



Slover Avenue & Cypress Avenue Warehouse

**TRAFFIC STUDY
CITY OF FONTANA**

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TABLE OF CONTENTS

TABLE OF CONTENTS.....	I
APPENDICES.....	III
LIST OF EXHIBITS.....	I
LIST OF TABLES	I
LIST OF ABBREVIATED TERMS	I
1 INTRODUCTION.....	1
1.1 Summary of Findings.....	1
1.2 Project Overview.....	3
1.3 Analysis Scenarios	3
1.4 Study Area.....	5
1.5 Deficiencies	8
1.6 Recommendations	9
1.7 Truck Access	13
1.8 Queuing Analysis.....	13
1.9 Roadway Segment Capacity Analysis.....	16
1.10 Vehicle Miles Traveled (VMT) Analysis	16
2 METHODOLOGIES	17
2.1 Level of Service	17
2.2 Intersection Capacity Analysis	17
2.3 Roadway Segment Capacity Analysis Methodology	19
2.4 Traffic Signal Warrant Analysis Methodology.....	20
2.5 Minimum Level of Service (LOS)	21
2.6 Deficiency Criteria	21
2.7 Project Fair Share Calculation Methodology	21
3 AREA CONDITIONS	23
3.1 Existing Circulation Network.....	23
3.2 General Plan Circulation Elements.....	23
3.3 Truck Routes	26
3.4 Bicycle & Pedestrian Facilities.....	26
3.5 Transit Service	26
3.6 Existing Traffic Counts.....	26
3.7 Existing (2021) Intersection Operations Analysis	33
3.8 Existing (2021) Traffic Signal Warrants Analysis	33
3.9 Existing (2021) Roadway Segment Analysis.....	34
4 PROJECTED FUTURE TRAFFIC.....	35
4.1 Project Trip Generation.....	35
4.2 Project Trip Distribution.....	38
4.3 Modal Split	38
4.4 Project Trip Assignment.....	38
4.5 Background Traffic	42
4.6 Cumulative Development Traffic	42
4.7 Near-Term Traffic Conditions.....	47
5 OPENING YEAR CUMULATIVE (2023) TRAFFIC CONDITIONS.....	49

5.1	Roadway Improvements	49
5.2	Opening Year Cumulative (2023) Without Project Traffic Volume Forecasts	49
5.3	Opening Year Cumulative (2023) With Project Traffic Volume Forecasts	49
5.4	Intersection Operations Analysis	52
5.5	Traffic Signal Warrants Analysis	53
5.6	Roadway Segment Analysis.....	53
5.7	Deficiencies and Improvements	54
6	LOCAL AND REGIONAL FUNDING MECHANISMS.....	55
6.1	Measure “I” Funds	55
6.2	City of Fontana Development Impact Fee (DIF).....	55
6.3	Fair Share Contribution	56
7	VEHICLE MILES TRAVELED	57
7.1	Project Screening	57
7.2	VMT Methodology	57
7.3	VMT Analysis	57
7.4	Conclusion.....	61
8	REFERENCES.....	63

APPENDICES

APPENDIX 1.1: APPROVED TRAFFIC STUDY SCOPING AGREEMENT

APPENDIX 3.1: EXISTING & HISTORICAL TRAFFIC COUNTS

APPENDIX 3.2: EXISTING (2021) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

APPENDIX 3.3: EXISTING (2021) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

APPENDIX 5.1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

APPENDIX 5.2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

APPENDIX 5.3: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

APPENDIX 5.4: OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

APPENDIX 5.5: OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH IMPROVEMENTS

APPENDIX 5.6: OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS QUEUING ANALYSIS

APPENDIX 7.1: SBCTA VMT SCREENING TOOL RESULTS

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LIST OF EXHIBITS

EXHIBIT 1-1: LOCATION MAP.....	2
EXHIBIT 1-2: PRELIMINARY SITE PLAN	4
EXHIBIT 1-3: STUDY AREA	7
EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS	10
EXHIBIT 1-5: TRUCK ACCESS AT OLEANDER AVENUE.....	14
EXHIBIT 1-6: TRUCK ACCESS AT SLOVER AVENUE.....	15
EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROL.....	24
EXHIBIT 3-2: CITY OF FONTANA HIERARCHY OF STREETS	25
EXHIBIT 3-3: CITY OF FONTANA TRUCK ROUTES	27
EXHIBIT 3-4: CITY OF FONTANA BICYCLE FACILITIES.....	28
EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES.....	29
EXHIBIT 3-6: EXISTING TRANSIT ROUTES	30
EXHIBIT 3-7: EXISTING (2021) TRAFFIC VOLUMES	32
EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION	39
EXHIBIT 4-2: PROJECT (TRUCKS) TRIP DISTRIBUTION	40
EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES	41
EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP	43
EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES	44
EXHIBIT 5-1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUMES	50
EXHIBIT 5-2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES	51

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LIST OF TABLES

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS	6
TABLE 1-2: STUDY AREA ROADWAY SEGMENTS	8
TABLE 1-3: SUMMARY OF LOS	8
TABLE 1-4: SUMMARY OF IMPROVEMENTS AND ROUGH ORDER OF MAGNITUDE COSTS.....	12
TABLE 1-5: QUEUING ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS WITH PROJECT	16
TABLE 1-6: SUMMARY OF ROADWAY SEGMENT CAPACITY ANALYSIS.....	16
TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS.....	18
TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS	19
TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS.....	20
TABLE 2-4: THRESHOLDS OF SIGNIFICANT IMPACT	21
TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS	33
TABLE 3-2: ROADWAY SEGMENT ANALYSIS FOR EXISTING (2021) CONDITIONS.....	34
TABLE 4-1: PROJECT TRIP GENERATION RATES	36
TABLE 4-2: TRIP GENERATION SUMMARY (ACTUAL VEHICLES)	37
TABLE 4-3: TRIP GENERATION SUMMARY (PCE)	38
TABLE 4-4: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (PAGE 1 OF 2).....	45
TABLE 4-4: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (PAGE 2 OF 2).....	46
TABLE 5-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS	52
TABLE 5-2: ROADWAY SEGMENT ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS...	53
TABLE 5-3: INTERSECTION DEFICIENCIES AND IMPROVEMENTS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS	54
TABLE 6-1: PROJECT FAIR SHARE CALCULATIONS FOR INTERSECTIONS	56
TABLE 7-1: EMPLOYMENT ESTIMATES.....	58
TABLE 7-2: PROJECT VMT PER SP.....	61
TABLE 7-3: PROJECT VMT PER SP COMPARISON	61

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
APN	Assessor's Parcel Number
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
EVA	Emergency Vehicle Access
FAR	Floor to Area Ratio
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
OPR	Office of Planning and Research
PHF	Peak Hour Factor
Project	Slover Avenue & Cypress Avenue Warehouse
RTP	Regional Transportation Plan
SB 743	Senate Bill 743
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SED	Socio-Economic Data
SP	Service Population
TAZ	Traffic Analysis Zone
TIA	Traffic Impact Analysis
TPA	Transit Priority Area
TS	Traffic Study
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the Traffic Study (TS) for the proposed Slover Avenue & Cypress Avenue Warehouse development ("Project"), which is located on the northwest corner of Cypress Avenue and Slover Avenue in the City of Fontana as shown on Exhibit 1-1.

The purpose of this TS is to evaluate the potential deficiencies related to traffic, identify circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies in order to achieve acceptable operational conditions at study area intersections and ensure consistency with the City's General Plan. This TS has been prepared in accordance with the City of Fontana's Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (October 21, 2020) and through consultation with City of Fontana staff during the scoping process. (1) The Project traffic study scoping agreement is provided in Appendix 1.1 of this TS, which has been approved by the City of Fontana.

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 construct Slover Avenue at its ultimate half-width as a Primary Highway (104-foot right-of-way) from the Project's western boundary to Cypress Avenue consistent with the City's standards.
- Project to widen the eastern curb on Oleander Avenue to accommodate 28-feet of pavement within a 44-foot right-of-way from the Project's northern boundary to Slover Avenue consistent with the City's standards.
- Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report.

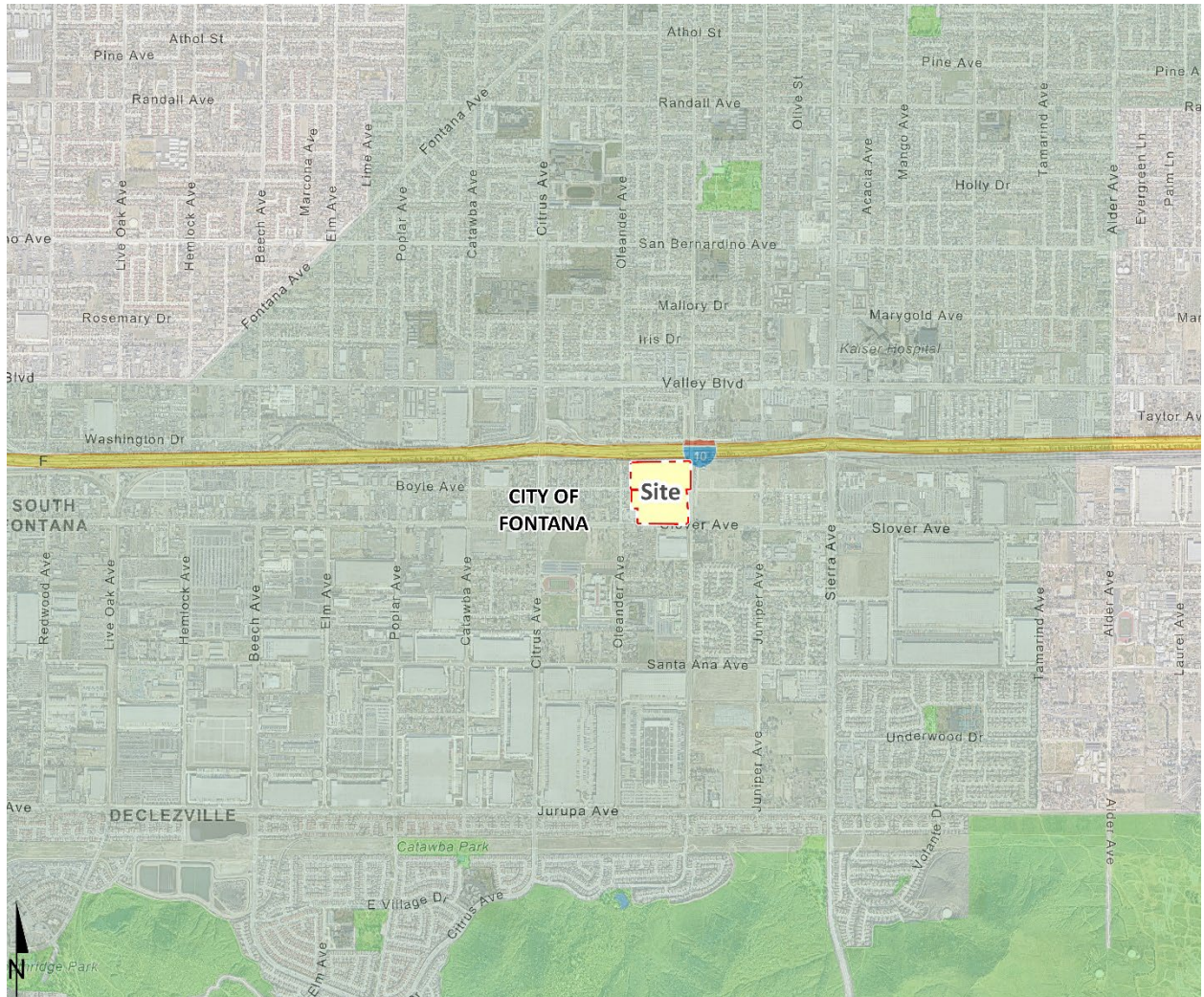
The following intersections are anticipated to operate at an unacceptable level of service (LOS) with the addition of Project traffic under Opening Year Cumulative traffic conditions:

- Citrus Avenue & I-10 EB Ramps (#2) – LOS F AM peak hour only
- Citrus Avenue & Slover Avenue (#3) – LOS F AM and PM peak hours
- Oleander Avenue & Slover Avenue (#7) – LOS F AM peak hour only
- Cypress Avenue & Slover Avenue (#9) – LOS D AM peak hour only
- Juniper Avenue & Slover Avenue (#10) – LOS E AM peak hour; LOS F PM peak hour

However, only the following intersections require improvements to address the peak hour deficiencies based on the net change in delay per the City's thresholds:

- Citrus Avenue & I-10 EB Ramps (#2)
- Citrus Avenue & Slover Avenue (#3)
- Juniper Avenue & Slover Avenue (#10)

EXHIBIT 1-1: LOCATION MAP



The Project Applicant's shall pay its requisite fees towards future regional roadway improvements consistent with the City's requirements (see Section 6 *Local and Regional Funding Mechanisms*).

