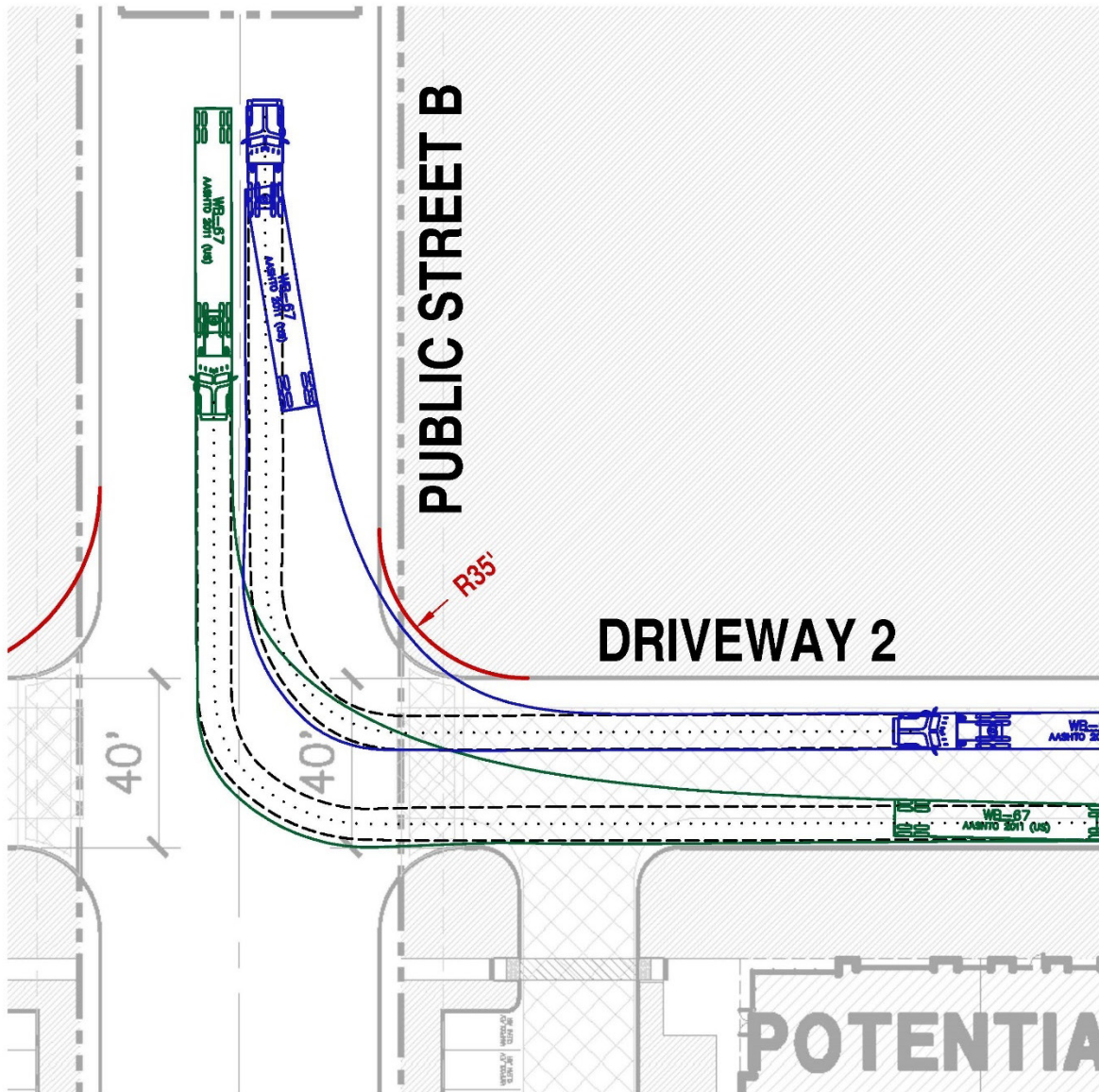
WB-67

15.00 53.00 3.00 45.50 0.00 4.00 19.50

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

EXHIBIT 1-5: TRUCK ACCESS (PAGE 3 OF 7)



WB-67

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



EXHIBIT 1-5: TRUCK ACCESS (PAGE 4 OF 7)

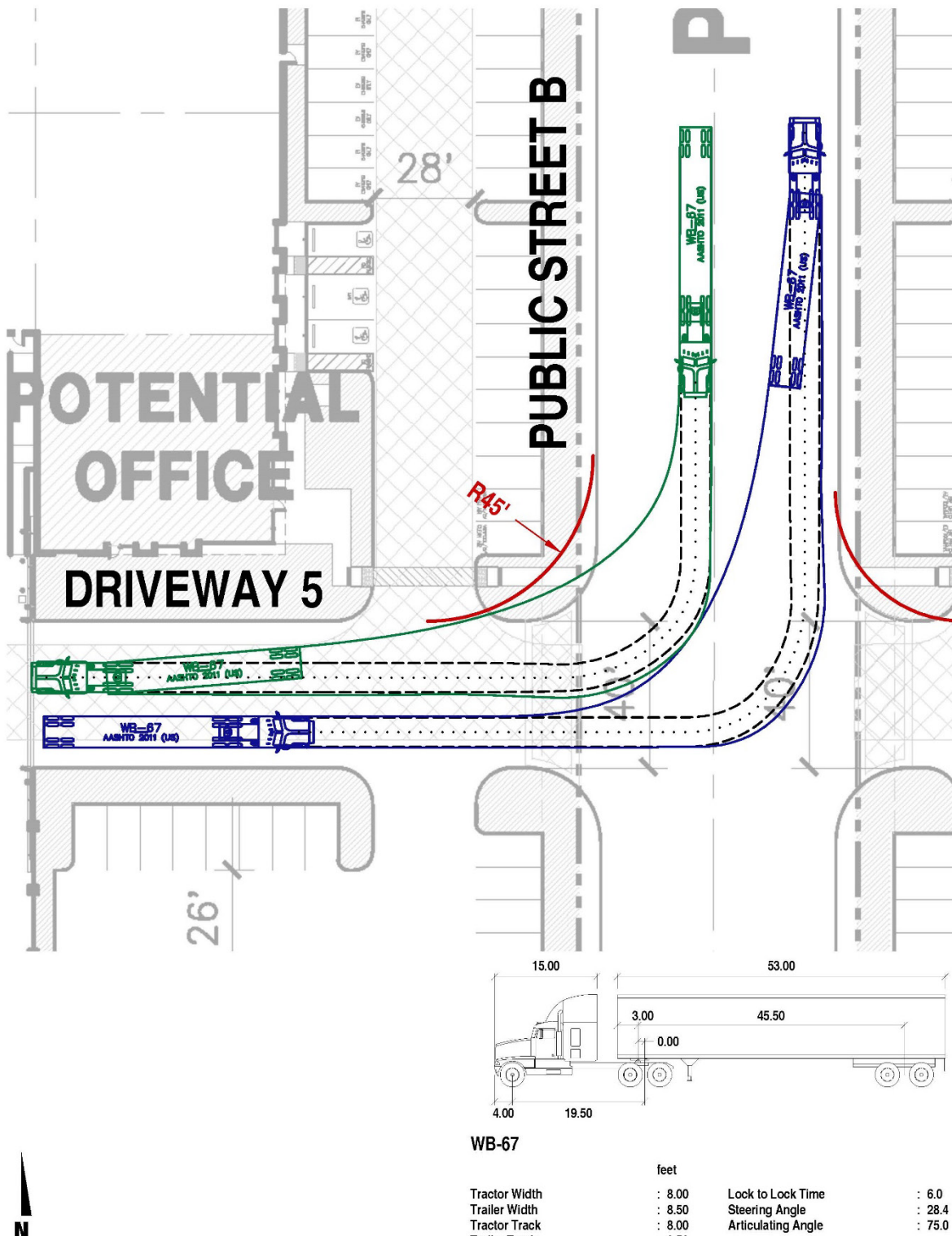
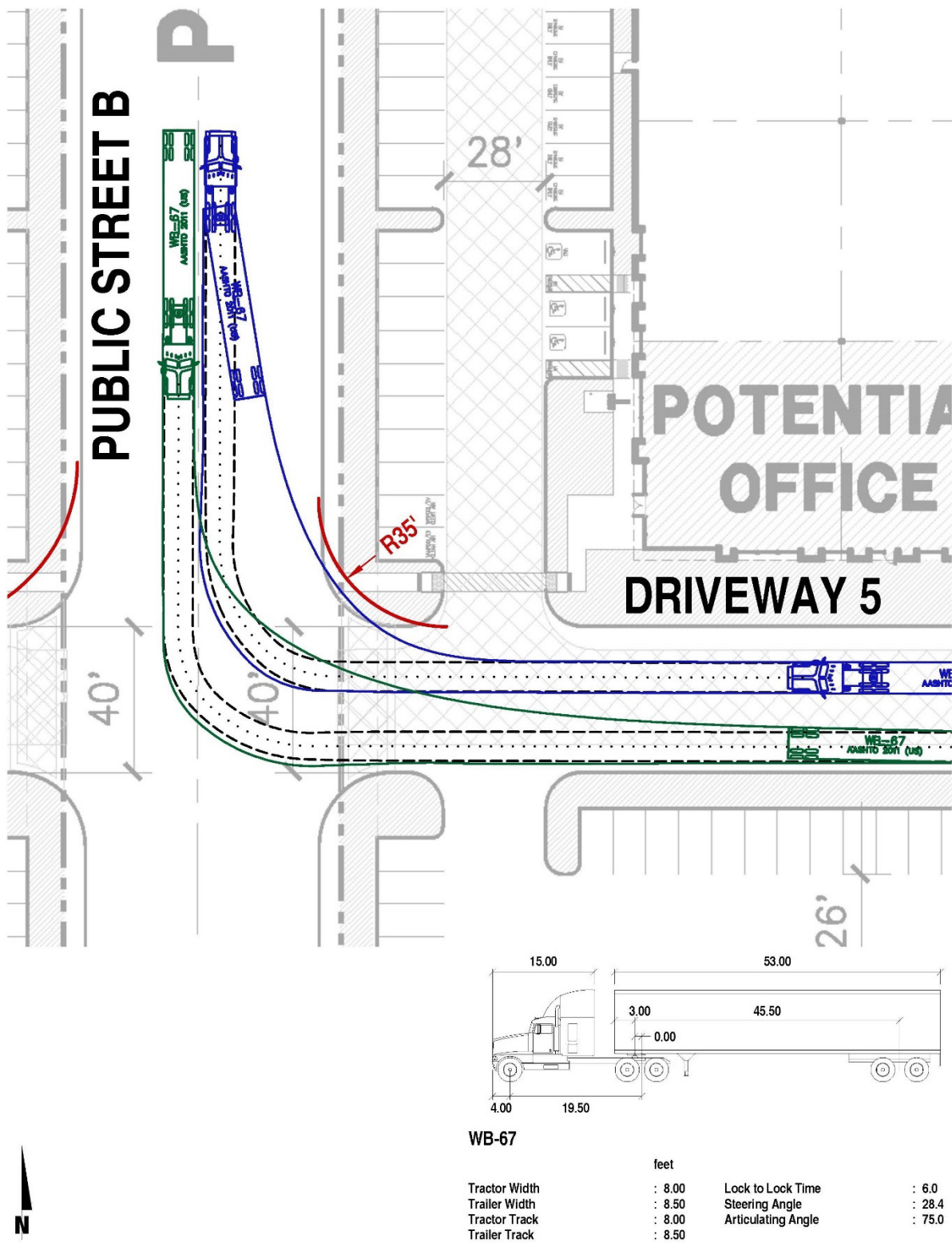


EXHIBIT 1-5: TRUCK ACCESS (PAGE 5 OF 7)

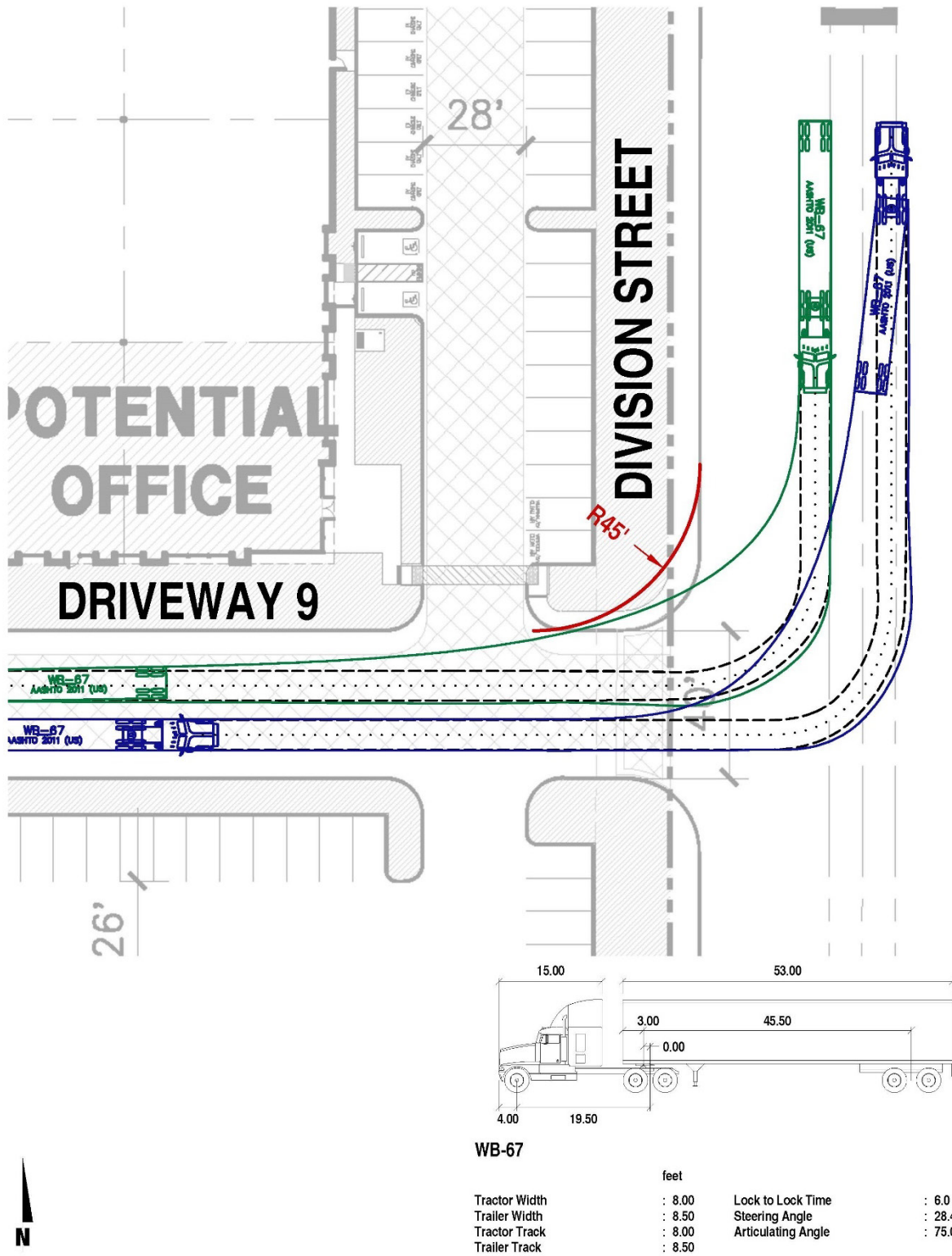


WB-67

Tractor Width : 8.00
 Trailer Width : 8.50
 Tractor Track : 8.00
 Trailer Track : 8.50

Lock to Lock Time : 6.0
 Steering Angle : 28.0
 Articulating Angle : 75.0

EXHIBIT 1-5: TRUCK ACCESS (PAGE 7 OF 7)



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 the County of Los Angeles' Traffic Study 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. (4) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Palmdale, City of Lancaster, and County of Los Angeles require signalized intersection operations analysis based on the methodology described in the HCM. (4) Intersection LOS operations are based on an intersection's average control delay. Control delays include 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), $V/C \leq 1.0$	Level of Service, $V/C \leq 1.0^1$
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.

Consistent with the Los Angeles County CMP, a saturation flow rate of 1600 vehicles per hour green per lane (vphgpl) has been utilized for all intersections for all scenarios.

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.

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., $PHF = [Hourly Volume] / [4 \times Peak 15-minute Flow Rate]$). 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. (4)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Palmdale, City of Lancaster, and County of Los Angeles require the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (4) 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), $V/C \leq 1.0$	Level of Service, $V/C \leq 1.0^1$
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
1	SR-14 SB Ramps & Avenue M
2	SR-14 NB Ramps & Avenue M
4	Driveway 1 & Street A
5	Street B & Avenue M
6	Street B & Driveway 2
7	Street B & Driveway 3
8	Street B & Driveway 4
9	Street B & Driveway 5
10	Street B & Street A
12	Division St. & Driveway 6
13	Division St. & Driveway 7
14	Division St. & Driveway 8
15	Division St. & Driveway 9
16	Division St. & Street A
21	4th St. & Avenue M/Columbia Wy.
22	10th St. & Columbia Wy.
23	SR-14 SB Ramps & Avenue N
24	SR-14 NB Ramps & Avenue N

It should be noted, although unsignalized, the intersection of Division Street & Avenue M (#11) has not been evaluated for traffic signal warrants since the intersection is proposed for restricted access (right-in/right-out only for the northbound and southbound approaches).

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 *EC & EPC (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 OFF-RAMP QUEUING ANALYSIS

Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing deficiencies at the freeway ramp intersections at the SR-14 Freeway at the Avenue M and Avenue N interchanges. Specifically, the off-ramp queuing analysis is utilized to identify any potential queuing and “spill back” onto the SR-14 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays. The 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

2.5 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.

2.5.1 CITY OF PALMDALE AND COUNTY OF LOS ANGELES

Consistent with the County of Los Angeles, the City of Palmdale utilizes LOS D as the minimum acceptable LOS. (1)

2.5.2 CITY OF LANCASTER

Per the City of Lancaster’s traffic study guidelines, LOS D is considered the minimum acceptable LOS for intersections within the City. (6)

2.5.3 CALTRANS

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway System facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. (7) If an existing State highway facility is operating at less than this target LOS, the existing LOS should be maintained. In general, the region-wide goal for an acceptable LOS on all freeways and intersections is LOS D. Consistent with the City of Palmdale, City of Lancaster, and County of Los Angeles, LOS threshold of LOS D will be used as the target LOS.