As required by City Guidelines, a project level Vehicle Miles Traveled (VMT) analysis was conducted consistent with the requirements identified for single use warehouse projects. Based on the results of this analysis the following findings are made:

- The Project's VMT impact was evaluated against screening criteria as outlined in the City Guidelines. The Project was not found to meet any available screening criteria, and a model based VMT analysis was performed.
- The Project's VMT analysis found the Project to exceed the City's VMT per employee threshold by 0.21% in baseline conditions and be below the City's VMT threshold by 49.27% in cumulative conditions. However, with the inclusion of project design features, the Project reduces its VMT per employee to below the City's impact threshold in the baseline conditions.
- The Project was found to be consistent with the underlying land use and zoning assumptions in the City's General Plan and the cumulative effect on VMT is considered less than significant.
- The Project is found to have a less than significant impact.

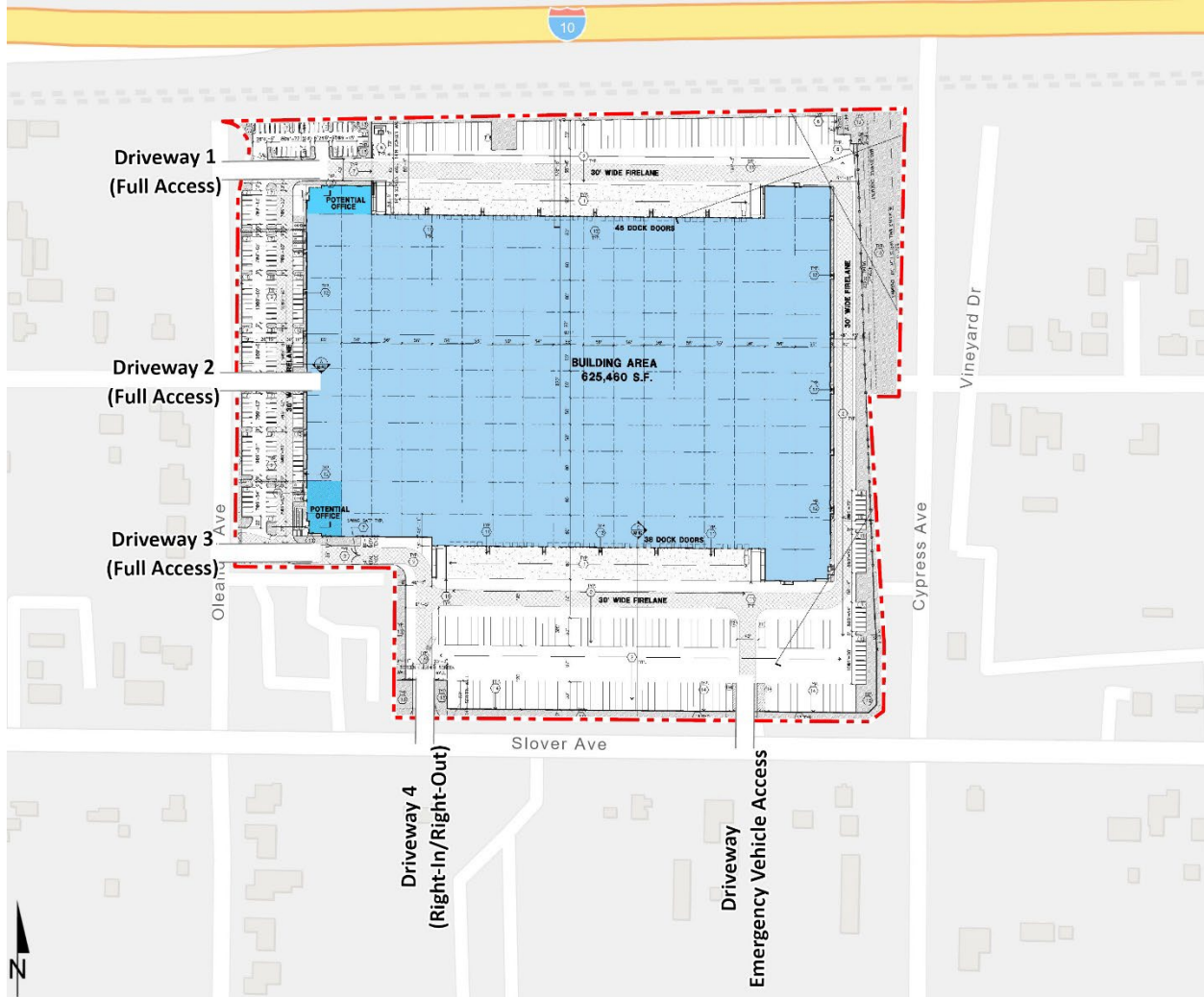
Detail traffic analysis can be found in Section 7 *Vehicle Miles Traveled Analysis* of this TS.

1.2 PROJECT OVERVIEW

The proposed Project includes the development of 469,095 square feet of high-cube fulfillment center warehouse use (75% of the total square footage) and 156,365 square feet of high-cube cold storage warehouse use (25% of the total square footage) for a total of 625,460 square feet. The Project is anticipated to be developed within a single phase with an Opening Year of 2023. The preliminary site plan for the proposed Project is shown on Exhibit 1-2. As indicated on Exhibit 1-2, access to the Project site will be provided via Boyle Avenue via three full access driveways and one right-in/right-out access point along Slover Avenue (easterly access on Slover Avenue is to be designated as emergency vehicle access or EVA only). Regional access to the Project site is available from the I-10 Freeway via the Citrus Avenue and Sierra Avenue interchanges.

Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, (11th Edition, 2021) and the High Cube Warehouse Trip Generation Study (WSP, January 2019) were used to estimate the trip generation. (2) (3) The Project is anticipated to generate a total of 1,334 two-way trips per day with 74 AM peak hour trips and 96 PM peak hour trips (actual vehicles). The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 1-2: PRELIMINARY SITE PLAN



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 (2021)
- Opening Year Cumulative (2023) Without Project
- Opening Year Cumulative (2023) With Project

1.3.1 EXISTING (2021) CONDITIONS

Information for Existing (2021) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.3.2 OPENING YEAR CUMULATIVE (2023) CONDITIONS

The Opening Year Cumulative (2023) conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2021) conditions of 2.33% is included for Opening Year Cumulative (2023) traffic conditions. The near-term conditions analysis will be utilized to determine if improvements funded through regional transportation fee programs, such as the City's Development Impact Fee (DIF) program, or other approved funding mechanisms can accommodate the long-range cumulative traffic at the target level of service (LOS) identified by the City of Fontana (lead agency). Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF facilities) are identified as such.

1.4 STUDY AREA

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

The 10 study area intersections shown on Exhibit 1-3 and listed in Table 1-1, and 3 roadway segments are identified on Table 1-2 were selected for evaluation in this TS based on consultation with City of Fontana staff. The study area includes intersections where the Project is anticipated to contribute 50 or more peak hour trips per the City of Fontana'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 San Bernardino 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. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. Study area intersections that are identified as CMP facilities in the County of San Bernardino per the San Bernardino County Transportation Authority (SBCTA) CMP are indicated on Table 1-1. (4)

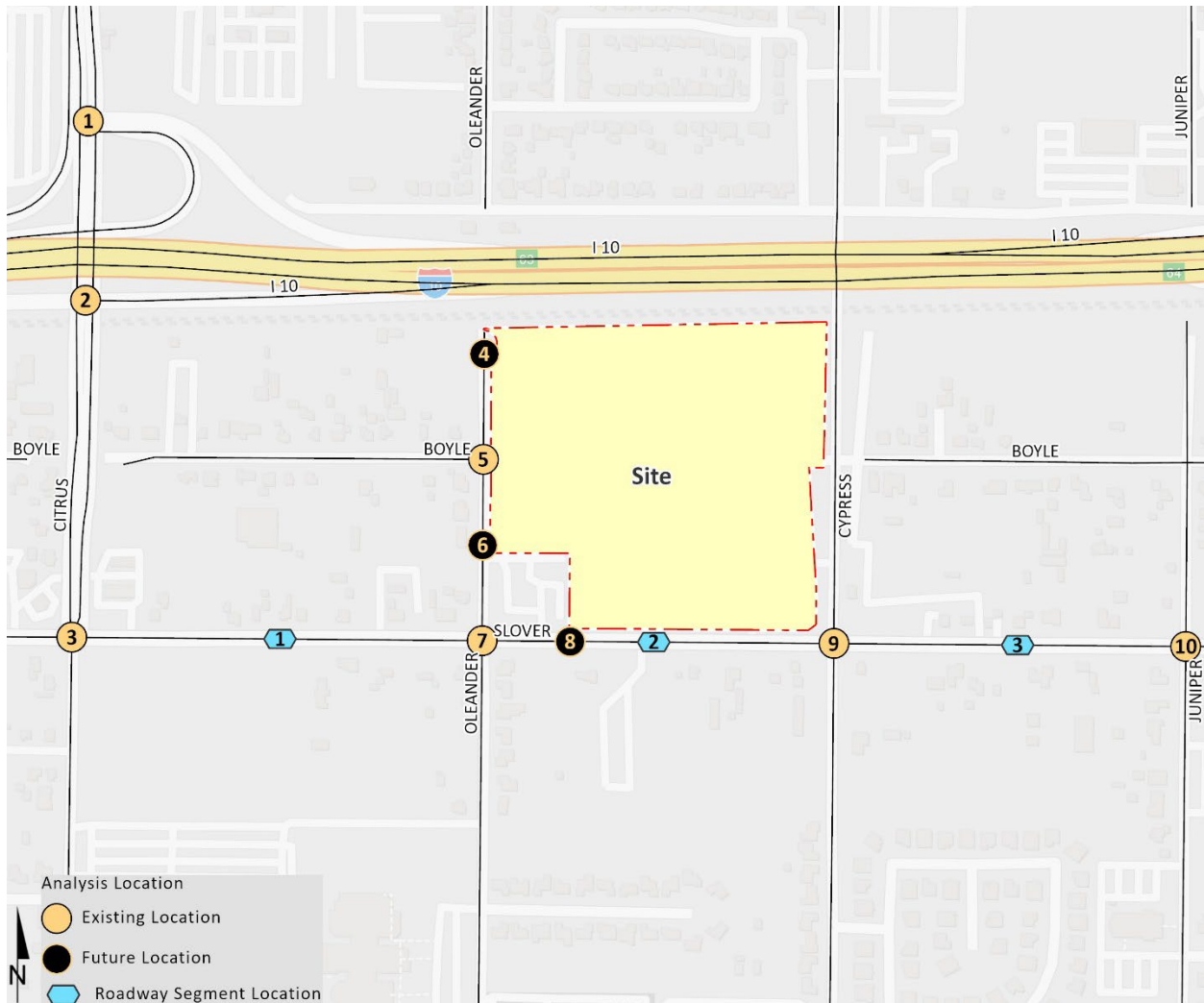
TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Citrus Av. & I-10 Westbound Ramps	City of Fontana, Caltrans	No
2	Citrus Av. & I-10 Eastbound Ramps	City of Fontana, Caltrans	No
3	Citrus Av. & Slover Av.	City of Fontana	No
4	Oleander Av. & Driveway 1 – Future Intersection	City of Fontana	No
5	Oleander Av. & Boyle Av./Driveway 2	City of Fontana	No
6	Oleander Av. & Driveway 3 – Future Intersection	City of Fontana	No
7	Oleander Av. & Slover Av.	City of Fontana	No
8	Driveway 4 & Slover Av. – Future Intersection	City of Fontana	No
9	Cypress Av. & Slover Av.	City of Fontana	No
10	Juniper Av. & Slover Av.	City of Fontana	No

TABLE 1-2: STUDY AREA ROADWAY SEGMENTS

#	Roadway Segments
1	Slover Av. between Citrus Av. & Oleander Av.
2	Slover Av. between Oleander Av. & Cypress Av.
3	Slover Av. between Cypress Av. & Juniper Av.

EXHIBIT 1-3: STUDY AREA



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 5 *Opening Year Cumulative (2023) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-3.

TABLE 1-3: SUMMARY OF LOS

#	Intersection	Existing		2023 Without Project		2023 With Project	
		AM	PM	AM	PM	AM	PM
1	Citrus Av. & I-10 WB Ramps	●	●	●	●	●	●
2	Citrus Av. & I-10 EB Ramps	●	●	●	●	●	●
3	Citrus Av. & Slover Av.	●	●	●	●	●	●
4	Oleander Av. & Driveway 1	N/A	N/A	N/A	N/A	●	●
5	Oleander Av. & Boyle Av./Driveway 2	●	●	●	●	●	●
6	Oleander Av. & Driveway 3	N/A	N/A	N/A	N/A	●	●
7	Oleander Av. & Slover Av.	●	●	●	●	●	●
8	Driveway 4 & Slover Av.	N/A	N/A	N/A	N/A	●	●
9	Cypress Av. & Slover Av.	●	●	●	●	●	●
10	Juniper Av. & Slover Av.	●	●	●	●	●	●

● = A - C ● = D/E ● = F

1.5.2 EXISTING CONDITIONS

The following study area intersections are currently operating at an unacceptable LOS (i.e., LOS D or worse) during the peak hours under Existing (2021) traffic conditions:

- Cypress Avenue & Slover Avenue (#9) – LOS D AM peak hour only
- Juniper Avenue & Slover Avenue (#10) – LOS F PM peak hour only

1.5.2 OPENING YEAR CUMULATIVE CONDITIONS

The following study area intersections are anticipated to operate at an unacceptable LOS (i.e., LOS D or worse) during the peak hours under Opening Year Cumulative (2023) Without Project traffic conditions:

- Citrus Avenue & I-10 EB Ramps (#2) – LOS F AM peak hour only
- Citrus Avenue & Slover Avenue (#3) – LOS F AM and PM peak hours
- Oleander Avenue & Slover Avenue (#7) – LOS E AM peak hour only
- Cypress Avenue & Slover Avenue (#9) – LOS D AM peak hour only
- Juniper Avenue & Slover Avenue (#10) – LOS E AM peak hour; LOS F PM peak hour

No additional intersections are anticipated to operate at an unacceptable LOS (i.e., LOS D or worse) during the peak hours under Opening Year Cumulative (2023) With Project traffic conditions, in addition to the intersections listed above. However, the LOS at the intersection

of Oleander Avenue and Slover Avenue is anticipated to worsen from LOS E to LOS F with the addition of Project traffic.

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. The site adjacent recommendations are shown on Exhibit 1-4.

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

- Project to maintain the stop control on the westbound approach.
- Project to accommodate shared left-right turn lane on westbound approach.

Recommendation 2 – Oleander Avenue & Boyle Avenue/Driveway 2 (#5) – The following improvements are necessary to accommodate site access:

- Project to maintain the stop control on the westbound approach.
- Project to accommodate shared left-through-right turn lane on westbound approach.

Recommendation 3 – Oleander Avenue & Driveway 3 (#6) – The following improvements are necessary to accommodate site access:

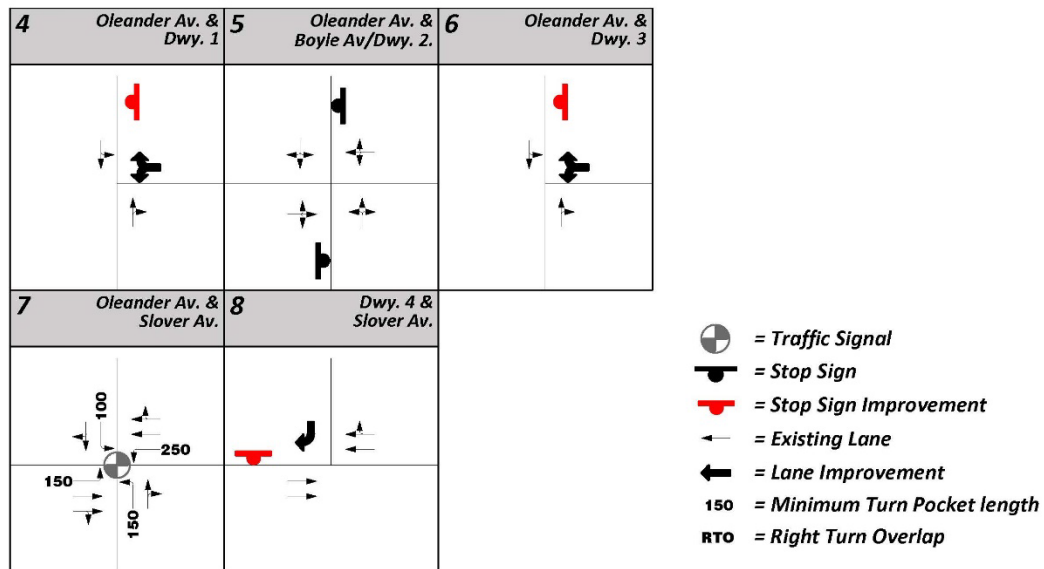
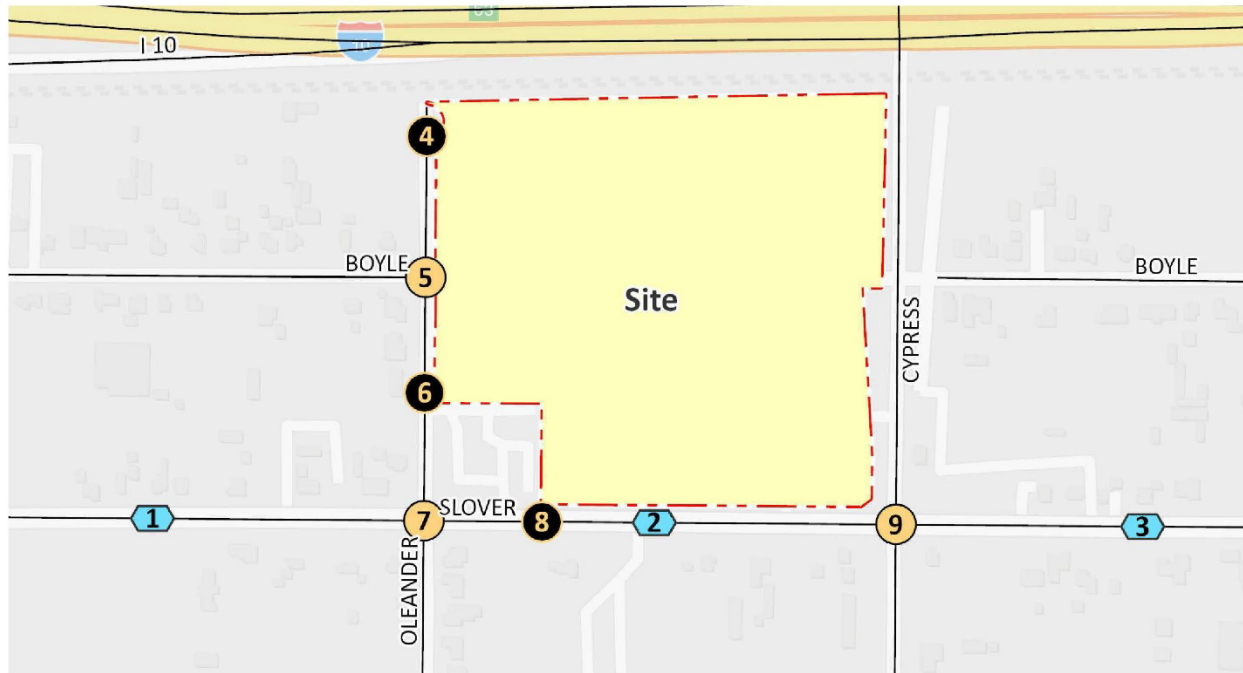
- Project to maintain the stop control on the westbound approach.
- Project to accommodate shared left-right turn lane on westbound approach.

Recommendation 4 – Driveway 4 & Slover Avenue (#8) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach (Project driveway) and a right turn lane. Driveway will be restricted to right-in/right-out access only with the construction of the future median along Slover Avenue.

Recommendation 6 – Slover Avenue is an east-west oriented roadway located on the Project's southern boundary. Project to construct Slover Avenue at its ultimate half-width as a Primary Highway (104-foot right-of-way) from Oleander Avenue to Cypress Avenue consistent with the City's standards.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



Recommendation 7 – Oleander Avenue is a north-south oriented roadway located to the west of the Project (not on Project boundary). Project to widen the eastern curb on Oleander Avenue to accommodate 28-feet of pavement within a 44-foot right-of-way from the Project’s northern boundary to Slover Avenue 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 Caltrans and City of Fontana sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

Under Opening Year Cumulative (2023) With Project traffic conditions, two intersections are anticipated to have improvements due to net change in delay is more than the City’s thresholds for deficient study area intersections under pre-project traffic conditions. The Project would be required to pay fair share fees consistent with the City’s requirements (see Section 6 *Local and Regional Funding Mechanisms*).

TABLE 1-4: SUMMARY OF IMPROVEMENTS AND ROUGH ORDER OF MAGNITUDE COSTS

#	Intersection	Jurisdiction	2023 With Project	Improvements in Fee Program? ¹	Project Responsibility ²	Total Cost ³	Fair Share % ⁴	Fair Share Cost ⁵
2	Citrus Av. & I-10 EB Ramps	Caltrans	EB right turn lane	Yes	Fees	\$0	5.7%	\$0
					Total:	\$0		\$0
3	Citrus Av. & Slover Av.	Fontana	SB right turn lane		Fees	\$0	15.7%	\$0
			Modify the traffic signal to implement overlap phasing on the SB and WB right turn lanes ⁷		Fees	\$0		\$0
					Total:	\$0		\$0
10	Juniper Av. & Slover Av.	Fontana	A Traffic Signal	No	Fair Share	\$600,000	34.0%	\$204,255
					Total:	\$600,000		\$204,255
Total Costs for Opening Year (2023) Improvements						\$600,000		\$204,255
Total Project Fair Share Contribution to the City of Fontana⁶								\$204,255

¹ Improvements included in County of San Bernardino regional fee program for local and regional components.

² Identifies the Project's responsibility to construct an improvement or contribute fair share or fee payment towards the implementation of the improvement shown.

³ Costs have been estimated using the data provided in Appendix "G" of the CMP for preliminary construction costs.

⁴ Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 6-1 for Fair Share Calculations.

⁵ Rough order of magnitude cost estimate.

⁶ Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within the City.

⁷ Improvement requires the restriction of southbound U-turns.

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 for Oleander Avenue and Exhibit 1-6 for Slover Avenue). A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. As shown on Exhibit 1-5 and Exhibit 1-6, the following curb radius changes are necessary in order to accommodate the ingress and egress of heavy trucks:

- Oleander Avenue at Driveway 1 should provide a 50-foot curb radius on the southeast corner.
- Slover Avenue at Driveway 4 should provide a 50-foot curb radius on the northeast corner.

1.8 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways of Oleander Avenue, Slover Avenue, and at the Project's driveways for Opening Year Cumulative (2023) traffic conditions to determine the turn pocket lengths and lane geometric necessary to accommodate near-term 95th percentile queues and recommend storage lengths for the turning movements shown on Exhibit 1-4. The analysis was conducted for the weekday AM and weekday PM peak hours using the SimTraffic modeling software. The Opening Year Cumulative (2023) queuing results are provided in Table 1-5 and Appendix 5.6 of this TS.

SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine-tuning signal operations. SimTraffic uses the input parameters from Synchro (Version 11) to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations). The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn lane. A SimTraffic simulation has been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 30-minute periods with 60-minute recording intervals.