2.6 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria have been utilized for the City of Palmdale, County of Los Angeles, and Caltrans. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- 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 contributes peak hour trips to pre-Project traffic conditions.

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:

- For signalized intersections operating at an acceptable LOS under pre-project conditions, and the addition of Project trips causes the peak hour LOS at the study area intersection to operate at an unacceptable LOS, a deficiency is deemed to occur. If the signalized intersection is operating at an unacceptable LOS under pre-Project conditions, a deficiency is deemed to occur if the Project-related increase in delay is equal to or greater than 5.0 seconds.
- For unsignalized intersections operating at an acceptable LOS under pre-project conditions, and the addition of Project trips causes the peak hour LOS at the study area intersection to operate at an unacceptable LOS, a deficiency is deemed to occur. If the signalized intersection is operating at an unacceptable LOS under pre-Project conditions, a deficiency is deemed to occur if the Project-related increase in delay is equal to or greater than 3.0 seconds for all-way stop controlled intersections and 10.0 seconds for cross-street stop-controlled intersections that meet a peak hour traffic signal warrant.

Intersection improvements needed to achieve the thresholds outlined above or better have been identified for each applicable future With Project analysis scenario.

3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Palmdale staff (Appendix 1.1), the study area includes a total of 25 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 PALMDALE GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of Palmdale. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified in the City of Palmdale General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Palmdale General Plan Circulation Element and Exhibit 3-3 illustrates the City of Palmdale General Plan roadway cross-sections.

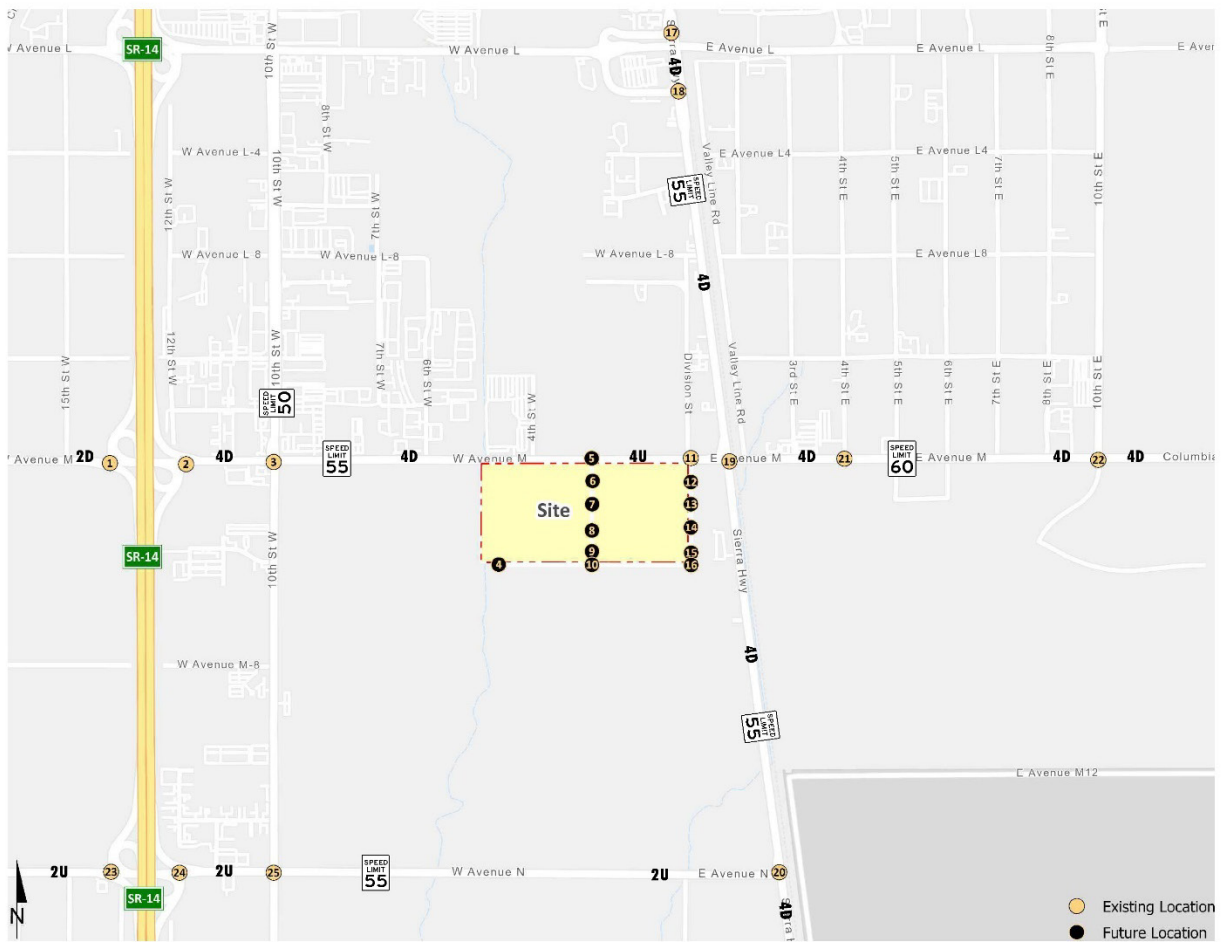
Regional Arterials can accommodate six-to-eight travel lines. These facilities primarily serve through traffic to which access from abutting property shall be kept at a minimum. The following roadways are classified as a Regional Arterial within the study area:

- Avenue M
- Sierra Highway, south of Avenue M
- 10th Street, south of Avenue M

Major Arterials can accommodate four-to-six travel lanes. These facilities serve property zoned for major industrial and commercial uses, or to serve through traffic. The following roadways are classified as a Major Arterial within the study area:

- Avenue N
- Challenger Way
- Division Street

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS (PAGE 1 OF 2)



4 = Number of Lanes
D = Divided
U = Undivided
 = Speed Limit (MPH)

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS (PAGE 2 OF 2)

1	SR-14 SB Ramps & Avenue M	2	SR-14 NB Ramps & Avenue M	3	10th St. & Avenue M	4	Driveway 1 & Street A	5	Street B & Avenue M
6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4	9	Street B & Driveway 5	10	Street B & Street A
11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7	14	Division St. & Driveway 8	15	Division St. & Driveway 9
16	Division St. & Street A	17	Sierra Hwy. & Avenue L West	18	Sierra Hwy. & Avenue L East	19	Sierra Hwy. & Avenue M	20	Sierra Hwy. & Avenue N
21	4th St. & Avenue M/Columbia Wy.	22	10th St. & Columbia Wy.	23	SR-14 SB Ramps & Avenue N	24	SR-14 NB Ramps & Avenue N	25	10th St. & Avenue N

- = Traffic Signal
- = Stop Sign
- = Right Turn Overlap
- = Free Right Turn

EXHIBIT 3-2: CITY OF PALMDALE GENERAL PLAN CIRCULATION ELEMENT

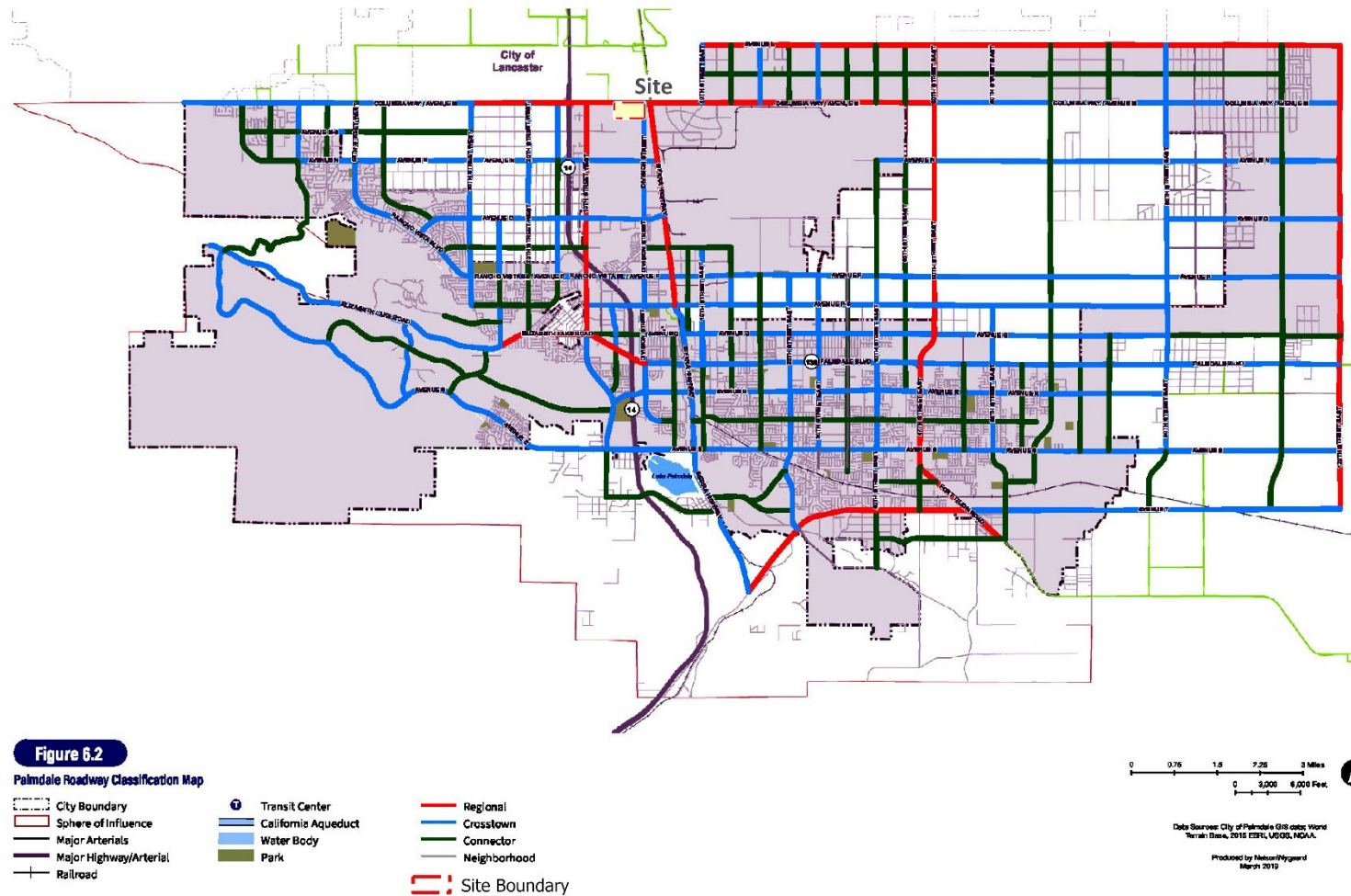
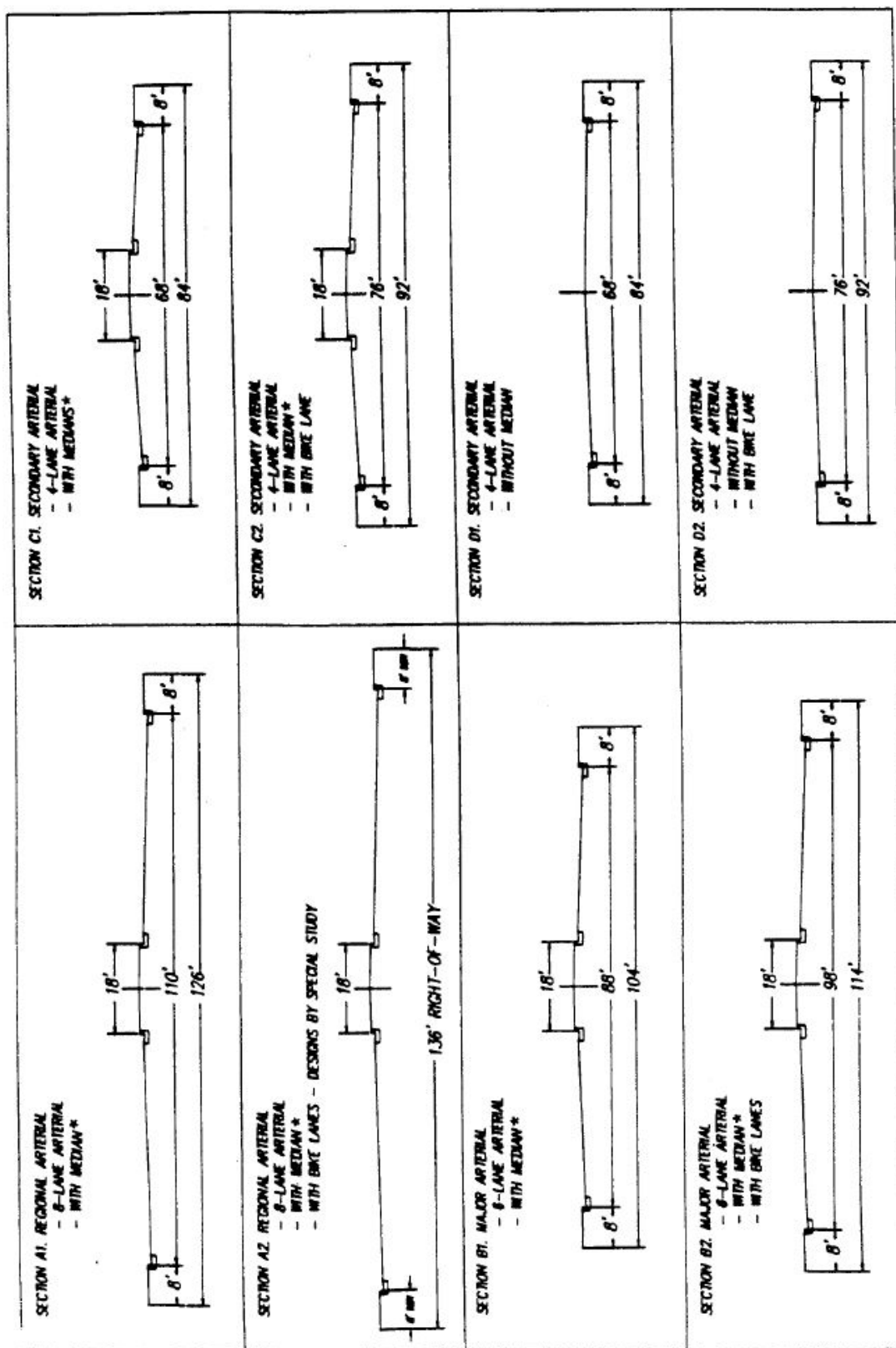
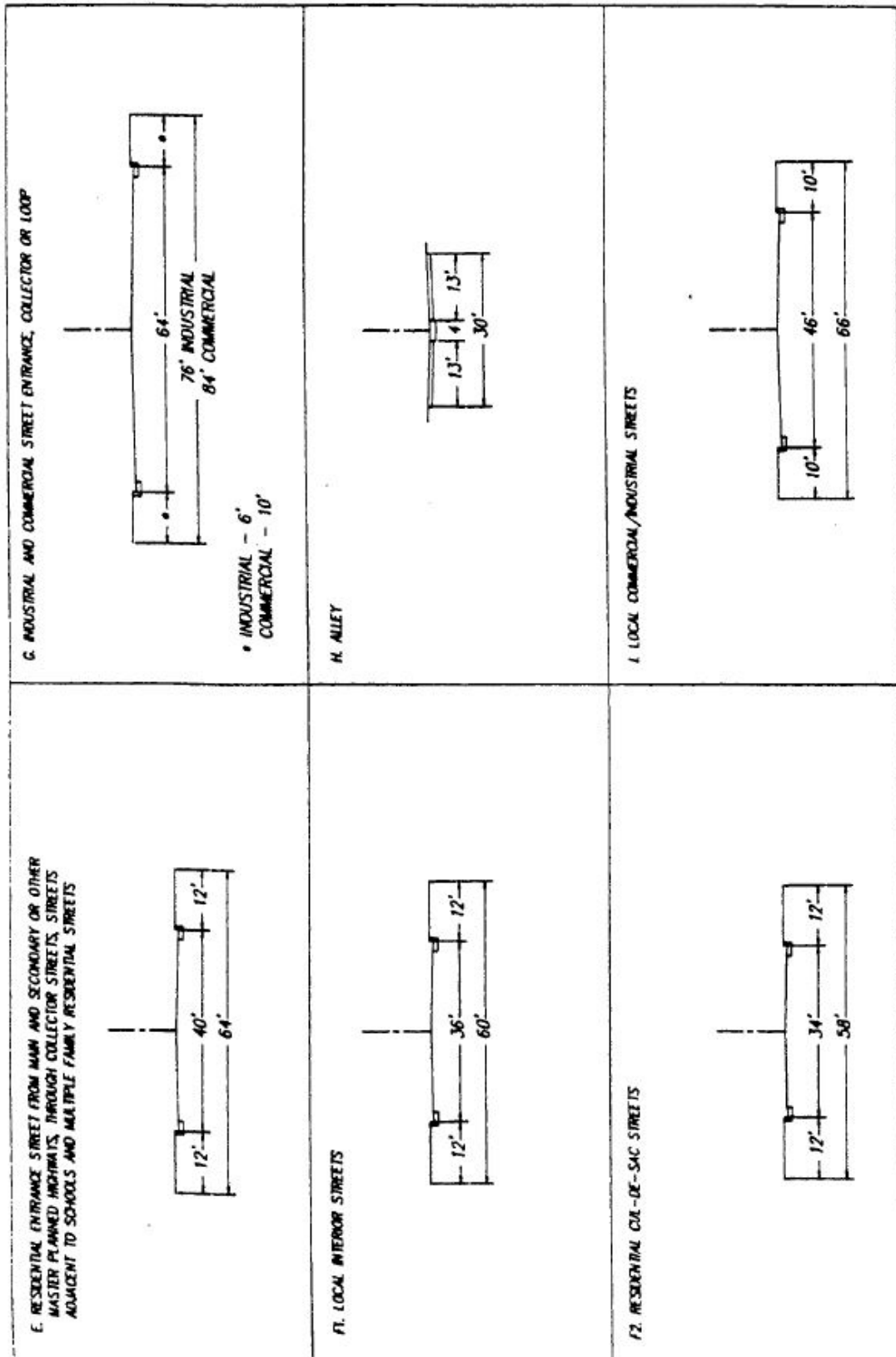


EXHIBIT 3-3: CITY OF PALMDALE GENERAL PLAN ROADWAY CROSS-SECTIONS (PAGE 1 OF 2)



* Medians may be painted or raised.