EXHIBIT 1-5: TRUCK ACCESS AT OLEANDER AVENUE

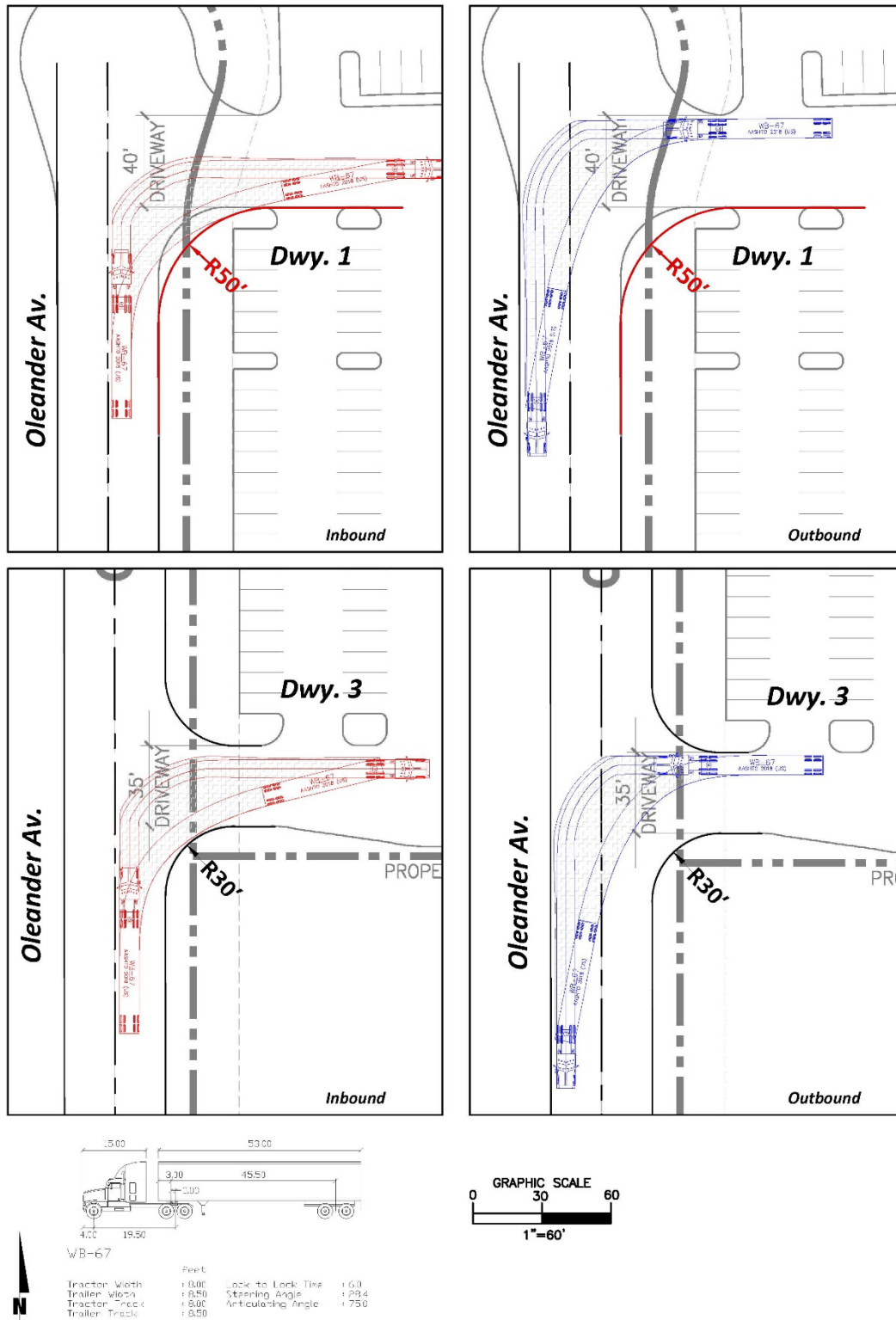


EXHIBIT 1-6: TRUCK ACCESS AT SLOVER AVENUE

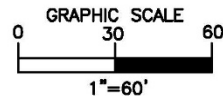
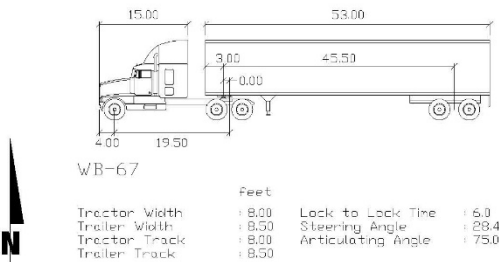
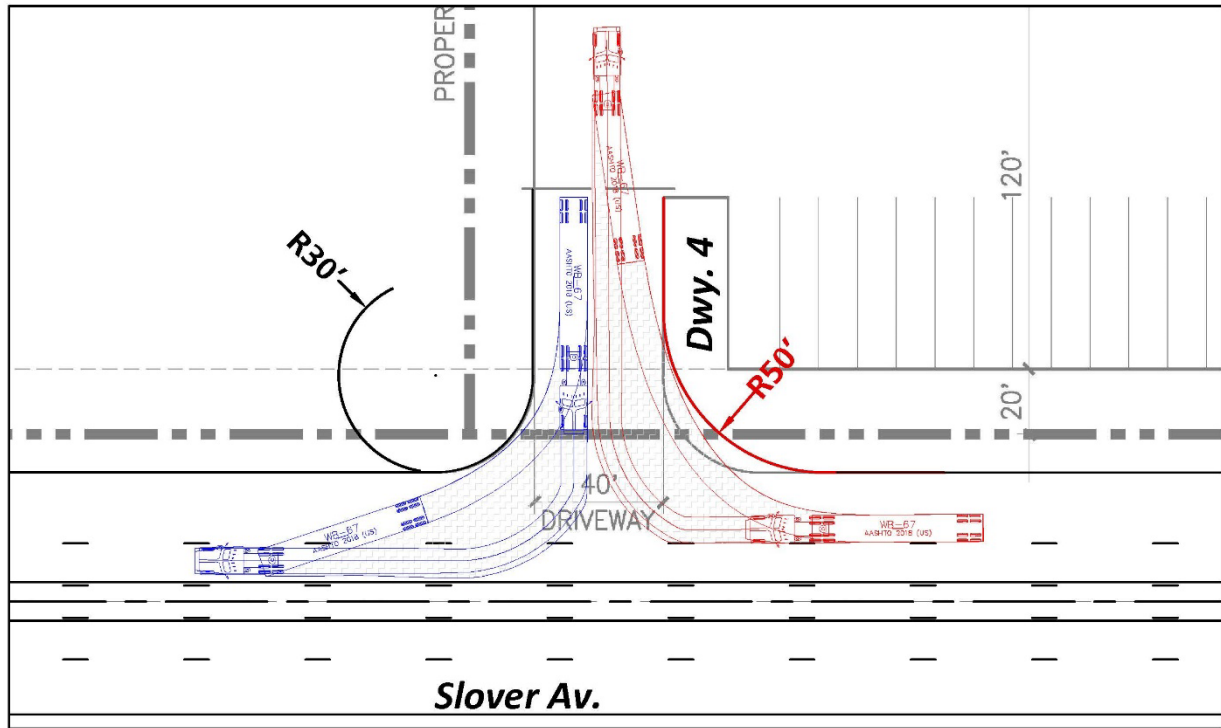


TABLE 1-5: QUEUING ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS WITH PROJECT

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? ¹	
				AM Peak Hour	PM Peak Hour	AM	PM
4	Oleander Av. & Driveway 1	WBLR	100	18	39	Yes	Yes
5	Oleander Av. & Boyle Av./Driveway 2	WBLTR	100	51	47	Yes	Yes
6	Oleander Av. & Driveway 3	WBLR	100	23	45	Yes	Yes
7	Oleander Av. & Slover Av.	SBL	100	65	57	Yes	Yes
		EBL	150	95	72	Yes	Yes
8	Driveway 4 & Slover Av.	SBR	100	20	28	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 in this table, where applicable.

1.9 ROADWAY SEGMENT CAPACITY ANALYSIS

Roadway segment capacity analysis was conducted along Slover Avenue for three segments for Existing (2021), Opening Year Cumulative (2023) Without Project, and Opening Year Cumulative (2023) With Project conditions. As shown on Table 1-6, these segments are currently operating and are anticipated to continue to operate at acceptable LOS under Existing and Opening Year Cumulative conditions based on City's Circulation Element roadway segment capacities.

TABLE 1-6: SUMMARY OF ROADWAY SEGMENT CAPACITY ANALYSIS

#	Roadway	Segment Limits	Existing			2023 Without Project			2023 With Project		
			2021	V/C ¹	LOS ²	2023	V/C ¹	LOS ²	2023	V/C ¹	LOS ²
1	Slover Av.	Between Citrus Av. & Oleander Av.	12,679	0.35	A	15,488	0.43	A	16,538	0.46	A
2		Between Oleander Av. & Cypress Av.	13,843	0.38	A	16,679	0.46	A	17,579	0.49	A
3		Between Cypress Av. & Juniper Av.	14,133	0.39	A	17,376	0.48	A	18,126	0.50	A

¹ V/C = Volume to Capacity Ratio

² LOS = Level of Service

1.10 VEHICLE MILES TRAVELED (VMT) ANALYSIS

The Project was evaluated against City Guideline's stated VMT screening criteria but was found to not meet available screening thresholds. As required by City Guidelines, a project level VMT analysis was performed consistent with the requirements identified for single use warehouse projects. The Project was not found to exceed 15% below the County of San Bernardino's baseline regional average VMT per SP measures of VMT. The Project's impact to VMT is therefore presumed to be less than significant. Detail traffic analysis can be found in Section 7 *Vehicle Miles Traveled Analysis* of this TS.

2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with the City of Fontana's traffic study guidelines. (1)

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 Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Fontana requires signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 11) analysis software package.

The traffic modeling and signal timing optimization software package Synchro (Version 11) is utilized to analyze signalized intersections within the study area. 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.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
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	F
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	F
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	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM, 6th Edition

A saturation flow rate of 1900 has been utilized for all study area intersections located within the City of Fontana. The peak hour traffic volumes are adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common 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., $PHF = [Hourly Volume] / [4 \times Peak\ 15\text{-minute Flow Rate}]$). 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. (5)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Fontana require the operations of unsignalized intersections be evaluated using the methodology described the HCM. (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM, 6th Edition

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. Per the HCM, the highest delay and associated LOS on the minor approach is reported for two-way stop-controlled intersections. For all-way stop controlled intersections, LOS is computed for the intersection as a whole and the average delay is reported (similar to signalized intersections).

2.3 ROADWAY SEGMENT CAPACITY ANALYSIS METHODOLOGY

Roadway segment operations have been evaluated using the applicable average daily traffic (ADT) roadway capacity values provided in the City of Fontana General Plan. The roadway capacities utilized for the purposes of this analysis are considered “rule of thumb” estimates for planning purposes and are affected by such factors as intersections (spacing, configuration and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic) and pedestrian bicycle traffic. The City of Fontana Circulation Element identifies 9,000 vehicles per lane per day for divided arterials.

While using ADT for planning purposes is suitable with regards to evaluating potential volume to capacity with future forecasts, it is not suitable for operational analysis because it does not account for the factors listed previously. As such, where the ADT based roadway segment analysis indicates a deficiency (unacceptable LOS), a review of the more detailed peak hour intersection analysis and progression analysis are undertaken. The more detailed peak hour intersection analysis explicitly accounts for factors that affect roadway capacity. Therefore, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes.

2.4 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TS uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (CA MUTCD). (6)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (6) Specifically, this TS utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TS because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). 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.

Traffic signal warrant analyses were performed for the following unsignalized study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
5	Oleander Av. & Boyle Av.	Fontana
11	Juniper Av. & Slover Av.	Fontana

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 *Opening Year Cumulative (2023) Traffic 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. Traffic signal warrant analysis has not been performed for unsignalized intersections with limited access/turn restrictions.

2.5 MINIMUM LEVEL OF SERVICE (LOS)

The City's General Plan recommends a LOS standard of LOS C. Intersections which are forecast to operate at unsatisfactory conditions (i.e., at LOS worse than LOS C for City intersections) shall be identified as cumulatively deficient intersections. Therefore, any intersection operating at LOS D, E, or F will be considered deficient for the purposes of this analysis. (1)

2.6 DEFICIENCY CRITERIA

For the intersections that lie within the City of Fontana, determination of direct project-related deficiencies will be based on a comparison of without and with project levels of service for each analysis year. A project-related deficiency occurs if project traffic increases the average delay at an intersection by more than the thresholds identified on Table 2-4. The thresholds for LOS A, B, and C do not apply to projects consistent with the General Plan.

TABLE 2-4: THRESHOLDS OF SIGNIFICANT IMPACT

Pre-Project LOS	Significant Impact Threshold ¹
A/B	10.0 Seconds
C	8.0 Seconds
D	5.0 Seconds
E	3.0 Seconds
F	1.0 Second

Source: [Fontana Traffic Study Guidelines](#), October 21, 2020.

¹ Increase in delay

A Project's contribution to a deficiency can be reduced/improved if the Project is required to implement or fund its fair share of improvements designed to alleviate the potential deficiency.

2.7 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TS identifies that the proposed Project would have a significant cumulative impact to a roadway facility, and the recommended mitigation measure is a fair share monetary contribution, the following methodology was applied to determine the fair share contribution. A project's fair share contribution at an off-site study area intersection is determined based on the following equation, which is the ratio of Project traffic to net new traffic, where net new traffic is total future traffic (Opening Year Cumulative conditions) subtracts less baseline traffic:

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{Opening Year Cumulative Total Traffic} - \text{Existing Baseline Traffic})$$

The Project fair share contribution calculations are presented in Section 6 *Local and Regional Funding Mechanisms* of this TS.

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3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Fontana staff (Appendix 1.1), the study area includes a total of 11 existing and future intersections as shown on Exhibit 3-1. 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 GENERAL PLAN CIRCULATION ELEMENTS

As noted previously, the Project site is located within the City of Fontana. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on City of Fontana General Plan Hierarchy of Streets, are described subsequently. Exhibit 3-2 shows the City of Fontana General Plan Circulation Element. The City of Fontana General Plan does not include roadway cross-sections in its General Plan.

Major Highways are four-to-six-lane divided roadways (typically divided by a raised median or painted two-way turn-lane). These roadways serve both regional through-traffic and inter-city traffic and typically direct traffic onto and off-of the freeways. The following study area roadway within the City of Fontana is classified as a Major Highways:

- Citrus Avenue, north of Slover Avenue

Primary Highways are four-lane roadways and may include a painted median. These roadways typically direct traffic through major development areas. The following study area roadway within the City of Fontana is classified as a Primary Highways:

- Slover Avenue

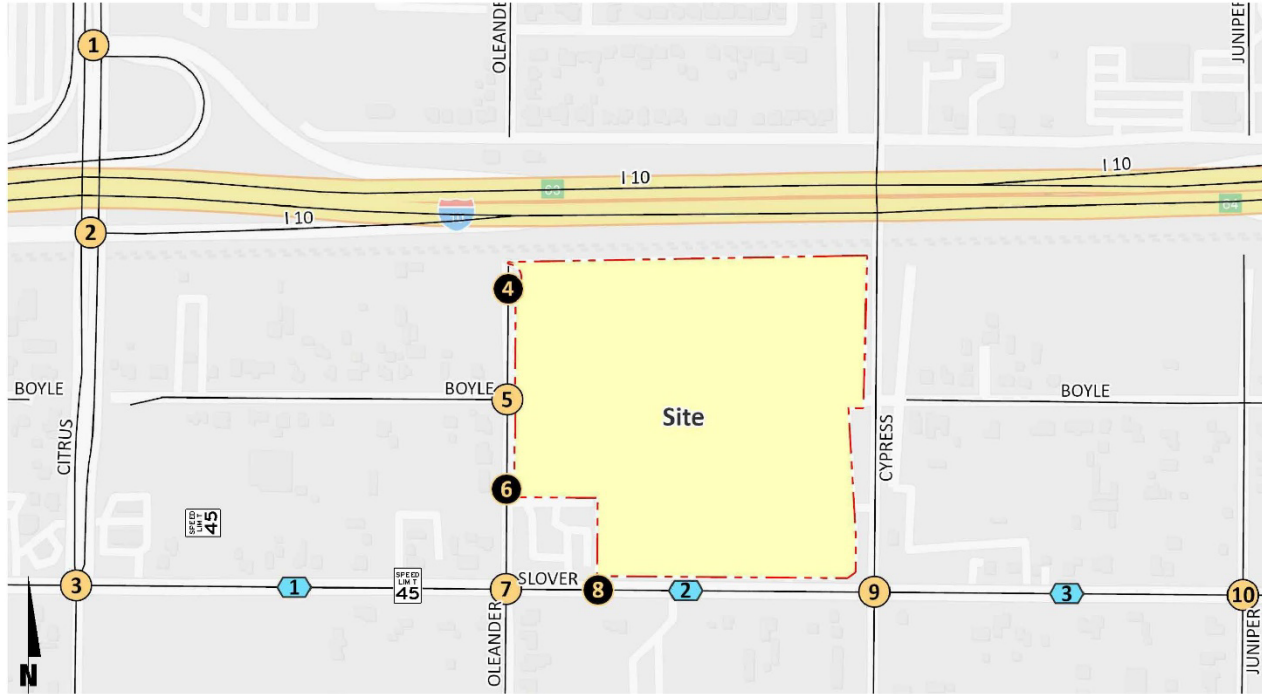
Secondary Highways are two-lane streets, providing one lane in each direction, separated by a raised median. The following study area roadways within the study area are classified as a Secondary Highways:

- Citrus Avenue, south of Slover Avenue
- Cypress Avenue

Collector Streets are two-lane streets, providing one lane in each direction. The following study area roadway within the study area is classified as a Collector Street:

- Oleander Avenue, south of Slover Avenue
- Juniper Avenue, south of Slover Avenue

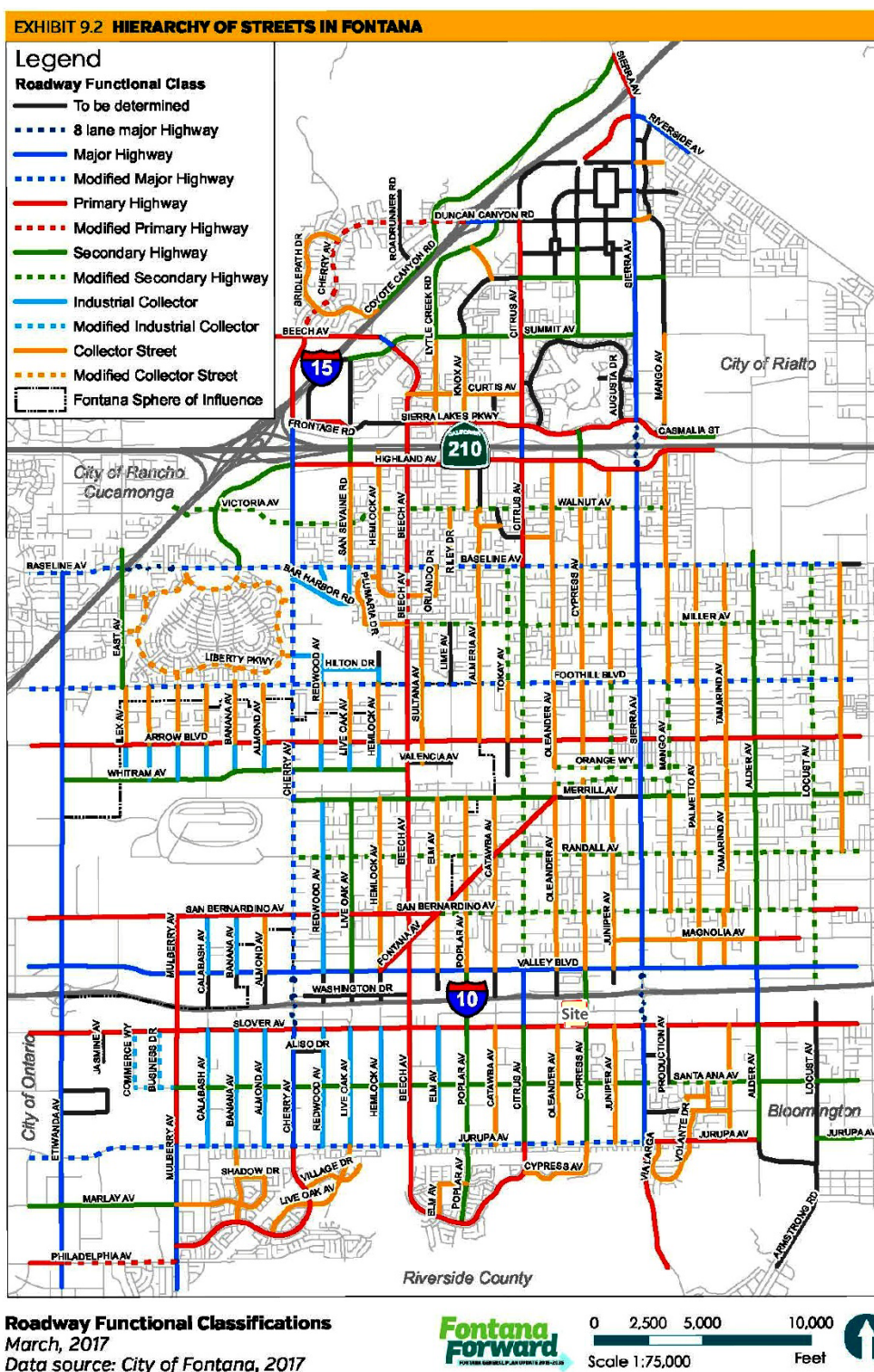
EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROL



1 Citrus Av. & I-10 WB Ramps	2 Citrus Av. & I-10 EB Ramps	3 Citrus Av. & Slover Av.	4 Oleander Av. & Dwy. 1	5 Oleander Av. & Boyle Av./Dwy. 2.
			Future Intersection	
			Future Intersection	
Future Intersection		Future Intersection		

- = Traffic Signal
- = Stop Sign
- 4** = Number of Lanes
- D** = Divided
- U** = Undivided
- RTO** = Right Turn Overlap
- = Speed Limit (MPH)

EXHIBIT 3-2: CITY OF FONTANA HIERARCHY OF STREETS



Approved and Adopted by City Council November 13, 2018

City Council Resolution 2018-096
 City Council Resolution 2018-097

3.3 TRUCK ROUTES

Exhibit 3-3 shows the City of Fontana truck routes. As shown, Citrus Avenue and Slover Avenue are identified as truck routes. These truck routes have been utilized to route truck traffic associated with the proposed Project and future cumulative development projects for the purposes of this TS.

3.4 BICYCLE & PEDESTRIAN FACILITIES

The City of Fontana bike facilities are shown on Exhibit 3-4. There are no existing bike facilities within the study area. However, Citrus Avenue and Cypress Avenue are proposed Class II bike facilities. Exhibit 3-5 illustrates the existing pedestrian facilities, including sidewalks and crosswalks. As shown on Exhibit 3-5, there are limited pedestrian facilities within the study area.

3.5 TRANSIT SERVICE

The study area is currently served by Omnitrans Transit Agency with bus services along Citrus Avenue and Slover Avenue via Omnitrans Route 82. There are currently stops along Slover Avenue in close proximity to the proposed Project. The transit services are illustrated on Exhibit 3-6. Transit service is reviewed and updated by Omnitrans 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.

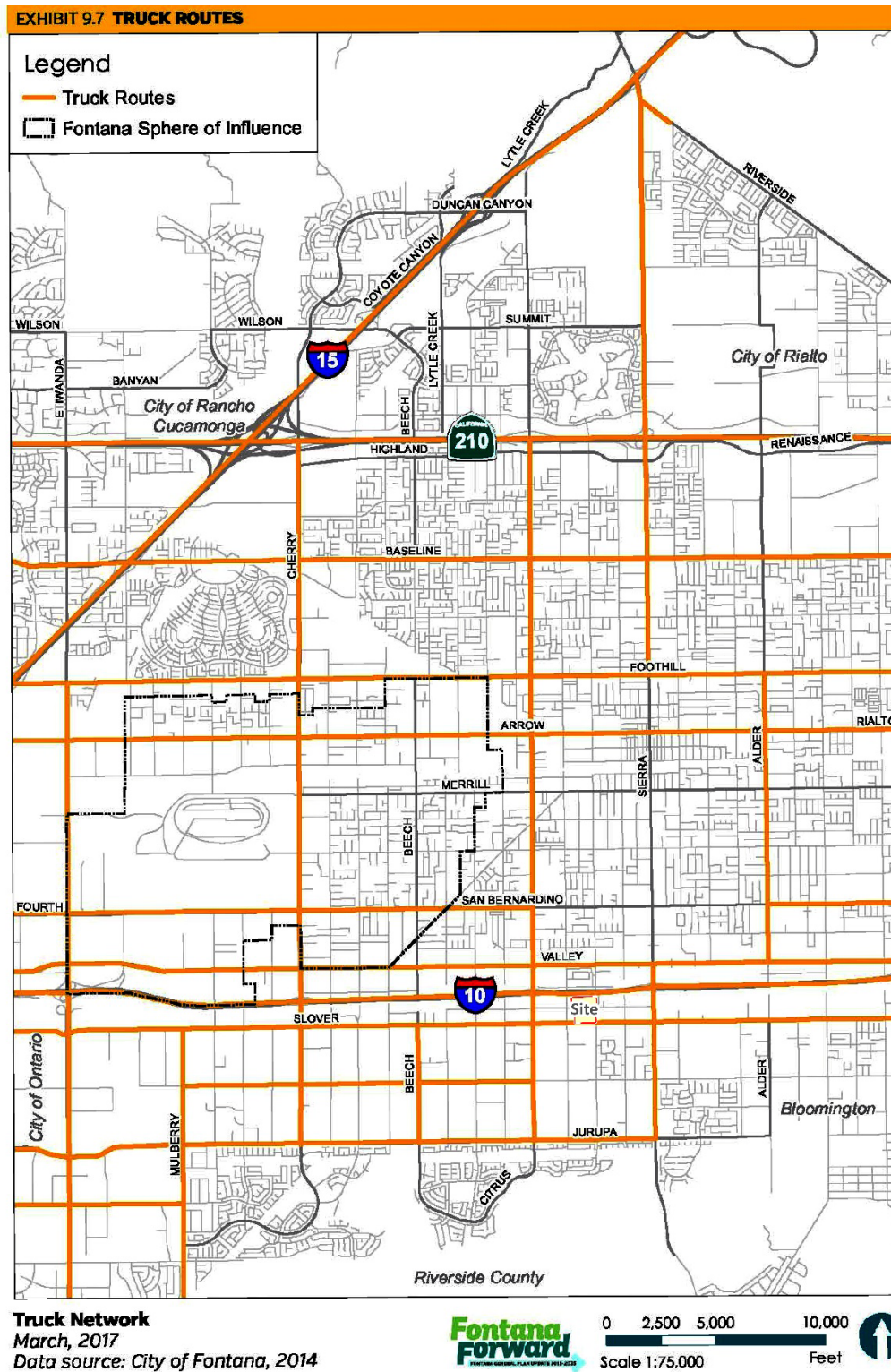
3.6 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in May 2018, March 2019, April 2021, and August 2021. 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)

Due to the currently ongoing COVID-19 pandemic, schools and businesses within the study area were closed or operating at less than full capacity at the time this study was prepared. As such, historic traffic counts from May 2018 and March 2019 were utilized in conjunction with a 1.16% per year growth rate (compounded annually) to develop traffic volumes for 2021 conditions. The historic 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.