EXHIBIT 3-3: CITY OF PALMDALE GENERAL PLAN ROADWAY CROSS-SECTIONS (PAGE 2 OF 2)



3.3 CITY OF LANCASTER GENERAL PLAN CIRCULATION ELEMENT

The City of Lancaster does not provide a circulation map within their General Plan.

3.4 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the City of Palmdale also includes a bikeway system. The City of Palmdale General Plan bikeway network, shown on Exhibit 3-4, shows the proposed bikeways within the City. There are proposed bike routes along Division Street and along the existing riverbed to the west of the Project site.

Existing pedestrian facilities within the study area are shown on Exhibit 3-5. As shown on Exhibit 3-5, there are limited pedestrian facilities in the vicinity of the Project site. Field observations and traffic counts conducted in May 2022 indicate light pedestrian and bicycle activity within the study area.

3.5 TRANSIT SERVICE

The study area within the City of Palmdale is currently served by Antelope Valley Transit Authority (AVTA), a public transit agency serving various jurisdictions within Los Angeles County. Based on a review of the existing transit routes within the vicinity of the proposed Project, AVTA Routes 4, 5, 785, and 786 run along Avenue M and Sierra Highway within the vicinity of the Project site and could potentially serve the Project site. 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 3-6. The City of Palmdale transit routes are shown on Exhibit 3-7.

3.6 TRUCK ROUTES

The City of Palmdale designated truck routes are shown on Exhibit 3-8. As shown on Exhibit 3-8, Avenue M and Sierra Highway are identified as truck routes within the City of Palmdale. These truck routes have been utilized to route truck traffic from both the proposed Project and nearby cumulative development projects within the area.

3.7 EXISTING (2022) 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 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)

EXHIBIT 3-4: CITY OF PALMDALE GENERAL PLAN BICYCLE FACILITIES

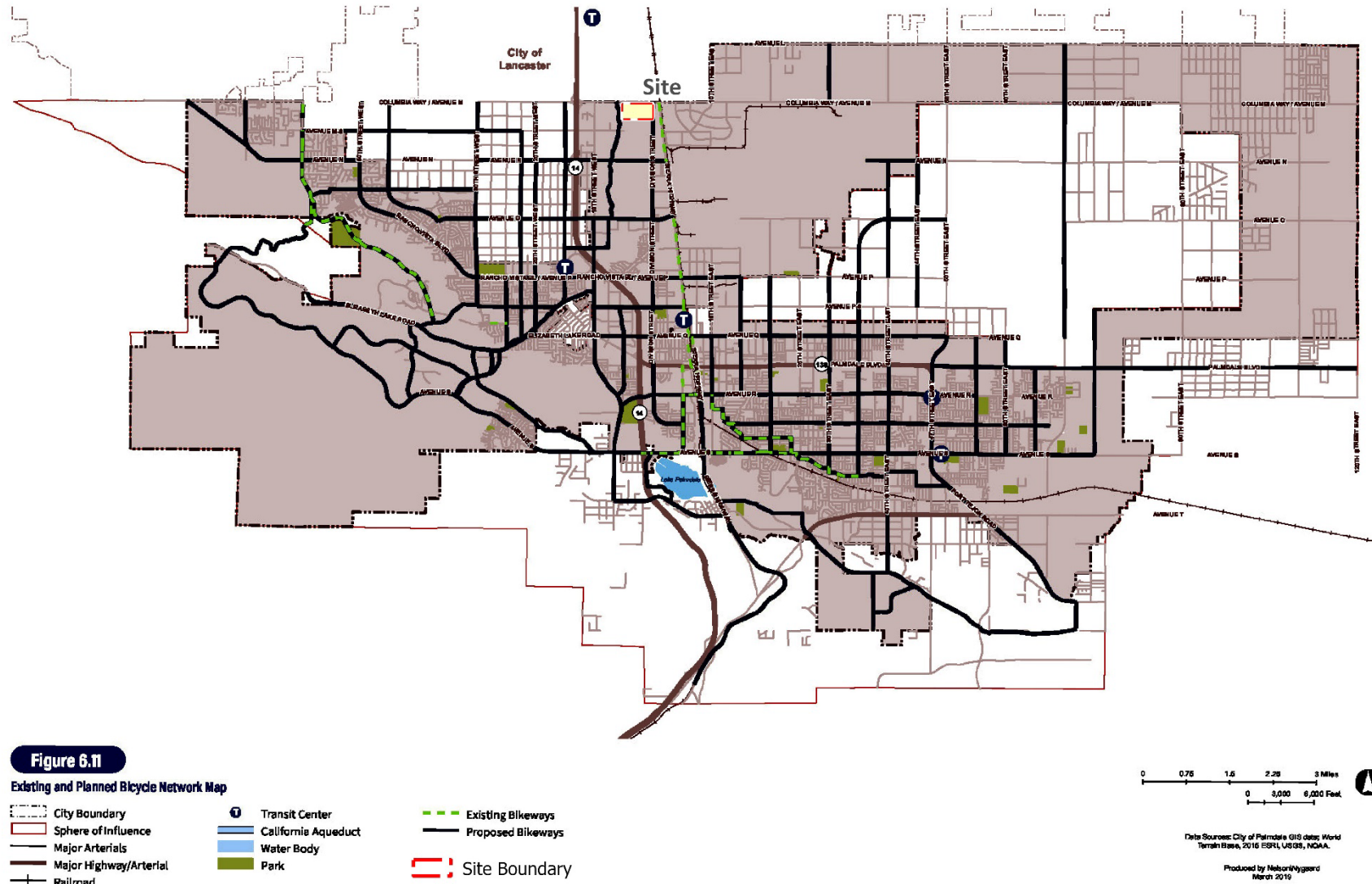


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

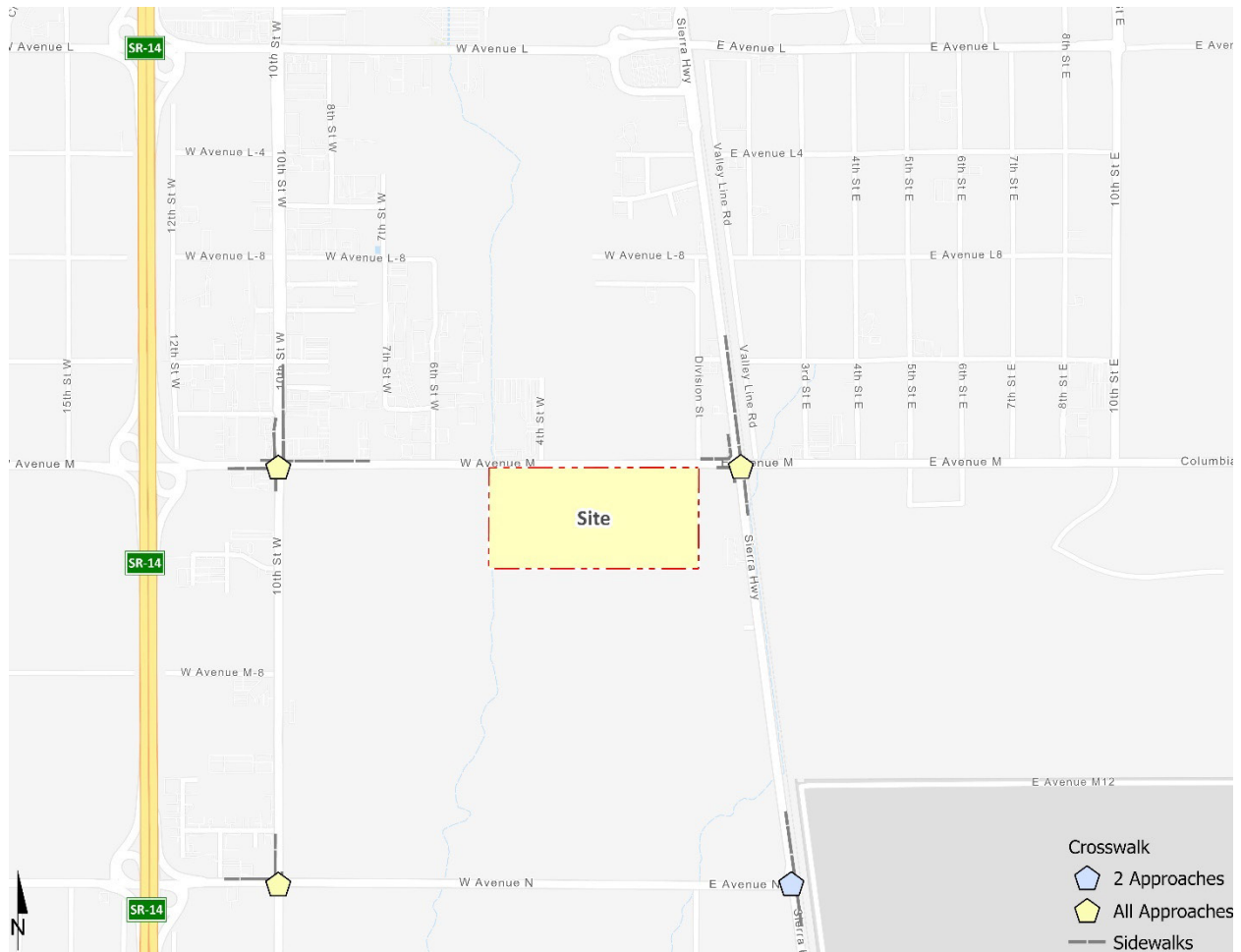


EXHIBIT 3-6: EXISTING TRANSIT ROUTES

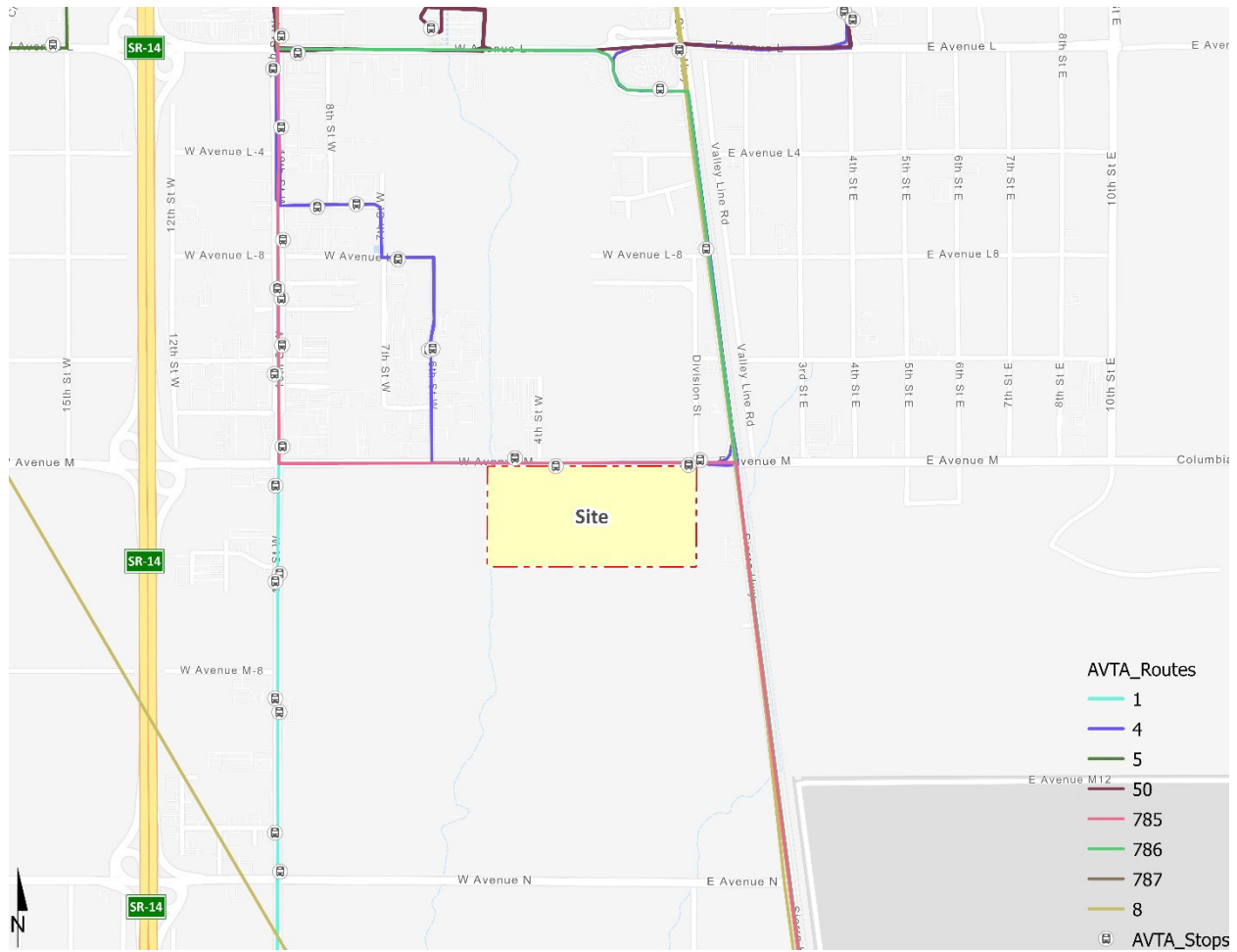


EXHIBIT 3-7: CITY OF PALMDALE TRANSIT ROUTES

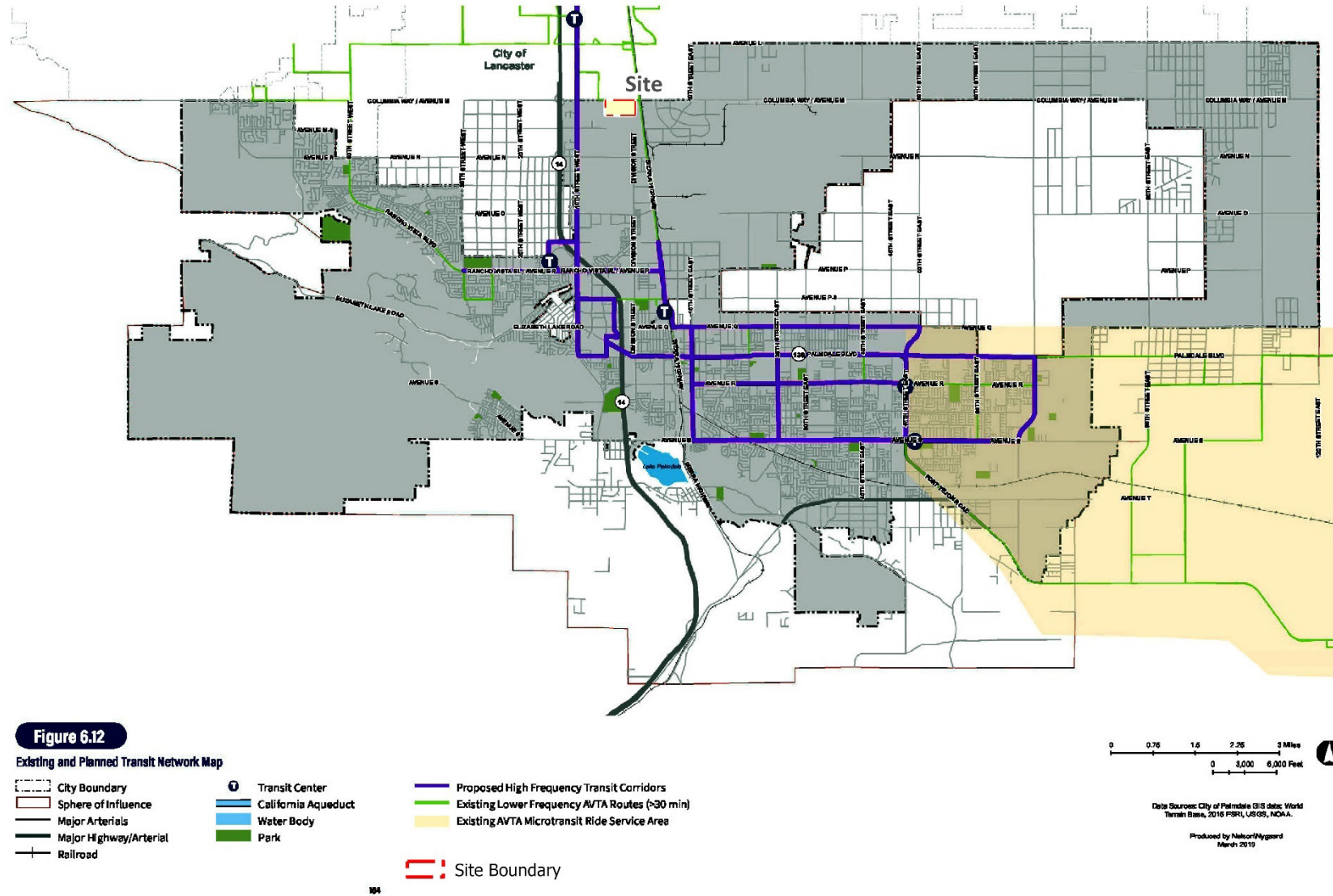
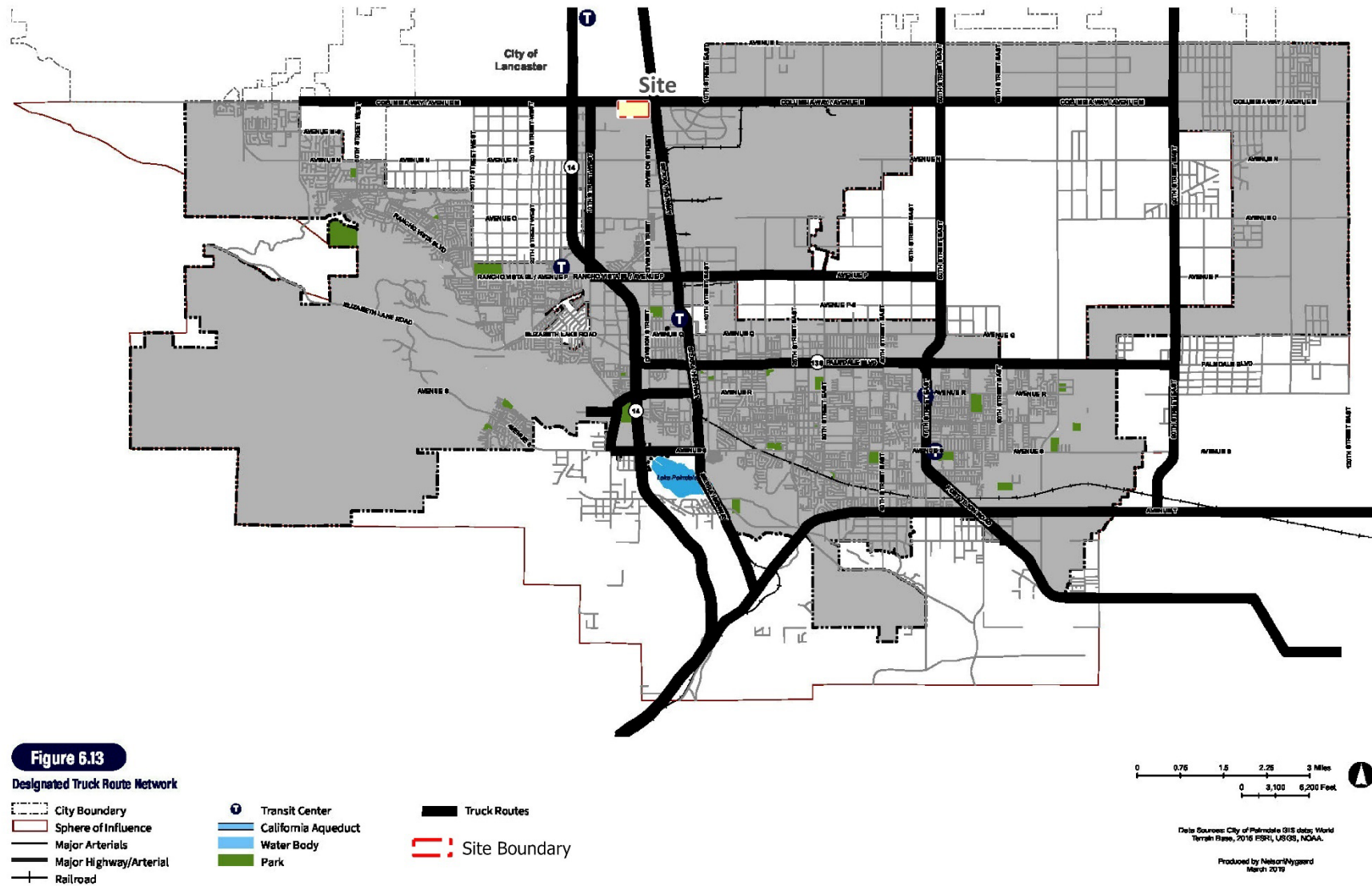