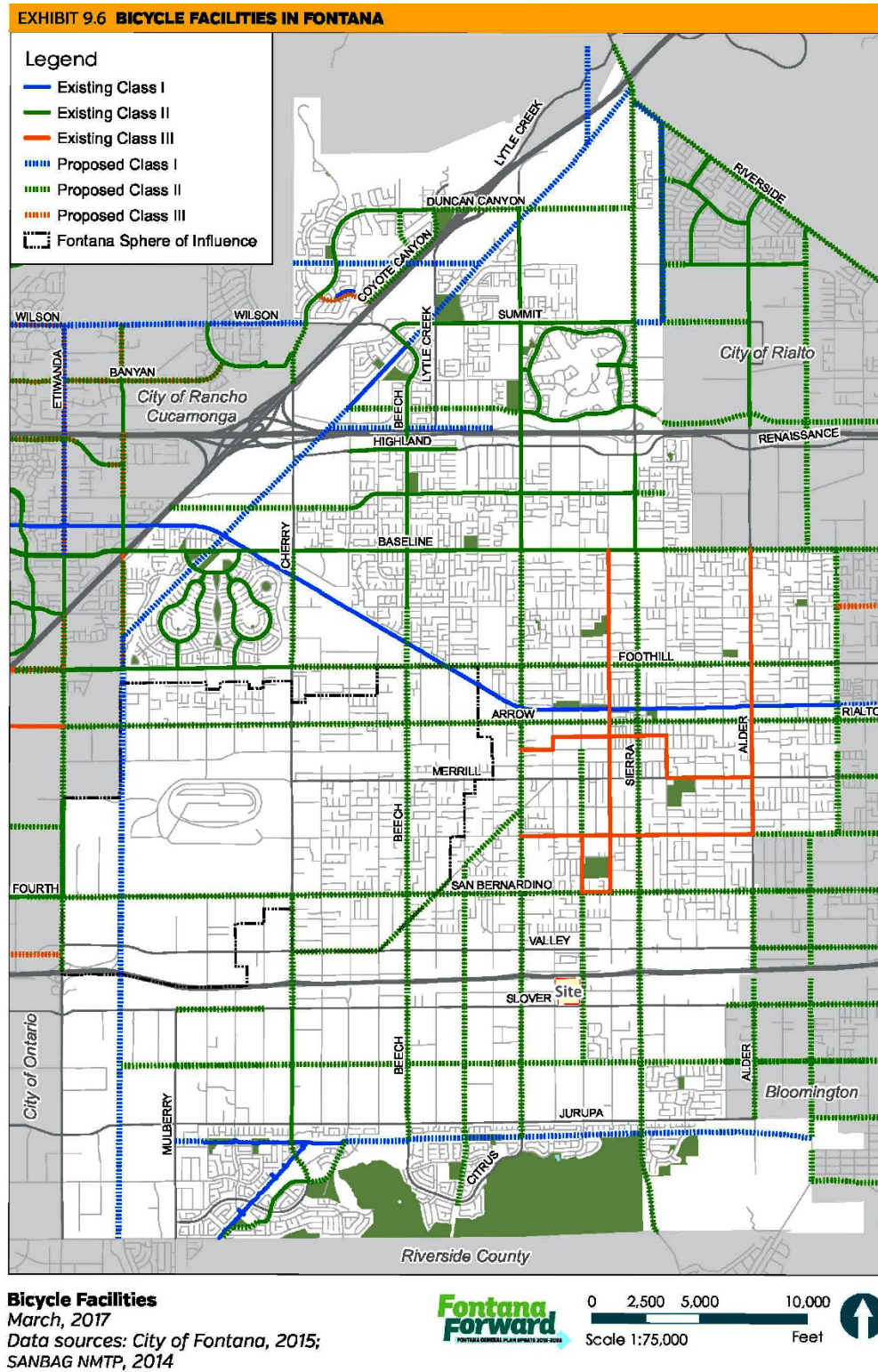
EXHIBIT 3-3: CITY OF FONTANA TRUCK ROUTES



Approved and Adopted by City Council November 13, 2018

9.15
 City Council Resolution 2018-096
 City Council Resolution 2018-097

EXHIBIT 3-4: CITY OF FONTANA BICYCLE FACILITIES



9.14 Fontana General Plan
 Approved and Adopted by City Council November 13, 2018

City Council Resolution 2018-096
 City Council Resolution 2018-097

EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES

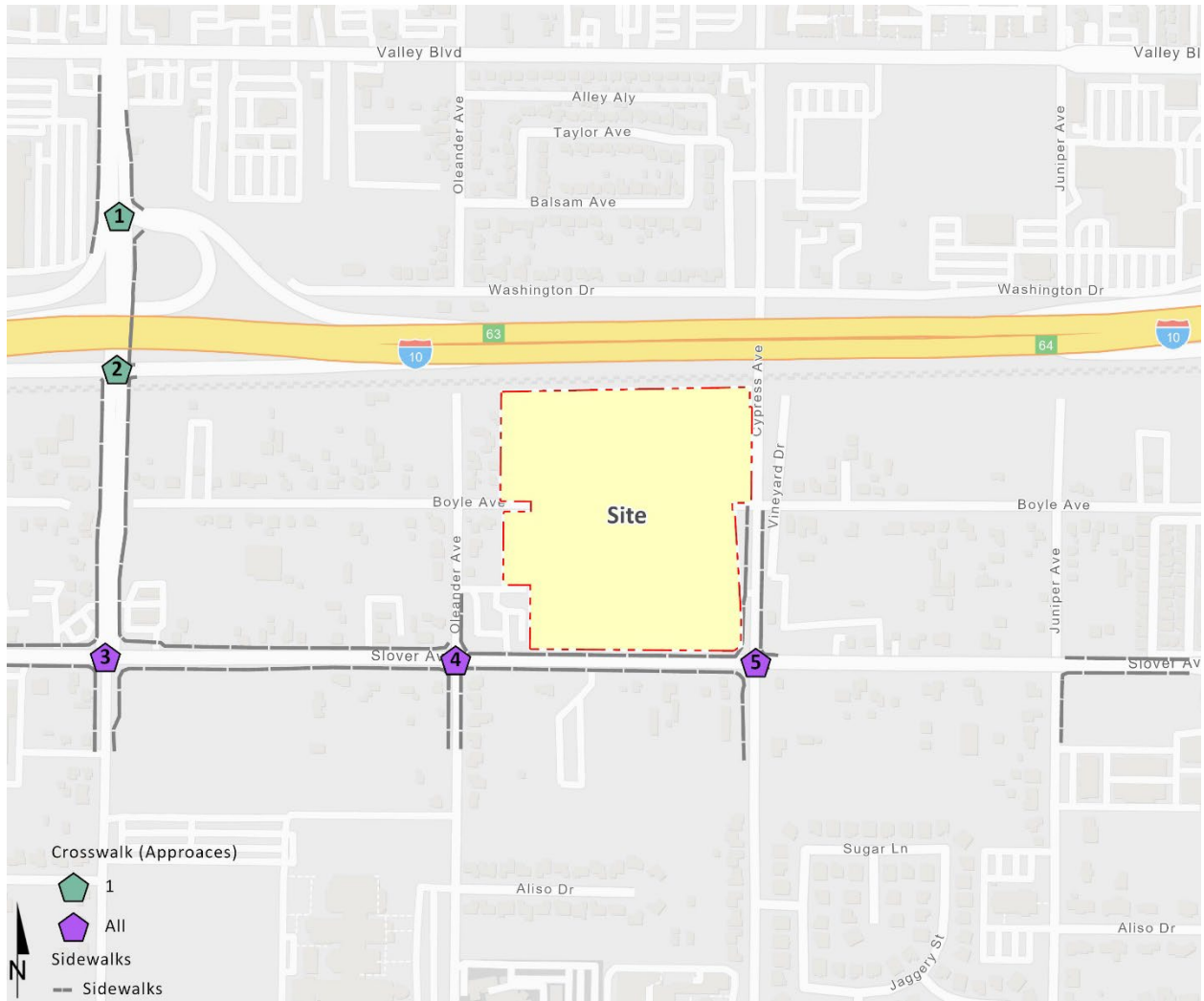
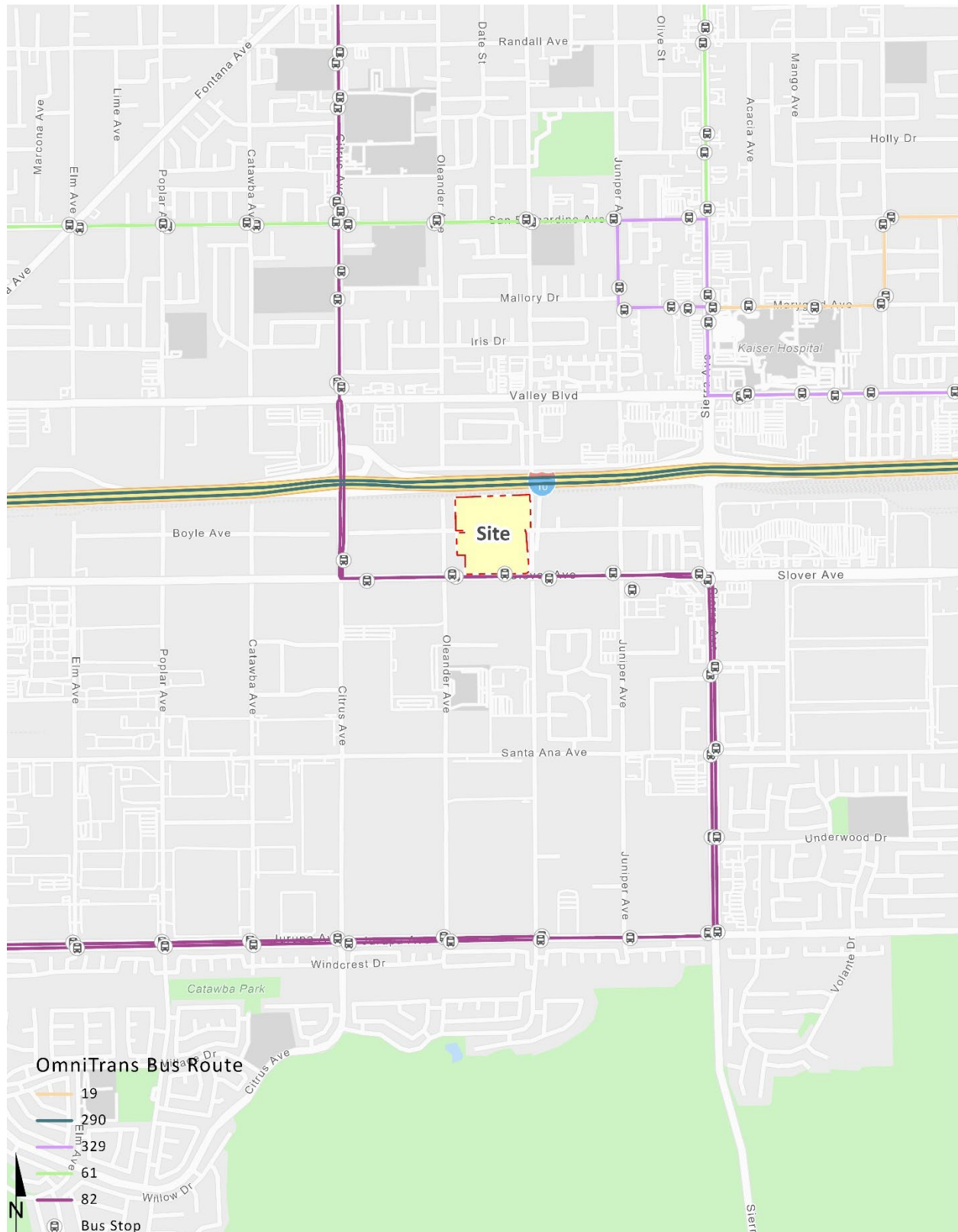


EXHIBIT 3-6: EXISTING TRANSIT ROUTES



Historic traffic count data was not readily available for all study area intersections. As such, 2021 traffic counts have been collected at the intersections of Oleander Avenue at Boyle Avenue. Traffic counts have also been collected at Citrus Avenue at I-10 Westbound Ramps, Citrus Avenue at I-10 Eastbound Ramps, and Oleander Avenue at Slover Avenue in order to compare and develop an adjustment factor based on a comparison to historic May 2018 or March 2019 traffic count data to the recently collected 2021 traffic count data. This adjustment factor has been applied to the 2021 traffic count data at the intersection of Oleander Avenue and Boyle Avenue in order to reflect non-COVID traffic conditions. Where applicable, traffic volumes have been flow conserved in order to not have any loss of vehicles. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-7. 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:

$$\text{Weekday PM Peak Hour (Approach Volume + Exit Volume)} \times 10.38 = \text{Leg Volume}$$

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 9.63 percent. As such, the above equation utilizing a factor of 10.38 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 9.63 percent (i.e., $1/0.0963 = 10.38$) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are shown on Exhibit 3-7. The volumes shown on Exhibit 3-7 (and on all other volume exhibits within this report) are in actual vehicles. PCE volumes utilized in the operations analysis are provided in the appendices for each applicable analysis scenario.

3.7 EXISTING (2021) INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the study area intersections are currently operating at an acceptable LOS during the peak hours, with the exception of the following intersections:

- Cypress Avenue & Slover Avenue (#9) – LOS D AM peak hour only
- Juniper Avenue & Slover Avenue (#10) – LOS F PM peak hour only

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

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Intersection	Traffic Control ²	Delay ¹ (secs.)		Level of Service	
			AM	PM	AM	PM
1	Citrus Av. & I-10 WB Ramps	TS	17.1	9.3	B	A
2	Citrus Av. & I-10 EB Ramps	TS	21.6	22.1	C	C
3	Citrus Av. & Slover Av.	TS	33.6	33.2	C	C
4	Oleander Av. & Driveway 1	--	Future Intersection			
5	Oleander Av. & Boyle Av./Driveway 2	CSS	14.9	9.8	B	A
6	Oleander Av. & Driveway 3	--	Future Intersection			
7	Oleander Av. & Slover Av.	TS	33.0	12.7	C	B
8	Driveway 4 & Slover Av.	--	Future Intersection			
9	Cypress Av. & Slover Av.	TS	41.4	24.6	D	C
10	Juniper Av. & Slover Av.	CSS	21.8	99.4	C	F

BOLD = 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

3.8 EXISTING (2021) 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 intersection currently meets peak hour volume-based traffic signal warrants for Existing (2021) traffic conditions (see Appendix 3.3):

- Juniper Avenue & Slover Avenue (#10)

3.9 EXISTING (2021) ROADWAY SEGMENT ANALYSIS

These roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 3-2 provides a summary of the Existing (2021) conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 3-2, all study area roadway segments currently operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds.