EXHIBIT 3-8: CITY OF PALMDALE TRUCK ROUTES



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. As such, no additional adjustments were made to the traffic counts to establish the baseline condition. 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 3-9. 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:

$$\text{Weekday PM Peak Hour (Approach Volume + Exit Volume)} \times 14.16 = \text{Leg Volume}$$

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 7.06 percent. As such, the above equation utilizing a factor of 14.16 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.06 percent (i.e., $1/0.0706 = 14.16$) 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 3-9.

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 County's Guidelines.

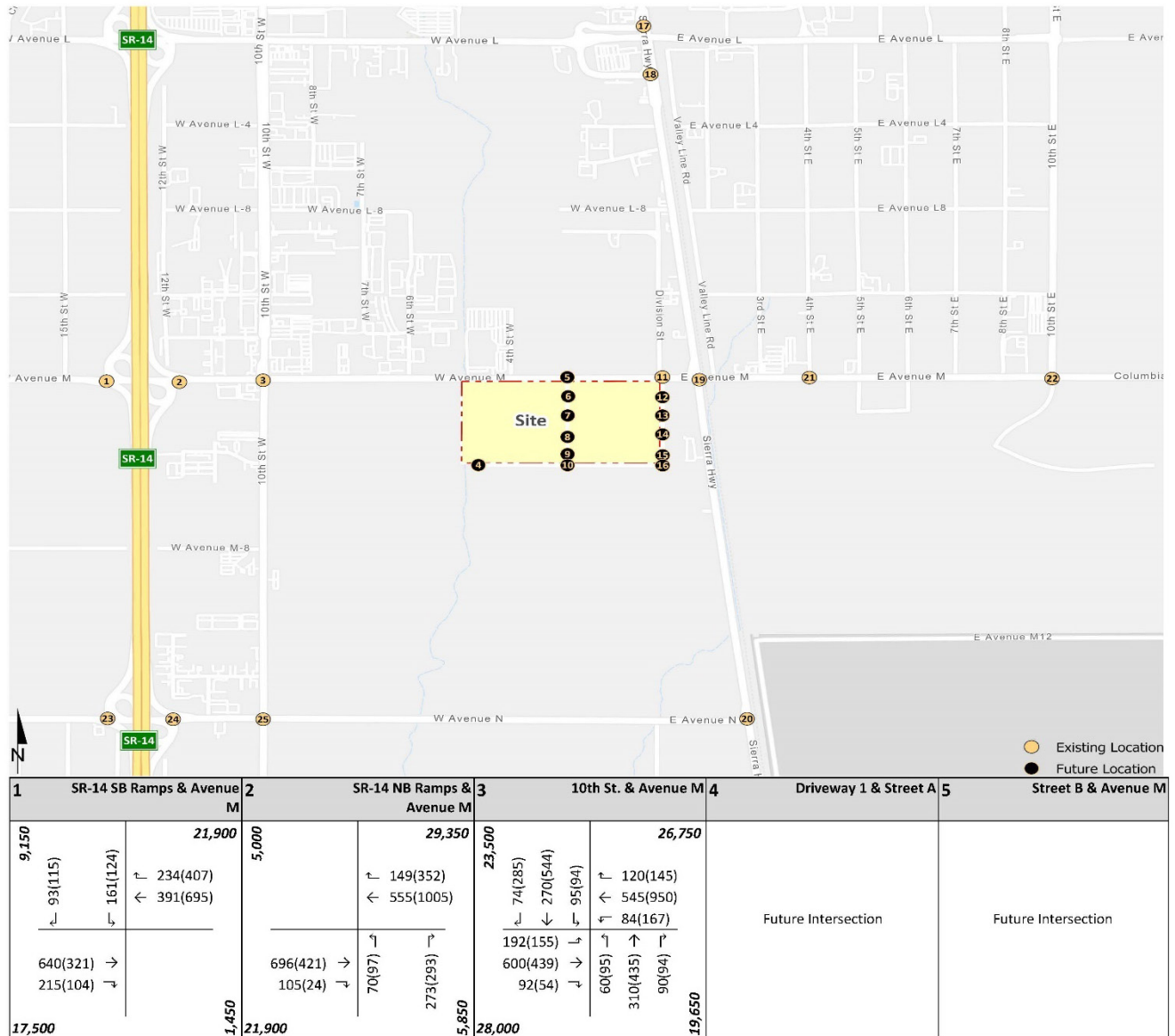
3.8 INTERSECTION OPERATIONS ANALYSIS

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 following study area intersections are currently operating at an unacceptable LOS during the peak hours under Existing (2022) traffic conditions:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM peak hour only
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM peak hour; LOS E PM peak hour
- 10th Street & Columbia Way (#22) – LOS F PM peak hour only
- SR-14 SB Ramps & Avenue N (#23) – LOS E PM peak hour only
- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS E PM peak hour only

The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

EXHIBIT 3-9: EXISTING (2022) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 1 OF 2)



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

Average Daily Trips

EXHIBIT 3-9: EXISTING (2022) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4	9	Street B & Driveway 5	10	Street B & Street A		
	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection		
11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7	14	Division St. & Driveway 8	15	Division St. & Driveway 9		
	22,400 ← 838(922) 551(658) → 22,400	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection	Future Intersection		
16	Division St. & Street A	17	Sierra Hwy. & Avenue L West	18	Sierra Hwy. & Avenue L East	19	Sierra Hwy. & Avenue M	20	Sierra Hwy. & Avenue N		
	Future Intersection	22,400 61(92) ↓ 522(722) ↓ 14(16) → 105(164) → 72(123) → 683(752) → 5,600	24,950 14(17) ↓ 613(869) ↓ 51(72) → 60(155) → 24(39) → 704(803) → 4,000	22,550 92(98) ↓ 456(654) ↓ 71(118) ↓ 68(100) → 423(465) → 60(93) → 135(158) → 512(540) → 464(310) → 22,100	27,750 119(83) ↑ 611(666) ↑ 277(319) ↑ 34,650 35(102) ↓ 783(1143) ↓ 94(83) → 106(109) → 135(266) → 1029(1117) → 7,950	26,450 29,800	24,950 4,000	22,550 22,100	27,750 34,650	29,800 7,950	37,300
21	4th St. & Avenue M/Columbia Wy.	22	10th St. & Columbia Wy.	23	SR-14 SB Ramps & Avenue N	24	SR-14 NB Ramps & Avenue N	25	10th St. & Avenue N		
4,400 86(135) ↓ 10(27) ↓ 217(111) → 783(946) → 31,450	28,850 64(37) ↑ 939(1027) ↑	7,200 198(170) ↓ 19(53) ↓ 171(237) → 631(740) → 29,000	24,650 113(48) ↑ 825(901) ↑ 0(1) →	7,100 89(298) ↓ 165(131) ↓ 645(362) → 249(141) → 20,950	17,600 35(72) ↑ 248(678) ↑	5,900 123(415) ↑ 136(481) ↑ 456(322) → 354(170) → 17,600	18,150 146(269) → 124(65) →	20,350 52(114) ↓ 333(635) ↓ 14(40) ↓ 146(103) → 182(135) → 124(128) → 106(298) → 312(529) → 4(16) → 15,600	7,950 34(15) ↑ 128(323) ↑ 8(31) ↑ 23,200		

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

Average Daily Trips

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2022) CONDITIONS

# Intersection	Traffic Control ²	Delay ¹ (secs.)		Level of Service	
		AM	PM	AM	PM
1 SR-14 SB Ramps & Avenue M	CSS	62.4	33.2	F	D
2 SR-14 NB Ramps & Avenue M	CSS	56.6	38.0	F	E
3 10th St. & Avenue M	TS	31.8	44.5	C	D
4 Driveway 1 & Street A		Future Intersection			
5 Street B & Avenue M		Future Intersection			
6 Street B & Driveway 2		Future Intersection			
7 Street B & Driveway 3		Future Intersection			
8 Street B & Driveway 4		Future Intersection			
9 Street B & Driveway 5		Future Intersection			
10 Street B & Street A		Future Intersection			
11 Division St. & Avenue M	CSS	0.0	0.0	A	A
12 Division St. & Driveway 6		Future Intersection			
13 Division St. & Driveway 7		Future Intersection			
14 Division St. & Driveway 8		Future Intersection			
15 Division St. & Driveway 9		Future Intersection			
16 Division St. & Street A		Future Intersection			
17 Sierra Hwy. & Avenue L West	TS	9.8	11.1	A	B
18 Sierra Hwy. & Avenue L East	TS	9.6	11.0	A	B
19 Sierra Hwy. & Avenue M	TS	38.2	54.6	D	D
20 Sierra Hwy. & Avenue N	TS	12.9	17.9	B	B
21 4th St. & Avenue M/Columbia Wy.	CSS	23.5	28.6	C	D
22 10th St. & Columbia Wy.	CSS	17.7	69.4	C	F
23 SR-14 SB Ramps & Avenue N	CSS	28.7	39.6	D	E
24 SR-14 NB Ramps & Avenue N	CSS	15.8	58.3	C	F
25 10th St. & Avenue N	TS	21.9	56.3	C	E

* **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 sharing a single lane) are shown. HCM delay reported

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

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following unsignalized study area intersections currently meet a traffic signal warrant under Existing (2022) traffic conditions:

- SR-14 SB Ramps & Avenue M (#1)
- SR-14 NB Ramps & Avenue M (#2)
- 4th Street & Avenue M/Columbia Way (#21)
- 10th Street & Columbia Way (#22)
- SR-14 SB Ramps & Avenue N (#23)
- SR-14 NB Ramps & Avenue N (#24)

Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.10 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the study area off-ramps at the SR-14 Freeway at the Avenue M and Avenue N interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the SR-14 Freeway mainline. Queuing analysis findings are presented in Table 3-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-2, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing (2022) traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

TABLE 3-2: PEAK HOUR OFF-RAMP QUEUING SUMMARY FOR EXISTING (2022) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM
SR-14 SB Ramps & Avenue M (#1)	SBL	1,335	190	98	Yes	Yes
	SBR	330	15	35	Yes	Yes
SR-14 NB Ramps & Avenue M (#2)	NBL	1,375	80	123	Yes	Yes
	NBR	340	215	80	Yes	Yes
SR-14 SB Ramps & Avenue N (#23)	SBL	1,395	105	100	Yes	Yes
	SBR	335	13	160	Yes	Yes
SR-14 NB Ramps & Avenue N (#24)	NBL	1,380	43	228	Yes	Yes
	NBR	290	23	8	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 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.

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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. As noted previously, the latest site plan for the Project reflects two warehouse buildings totaling 1,420,070 square feet. Building 1 is 716,930 square feet and Building 2 is 703,140 square feet. However, for the purposes of this analysis, the Project has been evaluated assuming 1,072,275 square feet of High-Cube Fulfillment Center (Non-Sort) use (75% of the total square footage) and 357,425 square feet of General Light Industrial use (remaining 25% of the total square footage) for a total of 1,429,700 square feet.

There is a new public street proposed that will run north-south between the two buildings (Street B) and a new public street along the southern boundary of both buildings that would connect to Division Street (Street A). Building 1 is proposed to have passenger car and truck access to both Street A and Street B. Building 2 would have access to Street B and Division Street. Neither building will have any direct access to Avenue M. 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 SR-14 Freeway and Avenue M and Avenue N interchanges.

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. For purposes of this analysis, the following land use code and vehicle mix has been utilized for each building:

- High-Cube Fulfillment Center Warehouse (ITE Land Use Code 155) has been used to derive site specific trip generation estimates for up to 1,072,275 square feet of the proposed Project (75% of the total square footage). The ITE Trip Generation Manual has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). As defined by ITE, *a high-cube warehouse is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical high-cube warehouse has a high level of on-site automation and logistics management. Automation and logistics enable highly-efficient processing of goods through the high-cube warehouse.* The ITE Trip Generation Manual has two subcategories for the High-Cube Fulfillment Center use: sort and non-sort. ITE describes a sort facility as a *fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means.* In comparison, a *non-sort facility is a fulfillment center that ships large box items that are processed primarily with automation rather than through manual means.* Some limited assembly and repackaging may occur within the facility. Given this description, a non-sort facility has been assumed for the purposes of calculating trip generation for the Project. The vehicle mix (passenger cars versus trucks) 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 110 (General Light Industrial) has been used to derive site specific trip generation estimates for up to 357,425 square feet of the proposed Project (remaining 25% of the total square footage). A light industrial facility is a free-standing facility devoted to a single 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 latest [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%.

Refinements to the raw trip generation estimates have been made to provide a more detailed breakdown of trips between passenger cars and trucks. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. PCE factors were applied to the trip generation rates for heavy trucks (large 2-axes, 3-axes, 4+-axes). 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 PCE factors are consistent with the recommended PCE factors in County's Guidelines.

The Project trip generation rates are provided in Table 4-1. Trip generation summary for the Project in actual vehicles is shown in Table 4-2. As shown in Table 4-2, the Project is anticipated to generate a total of 3,648 two-way trips per day with 422 AM peak hour trips and 402 PM peak hour trips (actual vehicles). The trip generation summary for the Project in PCE is also shown in Table 4-2. For the purposes of the peak hour intersection operations analyses, the PCE trip generation has been utilized.

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. 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.

TABLE 4-1: PROJECT TRIP GENERATION RATES

		ITE LU	AM Peak Hour			PM Peak Hour			Daily
Land Use ¹	Units ²	Code	In	Out	Total	In	Out	Total	
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			0.645	0.085	0.730	0.086	0.554	0.640	4.620
2-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.042
3-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.052
4+-Axle Trucks			0.004	0.002	0.006	0.003	0.003	0.006	0.157
High-Cube Fulfillment Center (Non-Sort) ^{3,5}	TSF	155	0.122	0.028	0.150	0.062	0.098	0.160	1.810
Passenger Cars			0.112	0.018	0.130	0.057	0.093	0.150	1.580
2-Axle Trucks			0.002	0.001	0.003	0.001	0.001	0.002	0.038
3-Axle Trucks			0.002	0.002	0.004	0.001	0.001	0.002	0.048
4+-Axle Trucks			0.006	0.007	0.013	0.003	0.003	0.006	0.144
Passenger Car Equivalent (PCE) 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			0.645	0.085	0.730	0.086	0.554	0.640	4.620
2-Axle Trucks (PCE = 1.5)			0.002	0.001	0.003	0.002	0.001	0.003	0.063
3-Axle Trucks (PCE = 2.0)			0.002	0.002	0.004	0.002	0.002	0.004	0.104
4+-Axle Trucks (PCE = 3.0)			0.012	0.007	0.019	0.009	0.010	0.019	0.470
High-Cube Fulfillment Center (Non-Sort) ^{3,5}	TSF	155	0.122	0.028	0.150	0.062	0.098	0.160	1.810
Passenger Cars			0.112	0.018	0.130	0.057	0.093	0.150	1.580
2-Axle Trucks (PCE = 1.5)			0.003	0.002	0.005	0.002	0.001	0.003	0.058
3-Axle Trucks (PCE = 2.0)			0.005	0.005	0.010	0.003	0.003	0.005	0.119
4+-Axle Trucks (PCE = 3.0)			0.018	0.020	0.038	0.009	0.010	0.019	0.432

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.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units ¹	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicles:									
General Light Industrial (25%)	357.425	TSF							
Passenger Cars:			231	30	261	31	198	229	1,652
2-axle Trucks:			0	0	0	0	0	0	16
3-axle Trucks:			0	0	0	0	0	0	18
4+-axle Trucks:			1	1	2	1	1	2	56
Total Truck Trips (Actual Vehicles):			1	1	2	1	1	2	90
Light Industrial Subtotal Trips (Actual Vehicles) ²			232	31	263	32	199	231	1,742
High-Cube Fulfillment (Non-Sort) (75%)	1,072.275	TSF							
Passenger Cars:			120	19	139	61	100	161	1,694
2-axle Trucks:			2	1	4	1	1	2	42
3-axle Trucks:			2	2	4	1	1	2	52
4+-axle Trucks:			6	7	13	3	3	7	154
Total Truck Trips (Actual Vehicles):			10	10	20	5	5	10	248
Fulfillment Subtotal Trips (Actual Vehicles) ²			130	29	159	66	105	171	1,942
Total Project Trips (Actual Vehicles) ²			362	60	422	98	304	402	3,684
Passenger Car Equivalent (PCE):									
General Light Industrial (25%)	357.425	TSF							
Passenger Cars:			231	30	261	31	198	229	1,652
2-axle Trucks:			1	0	1	1	0	1	22
3-axle Trucks:			1	1	1	1	1	1	38
4+-axle Trucks:			4	2	7	3	3	7	168
Total Truck Trips (PCE):			6	3	9	5	4	9	228
Light Industrial Subtotal Trips (PCE) ²			237	33	270	36	202	238	1,880
High-Cube Fulfillment (Non-Sort) (75%)	1,072.275	TSF							
Passenger Cars:			120	19	139	61	100	161	1,694
2-axle Trucks:			3	2	5	2	1	3	62
3-axle Trucks:			5	6	11	3	3	6	128
4+-axle Trucks:			19	21	40	10	10	20	464
Total Truck Trips (PCE):			27	29	56	15	14	29	654
Fulfillment Subtotal Trips (PCE) ²			147	48	195	76	114	190	2,348
Total Project Trips (PCE) ²			384	81	465	112	316	428	4,228

¹ TSF = thousand square feet

² Total Trips = Passenger Cars + Truck Trips.

EXHIBIT 4-1: PROJECT (TRUCK) TRIP DISTRIBUTION

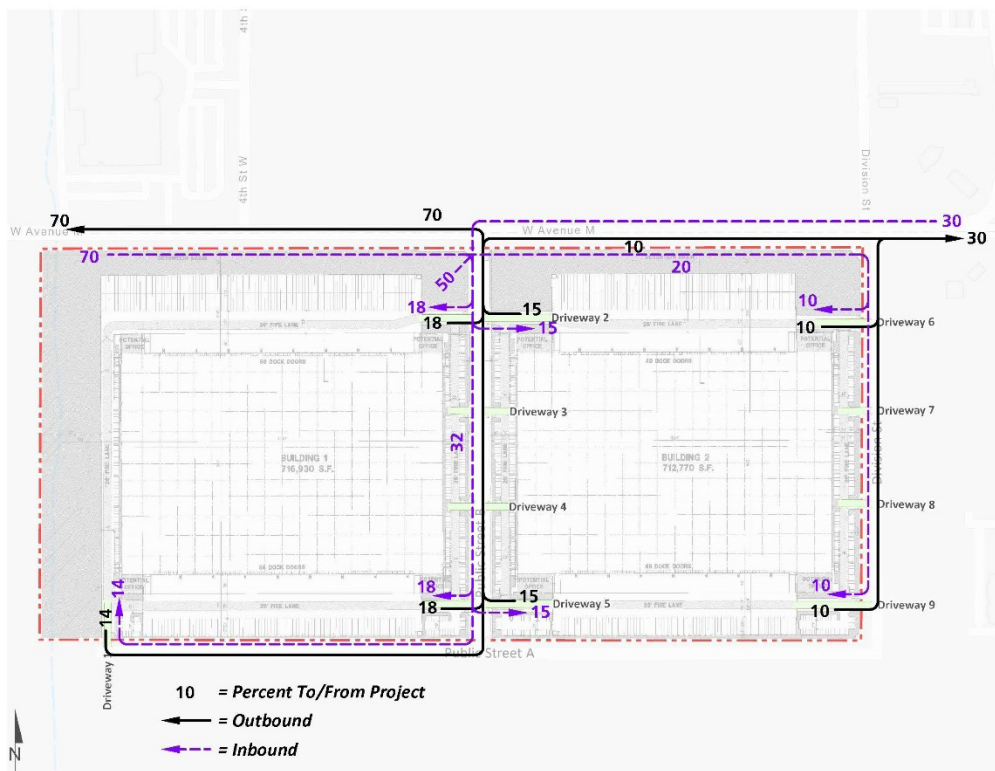
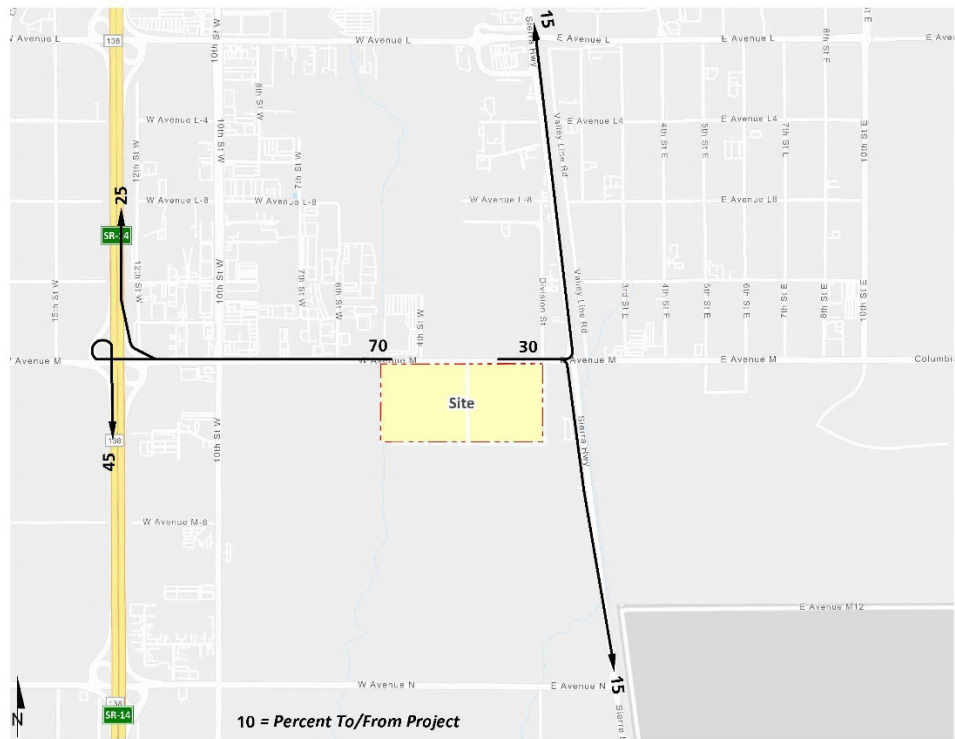
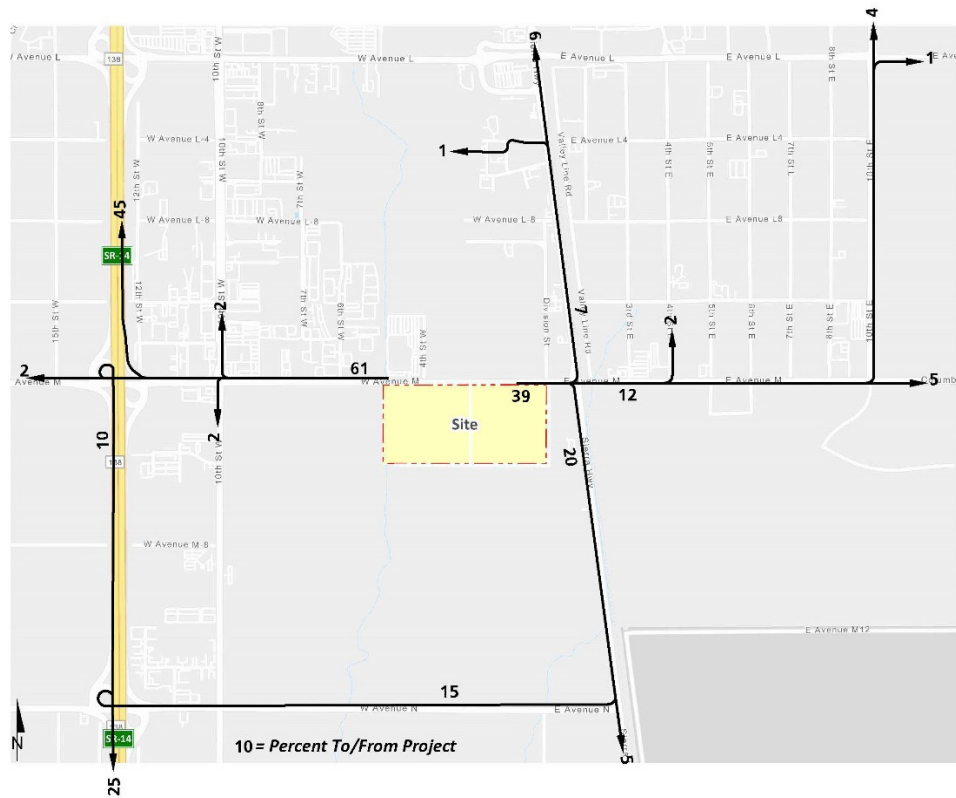


EXHIBIT 4-2: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



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 Exhibit 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 4.04% 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. EA (2024) traffic volumes are provided in Section 5 of this report. The traffic generated by the proposed Project was then manually added to determine With Project (EAP) forecasts.

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 Palmdale and the nearby agency of the City of Lancaster. 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 and EAP (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 2022. Traffic volumes generated by the Project are then added to assess the near-term (EAP) 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. EC (2024) traffic volumes are provided in Section 6 of this report. The traffic generated by the proposed Project was then manually added to determine With Project (EPC) forecasts.

1	SR-14 SB Ramps & Avenue M	2	SR-14 NB Ramps & Avenue M	3	10th St. & Avenue M	4	Driveway 1 & Street A	5	Street B & Avenue M			
1,050	161(43) ↑ 10(32) ← 1(6) ↓ 7(2) →	1,100	25(136) ← 11(38) ↑ 168(45) →	800	2,150	Nominal	7(2) ↑ 1(6) ← 36(174) ↖ 1(6) ↓ 208(57) →	700	700	11(60) ↖ 72(19) ↓	140(38) ↖ 93(25) → 128(35) ↘ ↓	1,400
Nominal		1,100		250	2,150	Nominal		2,300	2,750			

Average Daily Trips

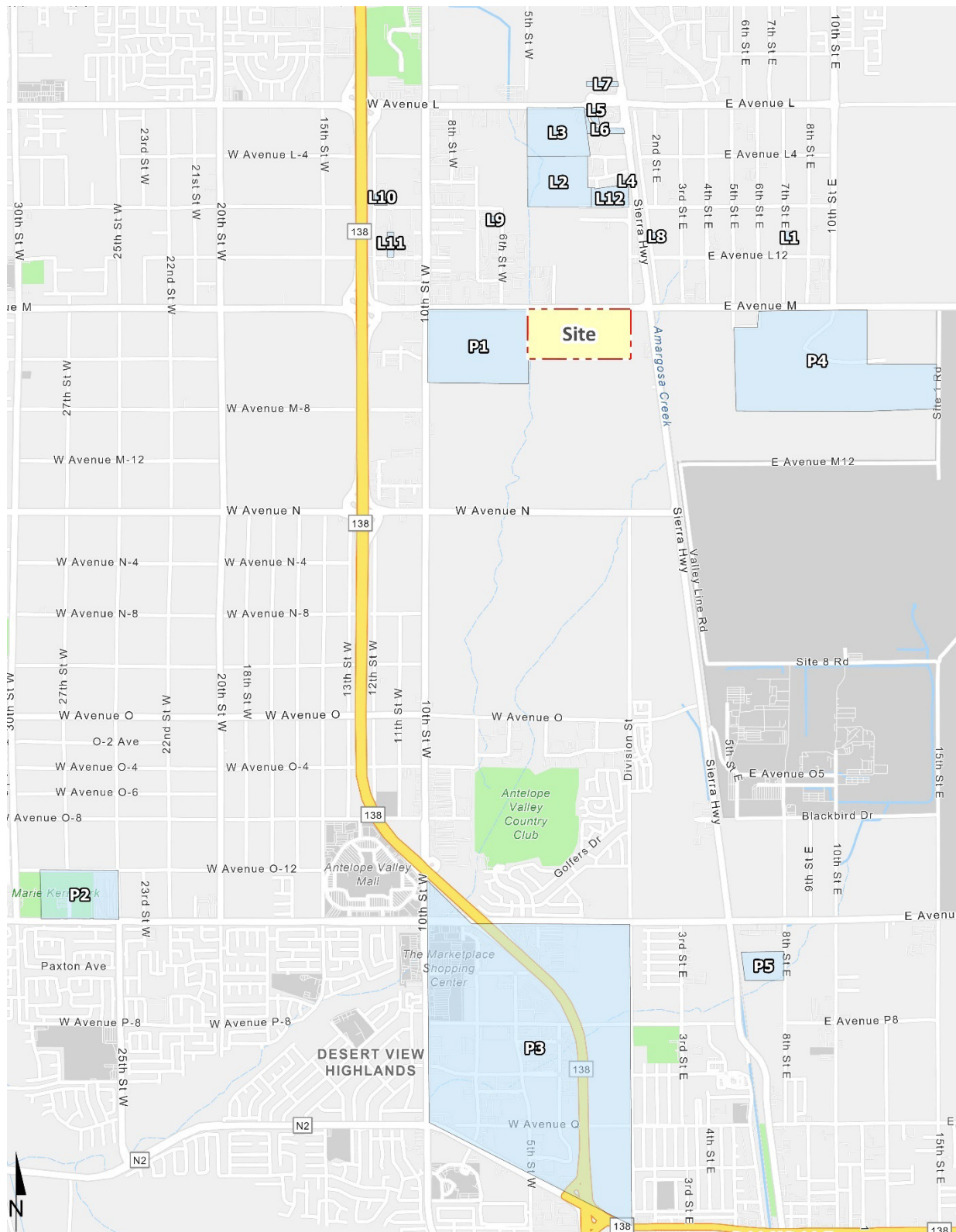
EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6 Street B & Driveway 2 2,750 200 2,250 300	7 Street B & Driveway 3 2,250 250 1,650 300	8 Street B & Driveway 4 1,650 250 1,100 300	9 Street B & Driveway 5 1,100 150 700 250	10 Street B & Street A 700 700
11 Division St. & Avenue M 1,400 950 1,400 950	12 Division St. & Driveway 6 950 200 750 250	13 Division St. & Driveway 7 750 450 250 450	14 Division St. & Driveway 8 450 200 200 200	15 Division St. & Driveway 9 200 200
16 Division St. & Street A 1,400 950	17 Sierra Hwy. & Avenue L West 250 250	18 Sierra Hwy. & Avenue L East 250 250	19 Sierra Hwy. & Avenue M 300 400 1,400 700	20 Sierra Hwy. & Avenue N 700 500 200
21 4th St. & Avenue M/Columbia Wy. Nominal 350 400	22 10th St. & Columbia Wy. 150 150 350	23 SR-14 SB Ramps & Avenue N 250 250	24 SR-14 NB Ramps & Avenue N 500 250 500	25 10th St. & Avenue N 500 500

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

Average Daily Trips

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP



1SR-14 SB Ramps & Avenue M		2SR-14 NB Ramps & Avenue M		310th St. & Avenue M		4Driveway 1 & Street A		5Street B & Avenue M		
7,700	970(678) ↑ 162(231) ← 21(40) 46(32) →	8,250	5,650	↑ 434(839) ← 184(275) 1017(710) → ↑ 287(212)	16,000	4,400	↓ 154(142) ↓ 44(31) 1303(922) → ↑ 19(38) ← 616(1113) ↑ 19(38) ↑ 39(210) ↑ 44(31)	17,000	Future Intersection	Future Intersection
550		8,250	2,050	16,000	4,400					

Average Daily Trips

EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4	9	Street B & Driveway 5	10	Street B & Street A
Future Intersection		Future Intersection		Future Intersection		Future Intersection		Future Intersection	
11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7	14	Division St. & Driveway 8	15	Division St. & Driveway 9
← 655(1189) 1391(983) →		Future Intersection		Future Intersection		Future Intersection		Future Intersection	
16	Division St. & Street A	17	Sierra Hwy. & Avenue L West	18	Sierra Hwy. & Avenue L East	19	Sierra Hwy. & Avenue M	20	Sierra Hwy. & Avenue N
Future Intersection		4,300 ← 316(227) 15(10) ↓ 94(197) ↖ 164(273) ↗	5,800 ← 2(1) 11(8) ↖ 240(113) ↓ 21(18) ↗ 504(462) ↗	6,350 ← 117(121) 1391(983) → 94(152) ↖ 655(1189) ↖ 201(377) ↖ 50(164) ↗ 438(308) ↗	8,150 ← 132(270) 310(214) ↗ 186(228) ↖ 179(258) ↗				
		1,500	5,800	1,550	7,200	17,000	9,150	3,500	4,700
21	4th St. & Avenue M/Columbia Wy.	22	10th St. & Columbia Wy.	23	SR-14 SB Ramps & Avenue N	24	SR-14 NB Ramps & Avenue N	25	10th St. & Avenue N
650 ← 50(35) 746(429) → 1198(922) ↓ 635(991) ↖ 23(42) ↗	8,600	5,450 ← 36(23) 16(30) ↖ 9(16) → 654(375) ↓ 36(62) ↖ 86(62) ↖ 19(12) ↖ 94(66) ↗ 230(598) ↖ 40(74) ↗ 41(81) ↗	1,350	1,700 ↖ 128(266) ← 4(4) 6(4) →	1,800	3,500 ← 132(270) 6(4) → 304(210) ↗	3,500	3,900 ← 154(142) 310(214) → 39(210) ↗ 132(270) ↖	3,500
23,800	15,850	8,300	13,400	100	1,800	1,700	3,500	3,900	3,900

##(##) 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	Grow-Op Farms (CUP 18-27)	Cannabis Cultivation and Manufacturing Facility	160.816 TSF
L3	Lancaster 20th Street West (CUP 18-22)	Hotel	105 Rooms
L4	CUP 18-26	Special Needs Housing	85.042 TSF
L5	Lancaster Housing (CUP 18-08)	Residential Care	202.818 TSF
L6	CUP 20-04	Cannabis Cultivation and Manufacturing Facility	22.843 TSF
	49-acre Warehouse Project	Warehousing	956.800 TSF
L7	SPR 22-02	Warehousing	28.895 TSF
L8	SPR 22-03	Mini Storage Facility	93.465 TSF
L9	DR 21-175	Warehousing	7.000 TSF
L10	CUP 19-04	Cannabis Cultivation and Manufacturing Facility	22.000 TSF
L11	SPR 22-07	Industrial	17.000 TSF
L12	Forbes & Market Warehouse	Warehousing	233.600 TSF
L13	SPR 21-16	Industrial	19.488 TSF
L14	L4 Warehouse	Warehousing	216.230 TSF
P1	Palmdale Warehouse Project	Industrial	1,117.314 TSF
		Commercial	98.794 TSF
		Business Park	743.650 TSF
P2	Westside Softball and Event Complex	Park	60.0 AC
		Recreation Center	20.000 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	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
P5	8th Street Industrial	High-Cube Fulfillment (Non-Sort)	384.800 TSF

¹ AC = Acres; TSF = Thousand Square Feet

The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- EA (2024)
 - Existing 2022 counts
 - Ambient growth traffic (4.04%)

- EAP (2024)
 - Existing 2022 counts
 - Ambient growth traffic (4.04%)
 - Project traffic

- EC (2024)
 - Existing 2022 counts
 - Cumulative Development traffic

- EPC (2024)
 - Existing 2022 counts
 - Cumulative Development traffic
 - Project traffic

5 EA & EAP (2024) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EA and EAP (2024) conditions and the resulting intersection operations, traffic signal warrant, and off-ramp queuing 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 EAP (2024) GROWTH TRAFFIC VOLUME FORECASTS

5.2.1 EA (2024) TRAFFIC CONDITIONS

This scenario includes Existing (2022) traffic volumes plus an ambient growth factor of 4.04%. 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.

5.2.2 EAP (2024) TRAFFIC CONDITIONS

This scenario includes Existing (2022) traffic volumes plus an ambient growth factor of 4.04% 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.

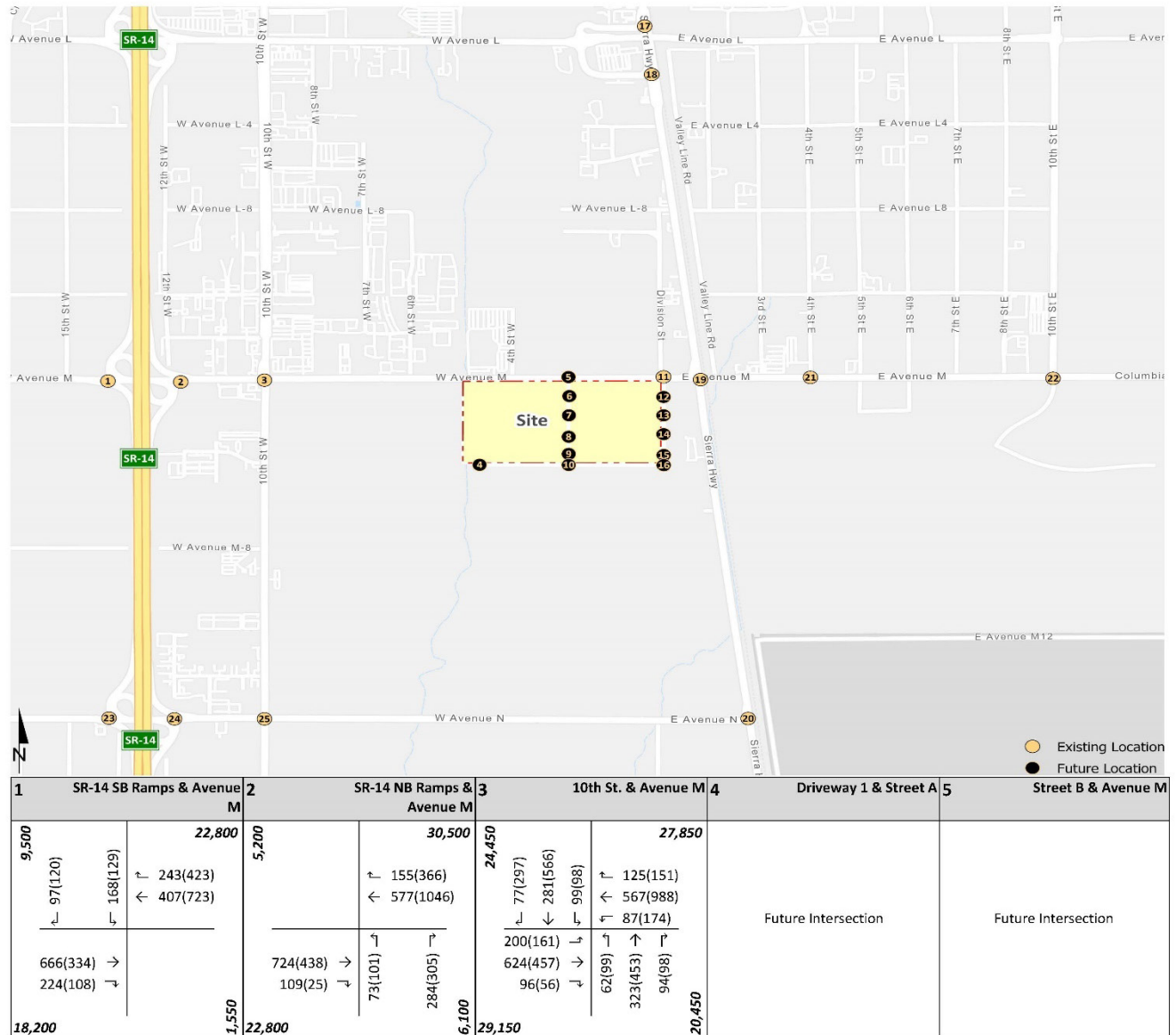
5.3 INTERSECTION OPERATIONS ANALYSIS

EA (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 that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM peak hour; LOS E PM peak hour
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM peak hour; LOS E PM peak hour
- 10th Street & Avenue M (#3) – LOS E PM peak hour only
- Sierra Highway & Avenue M (#19) – LOS E PM peak hour only
- 10th Street & Columbia Way (#22) – LOS F PM peak hour only
- SR-14 SB Ramps & Avenue N (#23) – LOS E PM peak hour only
- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS E PM peak hour only

The intersection operations analysis worksheets for EA (2024) traffic conditions are included in Appendix 5.1 of this TA.

EXHIBIT 5-1: EA (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 1 OF 2)



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

Average Daily Trips

EXHIBIT 5-1: EA (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4	9	Street B & Driveway 5	10	Street B & Street A
	Future Intersection		Future Intersection		Future Intersection		Future Intersection		Future Intersection
11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7	14	Division St. & Driveway 8	15	Division St. & Driveway 9
	23,300 ← 872(959) 573(685) → 23,300		Future Intersection		Future Intersection		Future Intersection		Future Intersection
16	Division St. & Street A	17	Sierra Hwy. & Avenue L West	18	Sierra Hwy. & Avenue L East	19	Sierra Hwy. & Avenue M	20	Sierra Hwy. & Avenue N
	Future Intersection	23,300 63(96) ↓ 543(751) ↓ 15(17) → 109(171) ↓ 75(128) → 711(782) → 5,800	25,950 15(18) ↓ 638(904) ↓ 53(75) → 62(161) ↓ 25(41) → 732(835) → 27,500	23,450 96(102) ↓ 474(680) ↓ 71(104) → 440(484) ↓ 62(97) ↓ 140(164) → 533(562) → 483(323) → 22,950	28,900 124(86) ↑ 636(693) ↑ 288(332) ↑ 31,000	36,050 36(107) ↓ 814(1189) ↓ 98(86) → 111(113) → 141(277) → 1070(1162) → 8,250	38,800		
21	4th St. & Avenue M/Columbia Wy.	22	10th St. & Columbia Wy.	23	SR-14 SB Ramps & Avenue N	24	SR-14 NB Ramps & Avenue N	25	10th St. & Avenue N
4,550 89(140) ↓ 10(28) ↓ 226(115) → 815(984) → 32,700	30,000 67(38) ↑ 977(1068) ↑	7,500 206(177) ↓ 20(55) ↓ 178(247) → 656(770) → 30,200	25,650 118(50) ↑ 858(937) ↑ 0(1) ↓	7,400 93(310) ↓ 172(136) ↓ 671(377) → 259(147) ↓ 21,800	18,300 36(75) ↑ 258(706) ↑	6,100 128(432) ↑ 142(501) ↑ 475(335) → 368(177) ↓ 18,300	18,900 128(432) ↑ 142(501) ↑ 152(280) → 129(68) → 7,450	21,150 54(119) ↓ 347(660) ↓ 15(42) ↓ 152(107) → 189(141) → 129(133) → 111(310) → 324(551) → 4(16) → 16,250	8,250 35(15) ↑ 133(336) ↑ 9(33) ↑ 24,100

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

Average Daily Trips

EXHIBIT 5-2: EAP (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 1 OF 2)

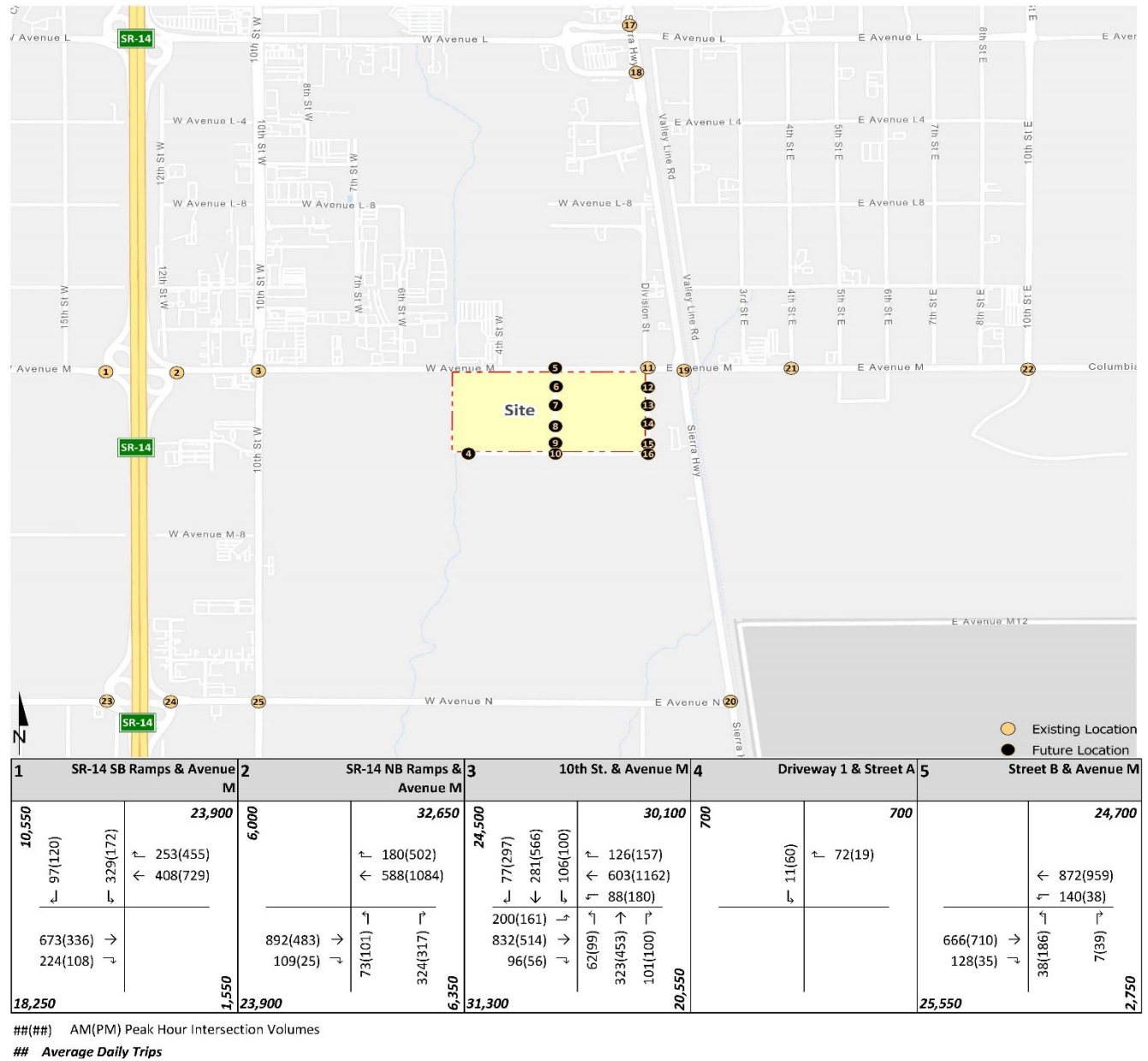


EXHIBIT 5-2: EAP (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6 Street B & Driveway 2 2,750 ← 27(8) ← 223(60) ← 19(5) 5(22) → 36(187) ↑ 200 ↑ 4(16) 300 2,250	7 Street B & Driveway 3 2,250 ← 32(8) ← 163(44) ← 28(7) 4(27) → 27(137) ↑ 250 ↑ 4(24) 300 1,650	8 Street B & Driveway 4 1,650 ← 32(8) ← 103(29) ← 28(7) 4(27) → 19(86) ↑ 250 ↑ 4(24) 300 1,100	9 Street B & Driveway 5 1,100 ← 20(6) ← 72(19) ← 12(4) 4(16) → 11(60) ↑ 150 ↑ 3(10) 250 700	10 Street B & Street A 700 ← 72(19) 700 11(60) →
11 Division St. & Avenue M 24,700 ← 1012(997) 580(724) → 93(25) ↓ 15(79) ↑ 24,700 950	12 Division St. & Driveway 6 950 ← 19(5) ← 75(20) 4(16) → 11(63) ↑ 200 750	13 Division St. & Driveway 7 750 ← 28(7) ← 47(13) 4(24) → 7(39) ↑ 250 450	14 Division St. & Driveway 8 450 ← 28(7) ← 19(5) 4(24) → 4(15) ↑ 250 200	15 Division St. & Driveway 9 200 ← 19(5) 4(15) →
16 Division St. & Street A 24,700	17 Sierra Hwy. & Avenue L West 23,550 ← 63(96) ← 566(757) 15(17) → 109(171) ↑ 75(128) ↓ 716(801) ↑ 5,800 26,200	18 Sierra Hwy. & Avenue L East 26,200 ← 15(18) ← 661(910) 53(75) → 62(161) ↓ 25(41) ↑ 737(854) ↓ 4,150 27,750	19 Sierra Hwy. & Avenue M 23,750 ← 122(109) ← 474(680) ← 74(123) 76(126) → 446(520) ↓ 73(158) ↑ 212(183) ↓ 533(562) ↑ 483(323) ↓ 29,300 31,700	20 Sierra Hwy. & Avenue N 36,750 ← 43(152) ← 818(1205) 151(100) → 111(113) ↓ 141(277) ↑ 1089(1168) ↓ 8,750 39,050
21 4th St. & Avenue M/Columbia Wy. 4,650 ← 96(142) ← 10(28) 227(121) → 820(1014) ↓ 30,350 33,100	22 10th St. & Columbia Wy. 7,650 ← 224(182) ← 20(55) 180(262) → 658(785) ↓ 0(1) ↑ 118(50) ↓ 876(942) ↓ 25,850 30,550	23 SR-14 SB Ramps & Avenue N 7,650 ← 93(310) ← 172(136) 671(377) → 259(147) ↓ 18,550 21,800	24 SR-14 NB Ramps & Avenue N 6,100 ← 128(432) ← 149(546) 475(335) → 368(177) ↓ 152(280) ↓ 182(82) ↑ 19,400 18,550	25 10th St. & Avenue N 21,150 ← 54(119) ← 347(660) ← 15(42) 152(107) → 242(155) ↓ 129(133) ↑ 111(310) ↓ 324(551) ↑ 4(16) ↓ 8,750 24,100

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

Average Daily Trips

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

# Intersection	Traffic Control ²	EA (2024)				EAP (2024)				Project-Related Increase in Delay (secs.) ³	
		Delay ¹ (secs.)		Level of Service		Delay ¹ (secs.)		Level of Service		AM	PM
		AM	PM	AM	PM	AM	PM	AM	PM		
1 SR-14 SB Ramps & Avenue M	CSS	81.6	39.0	F	E	> 100.0	69.7	F	F	>10.0	30.7
2 SR-14 NB Ramps & Avenue M	CSS	72.0	46.9	F	E	> 100.0	60.7	F	F	>10.0	13.8
3 10th St. & Avenue M	TS	34.2	57.3	C	E	38.3	65.1	D	E	--	7.8
4 Driveway 1 & Street A	CSS	Future Intersection				8.8	8.8	A	A	--	--
5 Street B & Avenue M	TS	Future Intersection				9.3	12.0	A	B	--	--
6 Street B & Driveway 2	CSS	Future Intersection				11.3	11.0	B	B	--	--
7 Street B & Driveway 3	CSS	Future Intersection				10.7	10.4	B	B	--	--
8 Street B & Driveway 4	CSS	Future Intersection				10.1	9.9	B	A	--	--
9 Street B & Driveway 5	CSS	Future Intersection				9.5	9.3	A	A	--	--
10 Street B & Street A	CSS	Future Intersection				8.6	8.4	A	A	--	--
11 Division St. & Avenue M	CSS	0.0	0.0	A	A	11.1	12.1	B	B	--	--
12 Division St. & Driveway 6	CSS	Future Intersection				9.1	9.1	A	A	--	--
13 Division St. & Driveway 7	CSS	Future Intersection				8.9	8.9	A	A	--	--
14 Division St. & Driveway 8	CSS	Future Intersection				8.7	8.7	A	A	--	--
15 Division St. & Driveway 9	CSS	Future Intersection				8.6	8.6	A	A	--	--
16 Division St. & Street A	CSS	Future Intersection				0.0	0.0	A	A	--	--
17 Sierra Hwy. & Avenue L West	TS	10.3	11.3	B	B	10.3	11.3	B	B	--	--
18 Sierra Hwy. & Avenue L East	TS	9.7	11.1	A	B	9.7	11.1	A	B	--	--
19 Sierra Hwy. & Avenue M	TS	42.5	60.3	D	E	52.7	66.4	D	E	--	6.1
20 Sierra Hwy. & Avenue N	TS	13.2	19.4	B	B	13.8	19.8	B	B	--	--
21 4th St. & Avenue M/Columbia Wy.	CSS	25.6	32.6	D	D	27.4	34.1	D	D	--	--
22 10th St. & Columbia Wy.	CSS	18.7	88.8	C	F	19.6	> 100.0	C	F	--	>10.0
23 SR-14 SB Ramps & Avenue N	CSS	33.8	48.7	D	E	33.8	48.7	D	E	--	--
24 SR-14 NB Ramps & Avenue N	CSS	16.5	76.2	C	F	26.9	92.3	C	F	--	--
25 10th St. & Avenue N	TS	22.5	62.2	C	E	22.6	68.6	C	E	--	--

* **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 sharing a single

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

³ Project-related increase in delay is only calculated for deficient intersections within the jurisdiction of the City of Lancaster.

With the addition of Project traffic, there are no additional study area intersections anticipated to operate at an unacceptable LOS during peak hours under EAP (2024) traffic conditions. The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. The intersection operations analysis worksheets for EAP (2024) traffic conditions are included in Appendix 5.2 of this TA.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

All existing unsignalized study area intersections currently meet a traffic signal warrant under Existing (2022) traffic conditions. As such, traffic signal warrants have not been evaluated for EA (2024) traffic conditions. The traffic signal warrant analysis for EAP (2024) traffic conditions are based on the peak planning level ADT volume-based traffic signal warrants. There is no unsignalized study area intersection anticipated to meet a traffic signal warrant under EAP (2024) traffic conditions (see Appendix 5.3).

5.5 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for EA and EAP (2024) are presented in Table 5-2. As shown in Table 5-2, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under both EA and EAP (2024) traffic conditions, consistent with Existing (2022) traffic conditions. Worksheets for EA and EAP (2024) traffic conditions queuing analysis are provided in Appendices 5.4 and 5.5, respectively.

TABLE 5-2: PEAK HOUR OFF-RAMP QUEUING SUMMARY FOR EAP (2024) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	EA (2024)				EAP (2024)			
			95th Percentile Queue (Feet)		Acceptable? ¹		95th Percentile Queue (Feet) ²		Acceptable? ¹	
			AM Peak	PM Peak	AM	PM	AM Peak	PM Peak	AM	PM
SR-14 SB Ramps & Avenue M (#1)	SBL	1,335	225	118	Yes	Yes	730	208	Yes	Yes
	SBR	330	18	40	Yes	Yes	18	40	Yes	Yes
SR-14 NB Ramps & Avenue M (#2)	NBL	1,375	93	148	Yes	Yes	130	170	Yes	Yes
	NBR	340	255	90	Yes	Yes	553 ²	115	Yes	Yes
SR-14 SB Ramps & Avenue N (#23)	SBL	1,395	125	120	Yes	Yes	125	120	Yes	Yes
	SBR	335	13	190	Yes	Yes	13	190	Yes	Yes
SR-14 NB Ramps & Avenue N (#24)	NBL	1,380	48	273	Yes	Yes	48	305	Yes	Yes
	NBR	290	25	10	Yes	Yes	40	13	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 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.

² Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the SR-14 Freeway mainline.

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 EA and EAP (2024) traffic conditions.

5.6.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that are anticipated to operate at a deficient LOS under EAP (2024) traffic conditions in an effort to achieve the allowable threshold from pre-project conditions (at a minimum). In some instances, the recommendations may exceed the Project's proportionate share by improving the intersection back to an acceptable LOS (i.e., LOS D or better), far exceeding the pre-project conditions. The effectiveness of the recommended

improvement strategies to address EAP (2024) traffic deficiencies are presented in Table 5-3. The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for the signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. As such, no intersection improvements have been recommended for the intersection of SR-14 Southbound Ramps at Avenue N. Worksheets for EAP (2024) with improvements, intersection operations are provided in Appendix 5.6.

TABLE 5-1: INTERSECTION ANALYSIS FOR EAP (2024) CONDITIONS WITH IMPROVEMENTS

	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
		Northbound				Southbound				Eastbound							
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1 SR-14 SB Ramps & Avenue M																	
Pre-Project Conditions:	CSS	0	0	0	1	0	1	0	1	0	0	1	1>>	81.6	39.0	F	E
With Improvements:	IS	0	0	0	1	0	1	0	1	0	0	1	1>>	18.1	12.7	B	B
2 SR-14 NB Ramps & Avenue M																	
Pre-Project Conditions:	CSS	1	0	1	0	0	0	0	1	1>>	0	1	0	72.0	46.9	F	E
With Improvements:	IS	1	0	1	0	0	0	0	1	1>>	0	1	0	45.4	16.1	D	B
3 10th St. & Avenue M																	
Pre-Project Conditions:	TS	1	2	0	1	2	1	1	2	1	1	2	1	34.2	57.3	C	E
With Improvements: ⁴	TS	1	<u>3</u>	<u>1</u>	1	2	1	1	<u>3</u>	<u>0</u>	1	<u>3</u>	<u>0</u>	26.6	45.1	C	D
19 Sierra Hwy. & Avenue M																	
Pre-Project Conditions:	TS	1	2	1	1	2	1>>	1	2	1	1	2	1	42.5	60.3	D	E
With Improvements:	TS	1	2	<u>1</u> >	1	2	1>>	1	2	1	1	2	1	52.0	63.6	D	E
22 10th St. & Columbia Wy.																	
Pre-Project Conditions:	CSS	0	1	0	0	1	1	1	2	0	1	2	1	18.7	88.8	C	F
With Improvements:	IS	0	1	0	0	1	1	1	2	0	1	2	1	16.5	23.2	B	C
24 SR-14 NB Ramps & Avenue N																	
Pre-Project Conditions:	CSS	1	0	1	0	0	0	0	1	1>>	0	1	1>>	16.5	76.2	C	F
With Improvements:	IS	1	0	1	0	0	0	0	1	1>>	0	1	1>>	11.0	12.8	B	B
25 10th St. & Avenue N																	
Pre-Project Conditions:	TS	1	2	0	1	2	0	1	1	1	1	1	0	22.5	62.2	C	E
With Improvements:	TS	1	2	0	1	2	0	1	1	<u>1</u> >	1	1	0	21.8	66.1	C	E

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1 = Improvement; > = Right-Turn Overlap Phasing; >> = Free-Right Turn

² 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.

³ CSS = Cross-Street Stop; TS = Traffic Signal; IS = Improvement

⁴ Consistent with proposed Palmdale Warehouse frontage improvements (located on the southeast corner of 10th St. and Avenue M).

5.6.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 5-2, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for EAP (2024) traffic conditions. As such, no improvements have been identified.

6 EC AND EPC (2024) TRAFFIC CONDITIONS

This section discusses the traffic forecasts for EC and EPC (2024) traffic conditions and the resulting intersection operations, traffic signal warrant, and off-ramp queuing analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EC and EPC (2024) Projects 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 EPC (2024) conditions (e.g., intersection and roadway improvements at the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for both EC and EPC (2024) conditions (e.g., intersection and roadway improvements along the cumulative development's frontages).

6.2 EC AND EPC (2024) TRAFFIC VOLUME FORECASTS

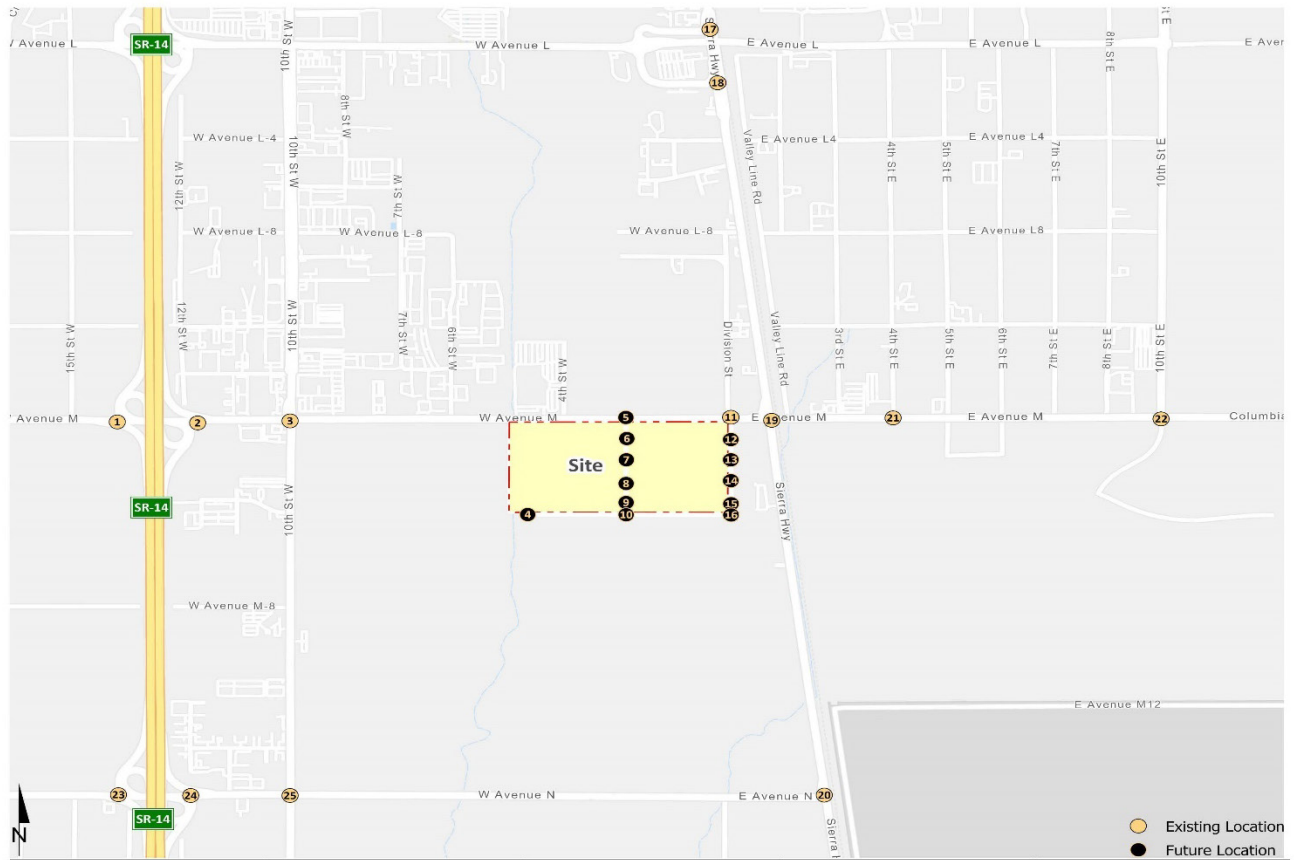
6.2.1 EC (2024) TRAFFIC CONDITIONS

This scenario includes Existing traffic volumes plus 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 EC (2024) traffic conditions are shown on Exhibit 6-1.

6.2.2 EPC (2024) TRAFFIC CONDITIONS

This scenario includes Existing traffic volumes plus 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 EPC (2024) traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: EC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 1 OF 2)



1	SR-14 SB Ramps & Avenue M	2	SR-14 NB Ramps & Avenue M	3	10th St. & Avenue M	4	Driveway 1 & Street A	5	Street B & Avenue M
16,850	30,200	10,650	45,300	27,900	43,750				
93(115)	↑ 396(638)	↑ 583(1191)	↑ 74(285)	↑ 139(183)					
1131(802)	← 412(735)	← 739(1280)	424(686)	← 1161(2063)					
			139(125)	103(205)					
686(353) →		1713(1131) →	192(155) →	60(95) →					
215(104) ↘		105(24) ↘	1903(1361) →	349(645) →					
		70(97)	92(54) ↘	134(125) →					
18,050	1,450	30,200	7,900	44,000	24,100				

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

Average Daily Trips

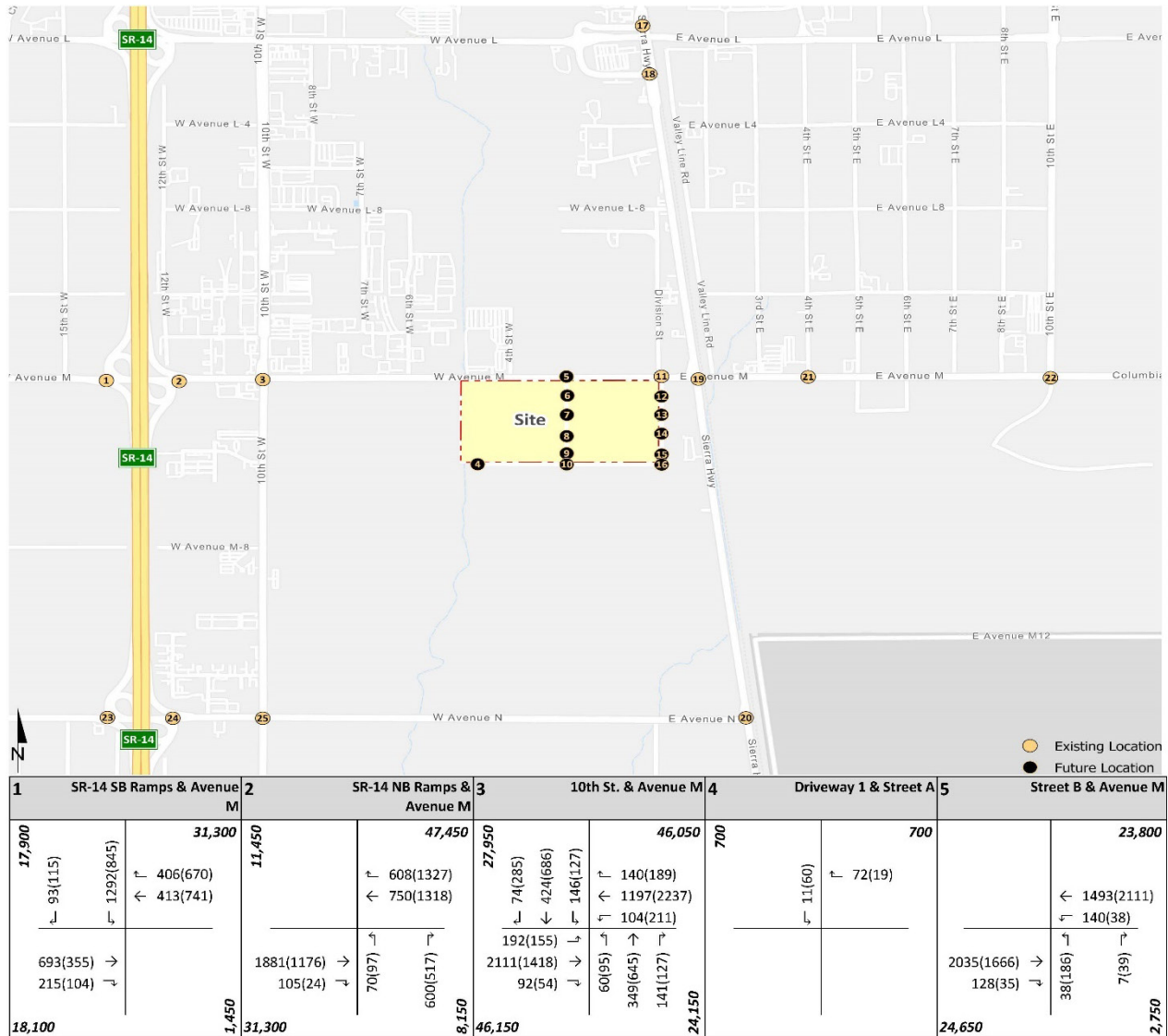
EXHIBIT 6-1: EC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6	Street B & Driveway 2	7	Street B & Driveway 3	8	Street B & Driveway 4	9	Street B & Driveway 5	10	Street B & Street A
	Future Intersection		Future Intersection		Future Intersection		Future Intersection		Future Intersection
11	Division St. & Avenue M	12	Division St. & Driveway 6	13	Division St. & Driveway 7	14	Division St. & Driveway 8	15	Division St. & Driveway 9
	22,400 ← 1493(2111) 1942(1641) → 22,400		Future Intersection		Future Intersection		Future Intersection		Future Intersection
16	Division St. & Street A	17	Sierra Hwy. & Avenue L West	18	Sierra Hwy. & Avenue L East	19	Sierra Hwy. & Avenue M	20	Sierra Hwy. & Avenue N
	Future Intersection	26,700 61(92) ↓ 838(949) ↓ 14(16) → 120(174) ↓ 166(320) ↓ 847(1025) ↓ 7,050		30,750 16(18) ↓ 1059(1105) ↓ 62(80) → 300(268) ↓ 45(57) ↓ 1208(1265) ↓ 5,550		28,950 92(98) ↓ 573(775) ↓ 68(100) → 1814(1448) ↓ 60(93) ↓ 135(158) ↓ 562(704) ↓ 902(618) ↓ 39,100	52,500 213(235) ↑ 1266(1855) ↑ 478(696) ↑ 253(249) ↓ 404(297) → 106(109) ↓ 135(266) ↓ 1208(1375) ↓ 38,950		42,800 167(372) ↓ 969(1371) ↓ 404(297) → 106(109) ↓ 135(266) ↓ 1208(1375) ↓ 42,000
21	4th St. & Avenue M/Columbia Wy.	22	10th St. & Columbia Wy.	23	SR-14 SB Ramps & Avenue N	24	SR-14 NB Ramps & Avenue N	25	10th St. & Avenue N
5,000 86(135) ↓ 50(35) ↓ 10(27) ↓ 217(111) → 1529(1375) ↓ 1198(922) ↓ 635(991) ↓ 23(42) ↓ 55,250	37,450 64(37) ↑ 1200(1707) ↓ 187(267) ↓ 640(756) ↓ 654(375) ↓ 230(599) ↓ 40(74) ↓ 41(81) ↓ 15,850	12,650 234(193) ↓ 86(62) ↓ 19(53) ↓ 113(48) ↑ 844(913) ↓ 94(66) ↓ 230(599) ↓ 40(74) ↓ 41(81) ↓ 13,400	26,000 113(48) ↑ 844(913) ↓ 94(66) ↓ 230(599) ↓ 40(74) ↓ 41(81) ↓ 21,100	8,750 89(298) ↓ 165(131) ↓ 163(338) ↑ 252(682) ↓ 651(366) ↓ 249(141) ↓ 2,000	19,400 163(338) ↑ 252(682) ↓ 651(366) ↓ 249(141) ↓ 2,000	5,900 123(415) ↑ 268(751) ↓ 462(326) ↓ 354(170) ↓ 19,400	21,650 123(415) ↑ 268(751) ↓ 462(326) ↓ 354(170) ↓ 19,400	24,250 52(114) ↓ 487(777) ↓ 14(40) ↓ 146(103) ↓ 492(349) ↓ 124(128) ↓ 106(298) ↓ 351(739) ↓ 4(16) ↓ 19,100	11,400 34(15) ↑ 260(593) ↓ 8(31) ↓ 106(298) ↓ 351(739) ↓ 4(16) ↓ 27,100

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

Average Daily Trips

EXHIBIT 6-2: EPC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 1 OF 2)



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

Average Daily Trips

EXHIBIT 6-2: EPC (2024) TRAFFIC VOLUMES (ACTUAL VEHICLES) (PAGE 2 OF 2)

6 Street B & Driveway 2 2,750 27(8) ↓ 223(60) ↓ 19(5) ↓ 5(22) → 4(16) ↑ 36(187) ↑ 200 2,250	7 Street B & Driveway 3 2,250 32(8) ↓ 163(44) ↓ 28(7) ↓ 4(27) → 4(24) ↑ 27(137) ↑ 250 1,650	8 Street B & Driveway 4 1,650 32(8) ↓ 103(29) ↓ 28(7) ↓ 4(27) → 4(24) ↑ 19(86) ↑ 250 1,100	9 Street B & Driveway 5 1,100 20(6) ↓ 72(19) ↓ 12(4) ↓ 4(16) → 3(10) ↑ 11(60) ↑ 150 700	10 Street B & Street A 700 72(19) ↓ 11(60) →
11 Division St. & Avenue M 23,800 1633(2149) ← 1949(1680) → 93(25) ↓ 15(79) → 23,800 950	12 Division St. & Driveway 6 950 19(5) ↓ 75(20) ↓ 4(16) → 11(63) ↑ 200 750	13 Division St. & Driveway 7 750 28(7) ↓ 47(13) ↓ 4(24) → 7(39) ↑ 250 450	14 Division St. & Driveway 8 450 28(7) ↓ 19(5) ↓ 4(24) → 4(15) ↑ 250 200	15 Division St. & Driveway 9 200 19(5) ↓ 4(15) →
16 Division St. & Street A	17 Sierra Hwy. & Avenue I West 26,950 61(92) ↓ 86(1955) ↓ 14(16) → 120(174) ↓ 166(320) ↓ 852(1044) ↑ 7,050 31,000	18 Sierra Hwy. & Avenue I East 31,000 16(18) ↓ 1082(1111) ↓ 62(80) → 300(268) ↓ 45(57) ↓ 1213(1284) ↑ 5,550 33,850	19 Sierra Hwy. & Avenue M 29,200 118(105) ↓ 573(775) ↓ 253(249) ↓ 73(122) → 1820(1484) → 71(154) ↓ 207(177) ↓ 562(704) ↑ 902(618) ↑ 40,500 39,650	20 Sierra Hwy. & Avenue N 43,500 174(417) ↓ 973(1387) ↓ 457(311) → 106(109) → 135(266) ↓ 1227(1381) ↑ 11,900 42,200
21 4th St. & Avenue M/Columbia Wy. 5,100 93(137) ↓ 50(35) ↓ 10(27) ↓ 218(117) → 1534(1405) → 1198(922) ↓ 635(991) ↓ 23(42) ↑ 55,650 15,850	22 10th St. & Columbia Wy. 12,800 252(198) ↓ 86(62) ↓ 19(53) ↓ 189(282) → 642(771) → 654(375) ↓ 230(599) ↓ 40(74) ↑ 41(81) ↑ 37,650 13,400	23 SR-14 SB Ramps & Avenue N 9,000 89(298) ↓ 165(131) ↓ 170(383) ↓ 252(682) ↓ 651(366) ↓ 249(141) ↓ 21,100 2,000	24 SR-14 NB Ramps & Avenue N 5,900 123(415) ↓ 275(796) ↓ 462(326) → 354(170) ↓ 146(269) ↓ 481(289) ↑ 19,650 9,100	25 10th St. & Avenue N 24,250 52(114) ↓ 487(777) ↓ 14(40) ↓ 146(103) → 545(363) → 124(128) ↓ 106(298) ↓ 351(739) ↑ 4(16) ↑ 19,600 27,100

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

Average Daily Trips

6.3 INTERSECTION OPERATIONS ANALYSIS

EC and EPC (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 EC (2024) traffic conditions, which indicates that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours:

- SR-14 SB Ramps & Avenue M (#1) – LOS F AM and PM peak hours
- SR-14 NB Ramps & Avenue M (#2) – LOS F AM and PM peak hours
- 10th Street & Avenue M (#3) – LOS F AM and PM peak hours
- Sierra Highway & Avenue M (#19) – LOS F AM and PM peak hours
- 4th Street & Avenue N (#21) – LOS F AM and PM peak hours
- 10th Street & Columbia Way (#22) – LOS F AM and PM peak hours
- SR-14 SB Ramps & Avenue N (#23) – LOS E AM and PM peak hours
- SR-14 NB Ramps & Avenue N (#24) – LOS F PM peak hour only
- 10th Street & Avenue N (#25) – LOS F PM peak hour only

With the addition of Project traffic, there are no additional study area intersections anticipated to operate at an unacceptable LOS during peak hours under EPC (2024) traffic conditions. The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for both signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. The intersection operations analysis worksheets for EC and EPC (2024) traffic conditions are included in Appendices 6.1 and 6.2, respectively.

TABLE 6-1: INTERSECTION ANALYSIS FOR EPC (2024) CONDITIONS

			EC (2024)				EPC (2024)				Project-Related	
			Delay ¹		Level of		Delay ¹		Level of		Increase in Delay	
			(secs.)	(secs.)	Service	Service	(secs.)	(secs.)	Service	Service	(secs.) ³	(secs.) ³
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	SR-14 SB Ramps & Avenue M	CSS	>100.0	>100.0	F	F	>100.0	>100.0	F	F	>10.0	>10.0
2	SR-14 NB Ramps & Avenue M	CSS	>100.0	>100.0	F	F	>100.0	>100.0	F	F	>10.0	>10.0
3	10th St. & Avenue M	TS	>200.0	>200.0	F	F	>200.0	>200.0	F	F	>5.0	>5.0
4	Driveway 1 & Street A	CSS	Future Intersection				8.8	8.8	A	A	--	--
5	Street B & Avenue M	TS	Future Intersection				14.7	37.9	B	D	--	--
6	Street B & Driveway 2	CSS	Future Intersection				11.3	11.0	B	B	--	--
7	Street B & Driveway 3	CSS	Future Intersection				10.7	10.4	B	B	--	--
8	Street B & Driveway 4	CSS	Future Intersection				10.1	9.9	B	A	--	--
9	Street B & Driveway 5	CSS	Future Intersection				9.5	9.3	A	A	--	--
10	Street B & Street A	CSS	Future Intersection				8.6	8.4	A	A	--	--
11	Division St. & Avenue M	CSS	0.0	0.0	A	A	28.3	28.1	D	D	--	--
12	Division St. & Driveway 6	CSS	Future Intersection				9.1	9.1	A	A	--	--
13	Division St. & Driveway 7	CSS	Future Intersection				8.9	8.9	A	A	--	--
14	Division St. & Driveway 8	CSS	Future Intersection				8.7	8.7	A	A	--	--
15	Division St. & Driveway 9	CSS	Future Intersection				8.6	8.6	A	A	--	--
16	Division St. & Street A	CSS	Future Intersection				0.0	0.0	A	A	--	--
17	Sierra Hwy. & Avenue L West	TS	12.3	15.0	B	B	12.4	15.0	B	B	--	--
18	Sierra Hwy. & Avenue L East	TS	11.8	12.5	B	B	11.8	12.5	B	B	--	--
19	Sierra Hwy. & Avenue M	TS	>200.0	>200.0	F	F	>200.0	>200.0	F	F	>5.0	>5.0
20	Sierra Hwy. & Avenue N	TS	35.5	52.2	D	D	44.2	57.8	D	E	--	--
21	4th St. & Avenue M/Columbia Wy.	CSS	54.1	>100.0	F	F	64.5	>100.0	F	F	10.4	>10.0
22	10th St. & Columbia Wy.	CSS	>100.0	>100.0	F	F	>100.0	>100.0	F	F	>10.0	>10.0
23	SR-14 SB Ramps & Avenue N	CSS	40.0	47.9	E	E	40.0	47.9	E	E	--	--
24	SR-14 NB Ramps & Avenue N	CSS	33.5	>100.0	D	F	47.0	>100.0	E	F	--	--
25	10th St. & Avenue N	TS	31.9	126.8	C	F	35.9	141.8	D	F	--	15.0

* **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 sharing a single lane) are shown. HCM delay reported in seconds.

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

³ Project-related increase in delay is only calculated for deficient intersections within the jurisdiction of the City of Lancaster.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

All existing unsignalized study area intersections currently meet a traffic signal warrant under Existing (2022) traffic conditions. As such, traffic signal warrants have not been evaluated for EC (2024) traffic conditions. The traffic signal warrant analysis for EPC (2024) traffic conditions are based on the peak planning level ADT volume-based traffic signal warrants. There is no future unsignalized study area

intersection anticipated to meet a traffic signal warrant under EPC (2024) traffic conditions (see Appendix 6.3).

6.5 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for EC and EPC (2024) are presented in Table 6-2. As shown in Table 6-2, the following movements are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for conditions:

- SR-14 SB Ramps & Avenue M (#1), SB left turn lane – AM and PM peak hours
- SR-14 NB Ramps & Avenue M (#2), NB right turn lane – AM and PM peak hours

Worksheets for EC and EPC (2024) traffic conditions queuing analysis for are provided in Appendices 6.4 and 6.5, respectively.

TABLE 6-2: PEAK HOUR OFF-RAMP QUEUING SUMMARY FOR EPC (2024) CONDITIONS

Intersection	Movement	Available Stacking Distance (Feet)	EC (2024)				EPC (2024)			
			95th Percentile Queue (Feet)		Acceptable? ¹		95th Percentile Queue (Feet) ²		Acceptable? ¹	
			AM Peak	PM Peak	AM	PM	AM Peak	PM Peak	AM	PM
SR-14 SB Ramps & Avenue M (#1)	SBL	1,335	3,708	2,460	No	No	4,295	2,625	No	No
	SBR	330	18	38	Yes	Yes	18	38	Yes	Yes
SR-14 NB Ramps & Avenue M (#2)	NBL	1,375	280	328	Yes	Yes	290	335	Yes	Yes
	NBR	340	2,285	1,470	No	No	2,515	1,570	No	No
SR-14 SB Ramps & Avenue N (#23)	SBL	1,395	108	103	Yes	Yes	108	103	Yes	Yes
	SBR	335	13	163	Yes	Yes	13	163	Yes	Yes
SR-14 NB Ramps & Avenue N (#24)	NBL	1,380	55	420	Yes	Yes	58	453	Yes	Yes
	NBR	290	205	55	Yes	Yes	283	60	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 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.

6.6 DEFICIENCIES AND IMPROVEMENTS

6.6.1 IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that are anticipated to operate at a deficient LOS under EPC (2024) traffic conditions in an effort to achieve the allowable threshold from pre-project conditions (at a minimum). In some instances, the recommendations may exceed the Project's proportionate share by improving the intersection back to an acceptable LOS (i.e., LOS D or better), far exceeding the pre-project conditions. The effectiveness of the recommended improvement strategies to address EPC (2024) traffic deficiencies are presented in Table 6-3. The addition of Project traffic is anticipated to increase the pre-project delay by more than the allowable thresholds for both signalized and unsignalized intersections, with the exception of the intersection of SR-14 Southbound Ramps at Avenue N which has no change in delay. As such, no intersection improvements have been recommended for the intersection of SR-14 Southbound Ramps at Avenue N. Worksheets for EPC (2024) with improvements, intersection operations are provided in Appendix 6.6.

TABLE 6-3: INTERSECTION ANALYSIS FOR EPC (2024) CONDITIONS WITH IMPROVEMENTS

	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
		Northbound				Southbound				Eastbound							
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1 SR-14 SB Ramps & Avenue M																	
Pre-Project Conditions:	CSS	0	0	0	1	0	1	0	1	0	0	1	1>>	>1000	>1000	F	F
With Improvements:	IS	0	0	0	1	0	1	0	1	0	0	1	1>>	295.4	141.4	F	F
2 SR-14 NB Ramps & Avenue M																	
Pre-Project Conditions:	CSS	1	0	1	0	0	0	0	1	1>>	0	1	0	>1000	>1000	F	F
With Improvements:	IS	1	0	1	0	0	0	0	1	1>>	0	1	1>>	391.3	214.3	F	F
3 10th St. & Avenue M																	
Pre-Project Conditions:	TS	1	2	0	1	2	1	1	2	1	1	2	1	269.2	297.9	F	F
With Improvements: ⁴	TS	1	3	1	1	2	1	1	3	0	1	3	0	100.4	106.4	F	F
19 Sierra Hwy. & Avenue M																	
Pre-Project Conditions:	TS	1	2	1	1	2	1>>	1	2	1	1	2	1	460.5	416.7	F	F
With Improvements:	TS	1	2	1>	1	2	1>>	1	2	1	1	2	1	328.8	349.8	F	F
20 Sierra Hwy. & Avenue N																	
Pre-Project Conditions:	TS	1	2	0	0	2	1	1	0	1	0	0	0	35.5	52.2	D	D
With Improvements:	TS	1	2	0	0	2	1>	1	0	1	0	0	0	45.6	47.8	D	D
21 4th St. & Avenue M/Columbia Wy.																	
Pre-Project Conditions:	CSS	0	0	0	0	1	0	1	2	0	0	2	0	54.1	266.9	F	F
With Improvements:	IS	0	0	0	0	1	0	1	2	0	0	2	0	29.4	49.7	C	D
22 10th St. & Columbia Wy.																	
Pre-Project Conditions:	CSS	0	1	0	0	1	1	1	2	0	1	2	1	>1000	>1000	F	F
With Improvements: ⁵	IS	2	1	0	1	1	0	1	2	1	1	2	1	58.8	99.3	E	F
24 SR-14 NB Ramps & Avenue N																	
Pre-Project Conditions:	CSS	1	0	1	0	0	0	0	1	1>>	0	1	1>>	33.5	242.1	D	F
With Improvements:	IS	1	0	1	0	0	0	0	1	1>>	0	1	1>>	19.3	24.1	B	C
25 10th St. & Avenue N																	
Pre-Project Conditions:	TS	1	2	0	1	2	0	1	1	1	1	1	0	31.9	126.8	C	F
With Improvements:	TS	1	2	0	1	2	0	1	1	1>	1	1	0	31.1	113.0	C	F

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement; > = Right-Turn Overlap Phasing; >> = Free-Right Turn

² 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.

³ CSS = Cross-Street Stop; TS = Traffic Signal; **IS** = Improvement

⁴ Consistent with proposed Palmdale Warehouse frontage improvements (located on the southeast corner of 10th St. and Avenue M).

⁵ Consistent with access proposed for the Antelope Valley Commerce Center project (southwest corner of 10th Street & Avenue M/Columbia Way).

6.6.2 IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

Improvement strategies have been recommended at study area off-ramps that have been identified as deficient under EPC (2024) traffic conditions and are shown in Table 6-4. The improvements are consistent with the intersection improvements identified in Table 6-3. As shown on Table 6-4, the peak hour queues are anticipated to improve at the SR-14 and Avenue M interchange during the peak

hours. However, although the queues improve from the pre-project traffic conditions, there is still a deficiency anticipated in the AM peak hour for the southbound left turn movement at the SR-14 Southbound Ramps and Avenue M. Additional capacity through the addition of a second left turn lane would likely improve the peak hour queues back to acceptable levels under EPC (2024) traffic conditions.

TABLE 6-4: PEAK HOUR QUEUING SUMMARY FOR EPC (2024) CONDITIONS WITH IMPROVEMENTS

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet) ²		Acceptable? ¹	
			AM Peak	PM Peak	AM	PM
SR-14 SB Ramps & Avenue M (#1)	SBL	1,335	2,063 ²	1,264 ²	No	Yes
	SBR	330	45	60	Yes	Yes
SR-14 NB Ramps & Avenue M (#2)	NBL	1,375	82	109	Yes	Yes
	NBR	340	1,153 ^{2,3}	921 ^{2,3}	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the SR-14 Freeway mainline.

Worksheets for EPC (2024) conditions, with improvements, off-ramp queuing analysis worksheets are provided in Appendix 6.7.

7 LOCAL AND REGIONAL FUNDING MECHANISMS

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

7.1 CITY OF PALMDALE DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is located within the City of Palmdale and therefore will be subject to City of Palmdale DIF in an effort to address development throughout the City. There are roadway and intersection widening/upgrades/additions, signal installations/upgrades, and major structures are listed in the City of Palmdale's [Transportation Impact Fee Assessment Update](#). (8) All or a portion of the intersection improvement needs identified as part of this TA may be covered by the City's DIF. Traffic improvement needs may be eligible for a fee credit, at the discretion of the City of Palmdale, for specific improvements identified within the City's DIF program.

7.2 MEASURE M

Measure M, Los Angeles County's half-cent sales tax for transportation, was adopted by voters in 2016. Measure M funds a wide variety of transportation projects and services throughout the County, including local street repair, sidewalk repair, expansion of public transportation, earthquake retrofitting of bridges, and subsidizing transit fares.

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8 REFERENCES

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3. **Los Angeles County.** *2010 Congestion Management Program*. County of Los Angeles : Los Angeles County Metropolitan Transportation Authority, 2010.
4. **Transportation Research Board.** *Highway Capacity Manual (HCM)*. 6th Edition. s.l. : National Academy of Sciences, 2016.
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).
6. **City of Lancaster.** *Local Transportation Assessment Guidelines*. City of Lancaster : s.n., January 5, 2021.
7. **California Department of Transportation.** *Guide for the Preparation of Traffic Impact Studies*. December 2002.

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