TABLE 3-2: ROADWAY SEGMENT ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity ¹	Existing 2021	V/C ²	LOS ³	Acceptable LOS
1		Between Citrus Av. & Oleander Av.	4D	36,000	12,679	0.35	A	C
2	Slover Av.	Between Oleander Av. & Cypress Av.	4D	36,000	13,843	0.38	A	C
3		Between Cypress Av. & Juniper Av.	4D	36,000	14,133	0.39	A	C

¹ These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

² V/C = Volume to Capacity Ratio

³ LOS = Level of Service

4 PROJECTED FUTURE TRAFFIC

The proposed Project includes the development of 469,095 square feet of high-cube fulfillment center warehouse use (75% of the total square footage) and 156,365 square feet of high-cube cold storage warehouse use (25% of the total square footage) for a total of 625,460 square feet. The Project is anticipated to be developed within a single phase with an Opening Year of 2023. As shown on Exhibit 1-2, access to the Project site will be provided to Oleander Avenue via 3 full access driveways and to Slover Avenue via 1 driveway. A future raised median is planned to be constructed along Slover Avenue between Oleander Avenue and Cypress Avenue. As such, Driveway 4 is proposed to be restricted to right-in/right-out access only. Regional access to the Project site is available from the I-10 Freeway via the Citrus Avenue and Sierra Avenue interchanges.

4.1 PROJECT TRIP GENERATION

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, 2017) for High-Cube Cold Storage Warehouse (Land Use Code 157) and the High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) for High-Cube Fulfillment Center Warehouse use. (2) (3)

The ITE Trip Generation Manual Supplement (February 2020) has trip generation rates for high-cube fulfillment center use for both non-sort and sort facilities (ITE land use code 155). (7) While there is sufficient data to support use of the trip generation rates for non-sort facilities, the sort facility rate appears to be unreliable because they are based on limited data (i.e., one to two surveyed sites only). The proposed Project is speculative and whether a non-sort or sort facility end-user would occupy the building is not known at this time. Lastly, the ITE Trip Generation Manual recommends the use of local data sources where available. As such, the best available source for high-cube fulfillment center use would be the trip-generation statistics published in the High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019) which was commissioned by the Western Riverside Council of Governments (WRCOG) in support of the Transportation Uniform Mitigation Fee (TUMF) update in the County of Riverside. (3) The WSP trip generation rates were published in January 2019 and are based on data collected at 11 local high-cube fulfillment center sites located throughout Southern California (located throughout both Riverside County and San Bernardino County).

TABLE 4-1: PROJECT TRIP GENERATION RATES

Land Use ¹	ITE LU		AM Peak Hour			PM Peak Hour			Daily
	Units ²	Code	In	Out	Total	In	Out	Total	
Actual Vehicles:									
High-Cube Fulfillment Center Warehouse ⁴	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks			0.006	0.002	0.008	0.003	0.008	0.011	0.162
5+-Axle Trucks			0.008	0.003	0.011	0.003	0.007	0.010	0.217
High-Cube Cold Storage Warehouse ³	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.665
2-Axle Trucks			0.003	0.007	0.010	0.005	0.005	0.010	0.260
3-Axle Trucks			0.001	0.002	0.003	0.002	0.001	0.003	0.083
4+-Axle Trucks			0.005	0.011	0.016	0.008	0.008	0.016	0.113
Passenger Car Equivalent (PCE): ⁵									
High-Cube Fulfillment Center Warehouse ⁴	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (PCE = 2.5)			0.015	0.005	0.020	0.008	0.008	0.028	0.405
5+-Axle Trucks (PCE = 3.0)			0.025	0.008	0.033	0.008	0.022	0.030	0.651
High-Cube Cold Storage Warehouse ³	TSF	157	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.062	0.018	0.080	0.025	0.065	0.090	1.665
2-Axle Trucks (PCE = 2.0)			0.006	0.015	0.021	0.010	0.011	0.021	0.521
3-Axle Trucks (PCE = 2.5)			0.003	0.006	0.008	0.005	0.003	0.008	0.206
4+-Axle Trucks (PCE = 3.0)			0.015	0.034	0.049	0.024	0.025	0.049	0.338

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 % - With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks.

⁴ Vehicle Mix Source: High Cube Warehouse Trip Generation Study, WSP, January 29, 2019.

Inbound and outbound split source: ITE Trip Generation Manual, Eleventh Edition (2021) for ITE Land Use Code 154.

⁵ PCE factors per City's TIA Guidelines.

The trip generation summary for the Project in actual vehicles is shown on Table 4-2. As shown on Table 4-2, the Project is anticipated to generate a total of 1,334 two-way trips per day with 74 AM peak hour trips and 96 PM peak hour trips.

TABLE 4-2: TRIP GENERATION SUMMARY (ACTUAL VEHICLES)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Actual Vehicles:								
High-Cube Cold Storage (25%)	156.365 TSF							
Passenger Cars:		10	3	13	4	11	15	216
2-axle Trucks:		1	0	1	0	1	1	40
3-axle Trucks:		0	0	0	0	0	0	14
4+-axle Trucks:		2	1	3	1	2	3	64
Total Truck Trips (Actual Vehicles):		3	1	4	1	3	4	118
Total Trips (Actual Vehicles)²		13	4	17	5	14	19	334
High-Cube Fulfillment (75%)	469.095 TSF							
Passenger Cars:		37	11	48	19	49	68	822
2-4 axle Trucks:		3	1	4	1	4	5	76
5+-axle Trucks:		4	1	5	1	3	4	102
Total Truck Trips (Actual Vehicles):		7	2	9	2	7	9	178
Total Trips (Actual Vehicles)²		44	13	57	21	56	77	1,000
Total Passenger Cars:		47	14	61	23	60	83	1,038
Total Trucks (Actual Vehicles):		10	3	13	3	10	13	296
Total Trips (Actual Vehicles)²		57	17	74	26	70	96	1,334

¹ TSF = thousand square feet² Total Trips = Passenger Cars + Truck Trips.

The trip generation summary for the Project in PCE is shown on Table 4-3. As shown on Table 4-3, the Project is anticipated to generate a total of 1,838 PCE two-way trips per day with 98 PCE AM peak hour trips and 116 PCE PM peak hour trips.

TABLE 4-3: TRIP GENERATION SUMMARY (PCE)

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Passenger Car Equivalent (PCE):								
High-Cube Cold Storage (25%)	156.365 TSF							
Passenger Cars:		10	3	13	4	11	15	216
2-axle Trucks:		2	1	3	1	2	3	82
3-axle Trucks:		1	0	1	0	1	1	32
4+-axle Trucks:		6	2	8	2	5	7	190
Total Truck Trips (PCE):		9	3	12	3	8	11	304
Total Trips (PCE)²		19	6	25	7	19	26	520
High-Cube Fulfillment (75%)	469.095 TSF							
Passenger Cars:		37	11	48	19	49	68	822
2-4 axle Trucks:		7	2	9	4	4	8	190
5+-axle Trucks:		12	4	16	4	10	14	306
Total Truck Trips (PCE):		19	6	25	8	14	22	496
Total Trips (PCE)²		56	17	73	27	63	90	1,318
Total Passenger Cars:		47	14	61	23	60	83	1,038
Total Trucks (PCE):		28	9	37	11	22	33	800
Total Trips (PCE)²		75	23	98	34	82	116	1,838

¹ TSF = thousand square feet² Total Trips = Passenger Cars + Truck Trips.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. Separate distributions have been developed for passenger cars and trucks. Exhibits 4-1 and 4-2 illustrate the passenger car and truck trip distribution patterns through the study area intersections, respectively.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TS. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

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

EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



EXHIBIT 4-2: PROJECT (TRUCKS) TRIP DISTRIBUTION

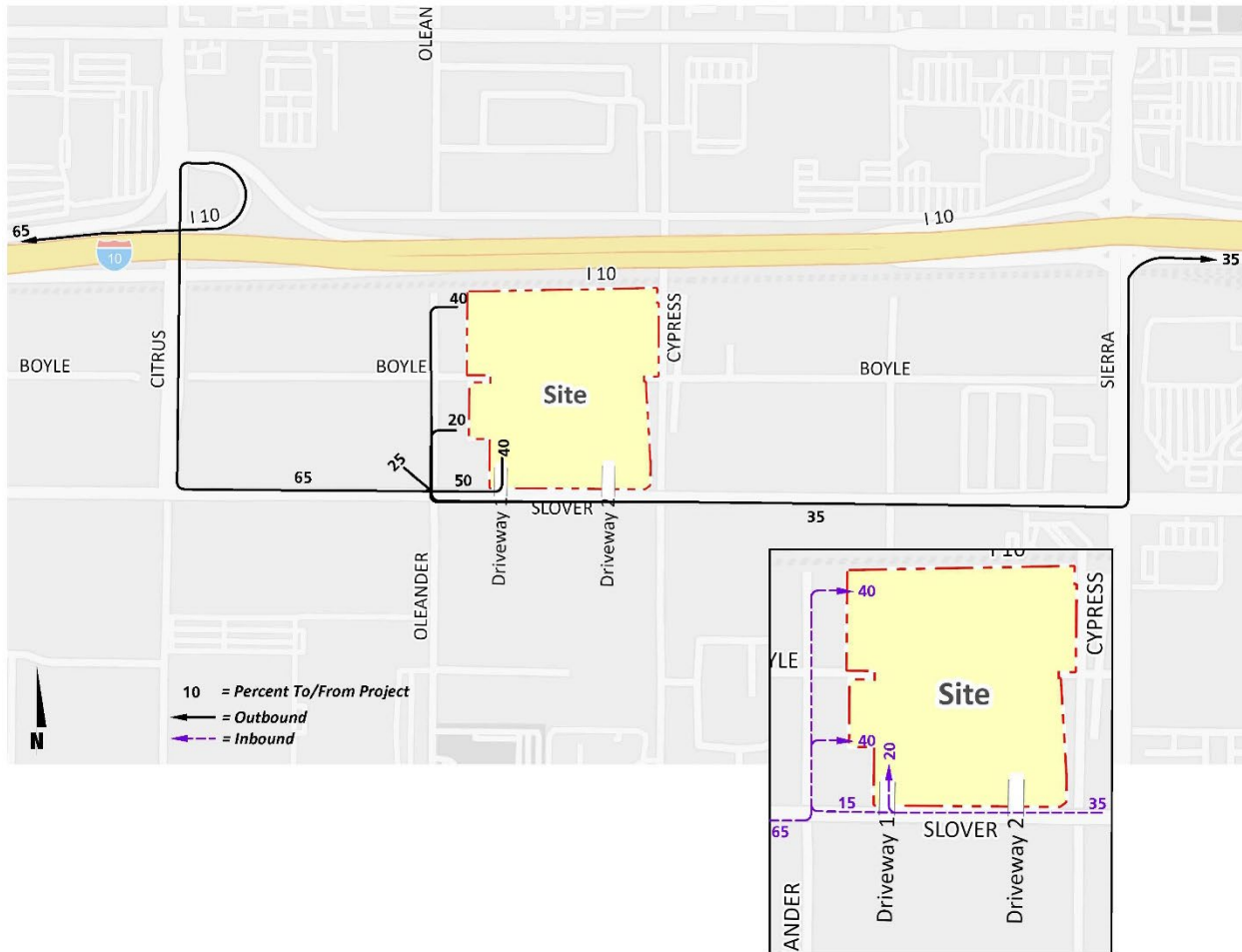
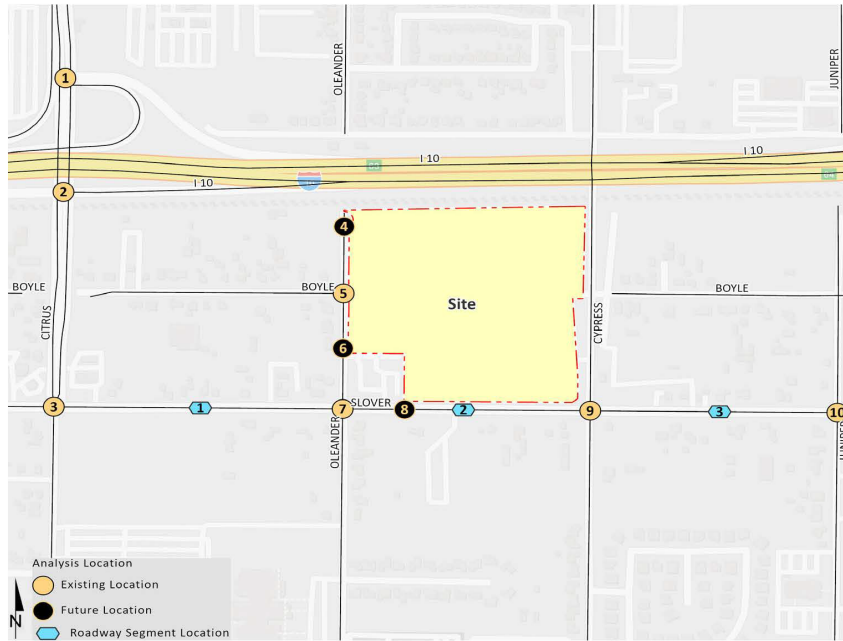


EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1	Citrus Av. & I-10 WB Ramps	2	Citrus Av. & I-10 EB Ramps	3	Citrus Av. & Slover Av.	4	Oleander Av. & Driveway 1	5	Oleander Av. & Boyle Av./Driveway 2
Nominal	300	350		600	700		300	300	500
← 2(1)		← 2(1)		25(11)	↑ 8(31)		↑ 4(15)	← 4(15)	
	1(3) → 7(28) →		23(10) ↓	↑ 1(6)	5(2) →		13(6) →		↑ 7(30)
	500	300	950		100		500		1,000
6	Oleander Av. & Driveway 3	7	Oleander Av. & Slover Av.	8	Driveway 4 & Slover Av.	9	Cypress Av. & Slover Av.	10	Juniper Av. & Slover Av.
850	400	1,250	650	100	600		550		550
← 11(45)	↑ 5(21)	8(32)	↑ 25(12)	↑ 1(4)	↑ 2(1)	↑	↑		← 13(6)
	37(17) → 18(8) →	8(34)	↑ 1(4)		← 25(12)	← 25(11)		15(21) → 4(16) →	
	1,550	30(13) ↓		8(34) →		7(31) → 1(3) →	2(1) ↑		
	700			650	600	Nominal	550		

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

Average Daily Trips

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon background (ambient) growth at 1.16% per year for 2023 traffic conditions, consistent with other recent studies performed in the area. The total ambient growth is 2.33% for 2023 traffic conditions (compounded growth of 1.16 percent per year over 2 years or 1.0116^2 years). The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Opening Year Cumulative (2023) traffic volumes are provided in Section 5 of this TS. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative “With Project” 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 Fontana. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections.

Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate Opening Year Cumulative (2023) forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-4, listed in Table 4-4, and have been considered for inclusion.

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Years 2023, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects located beyond the cumulative study area that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is likely accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-5.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

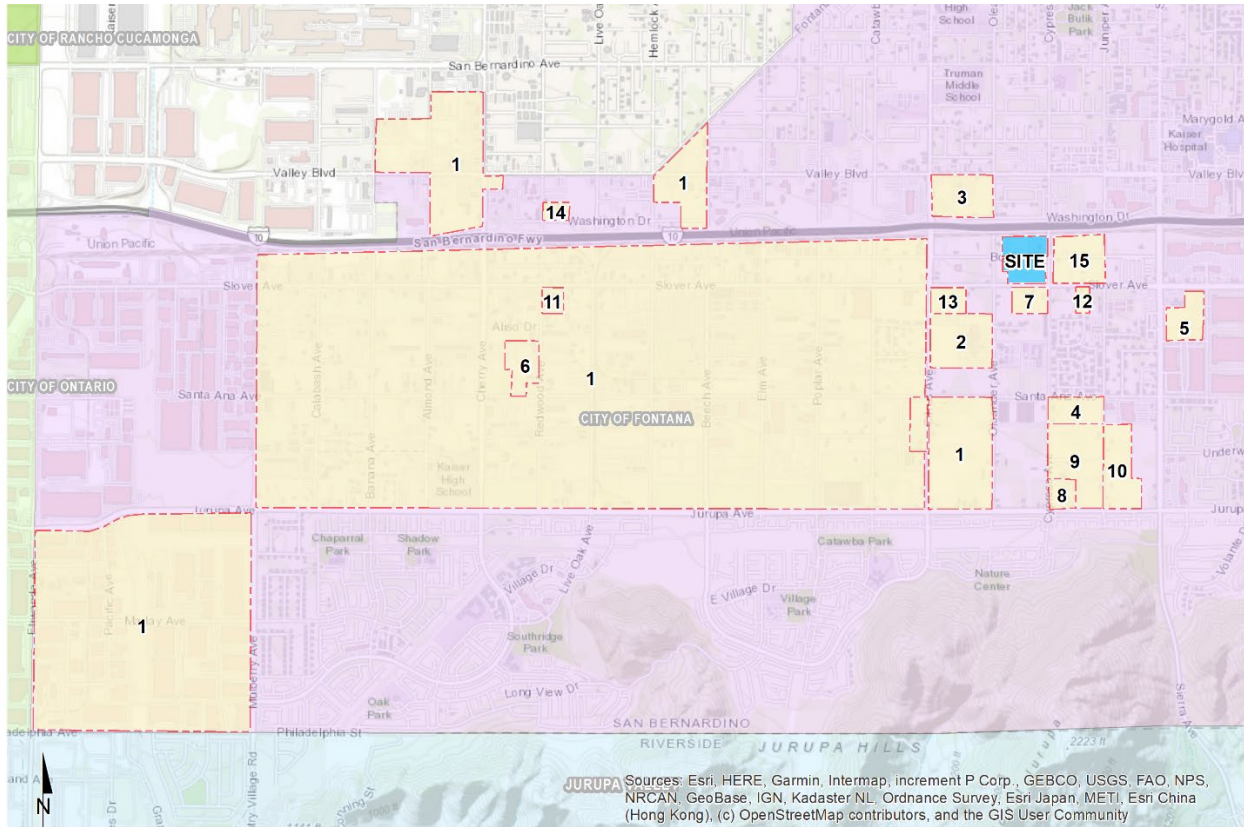
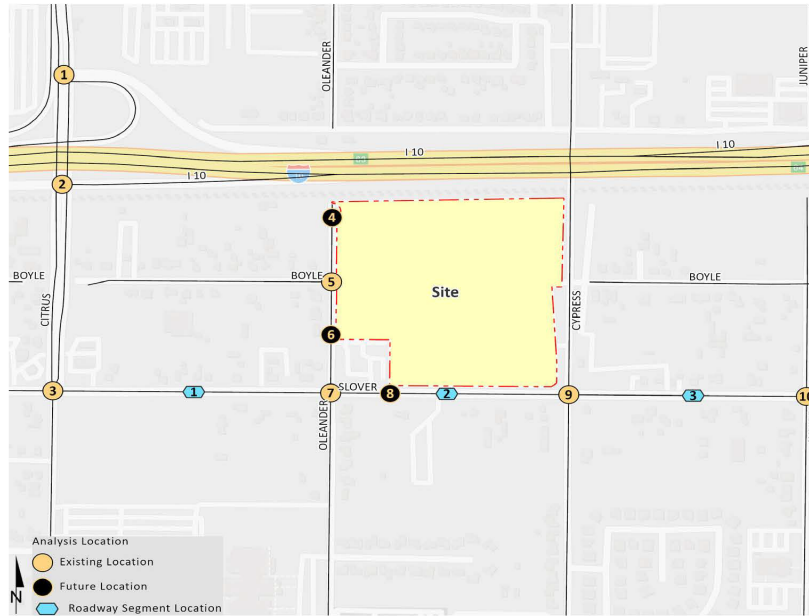


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES



1	Citrus Av. & I-10 WB Ramps	2	Citrus Av. & I-10 EB Ramps	3	Citrus Av. & Slover Av.	4	Oleander Av. & Driveway 1	5	Oleander Av. & Boyle Av./Driveway 2
1,900	3,200	3,750	900	7,400	3,250				
0(1)	50(1)	200(0)	2(0)	0(33)	0(221)				61(0)
381(311)	6(0)	581(106)	19(0)	48(208)	0(59)				
218(0)	6(73)	8(1)	5(0)	0(143)	0(27)				
24(0)	121(53)	27(1)	8(0)	0(33)	3(41)				
445(0)	93(247)	20(0)	157(296)	0(50)	14(334)				265(0)
		72(144)	3(73)	10(14)	0(18)				
250	4,150	3,600	7,300	4,250	7,200				
6	Oleander Av. & Driveway 3	7	Oleander Av. & Slover Av.	8	Driveway 4 & Slover Av.	9	Cypress Av. & Slover Av.	10	Juniper Av. & Slover Av.
		2,500		2,500		400	2,900		2,500
	61(0)		74(274)	14(0)	8(0)	2(1)	7(15)		22(289)
				49(0)	263(274)	9(14)	13(273)		
265(0)		270(184)		144(0)		2(1)	2(1)		
				16(184)		0(1)	1(3)		14(200)
						1(0)	1(2)		
		2,500		2,500		2,500	100	2,500	

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

Average Daily Trips

TABLE 4-4: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (PAGE 1 OF 2)

TAZ	Project	Land Use	Quantity ²
1	Southwest Industrial Park (SWIP) ¹	Freeway Industrial Commercial (Central)	
		Warehousing	761.067 TSF
		Office	147.786 TSF
		Office Park	152.213 TSF
		Commercial Retail	456.640 TSF
		Freeway Industrial Commercial (East)	
		Warehousing	886.410 TSF
		Office	172.125 TSF
		Office Park	177.282 TSF
		Commercial Retail	531.846 TSF
		Freeway Industrial Commercial (North)	
		Warehousing	335.885 TSF
		Office	65.223 TSF
		Office Park	67.177 TSF
		Commercial Retail	201.531 TSF
		Freeway Industrial Commercial (West)	
		Warehousing	747.959 TSF
		Office	145.241 TSF
		Office Park	149.592 TSF
		Commercial Retail	448.776 TSF
		Jurupa North Research & Development (West)	
		Light Industrial	1344.901 TSF
		Office	478.407 TSF
		Office Park	847.485 TSF
		Research & Development	677.988 TSF
		Jurupa North Research & Development (Central)	
		Light Industrial	964.045 TSF
		Office	342.930 TSF
		Office Park	607.490 TSF
		Research & Development	485.992 TSF
		Jurupa North Research & Development (East)	
		Light Industrial	917.459 TSF
		Office	326.358 TSF
		Office Park	578.134 TSF
		Research & Development	462.506 TSF
		Jurupa South Industrial	
		Light Industrial	70.985 TSF
		Warehousing	1799.899 TSF
		Slover Central Manufacturing/Industrial	
		Manufacturing	1113.002 TSF
		Warehousing	2597.004 TSF

TABLE 4-4: CUMULATIVE DEVELOPMENT LAND USE SUMMARY (PAGE 2 OF 2)

TAZ	Project	Land Use	Quantity ²
1	Southwest Industrial Park (SWIP) ¹	Slover East Industrial	
		Light Industrial	719.464 TSF
		Warehousing	1006.149 TSF
		Office Park	503.074 TSF
		Slover West Industrial	
		Light Industrial	1384.886 TSF
		Warehousing	3518.167 TSF
		Speedway Industrial	
		Light Industrial	930.121 TSF
		Warehousing	762.191 TSF
		Office Park	13.264 TSF
		SWIP Residential Trucking (1,3 and 4)	
		Single Family Detached Residential	84 DU
2	Citrus Center	Office	47.000 TSF
		Retail	44.500 TSF
		Fast Food w/ Drive-Thru	8.658 TSF
3	ASP 16-018	Retail w/ Gas Station	18.800 TSF
4	Southwest Fontana Logistics Center Project	City Park	17.45 AC
5	Walmart Shopping Center	Free-Standing Discount Superstore	200.000 TSF
		Specialty Retail Center	9.490 TSF
		Fast Food w/o Drive-Thru	9.490 TSF
6	First Redwood Logistics	High-Cube Warehouse / Distribution Center	360.000 TSF
		General Light Industrial	41.436 TSF
7	SWC Oleander Av. & Slover Av.	High-Cube Warehouse (Cold Storage)	52.580 TSF
		Warehousing	157.740 TSF
8	St. Mary's Catholic Church	Church	19.508 TSF
9	GLC Fontana III	Warehousing	362.416 TSF
		High-Cube Cold Storage Warehouse	90.604 TSF
10	Fontana Foothills	High-Cube Warehouse / Distribution Center	754.408 TSF
11	14801 Slover Avenue Warehouse	High-Cube Warehouse (Cold Storage)	77.053 TSF
		Warehousing	231.158 TSF
12	Slover Industrial Center	High-Cube Warehouse (Cold Storage)	20.421 TSF
		Warehousing	115.719 TSF
13	SEC of Citrus Av. & Slover Av.	Warehousing	194.212 TSF
14	10131 Redwood Av.	High-Cube Warehouse / Distribution Center	250.160 TSF
15	Sierra Business Center	High-Cube Fulfillment Center (Sort)	705.735 TSF

¹ Source: Southwest Industrial Park (SWIP) Project TIA, RBF Consulting, September 29, 2011.² TSF = Thousand Square Feet; AC = Acres; DU = Dwelling Units

4.7 NEAR-TERM TRAFFIC CONDITIONS

The “buildup” approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2023 traffic conditions. An ambient growth factor of 1.16% per year, compounded annually, accounts for background (area-wide) traffic increases that occur over time up to the years 2023 from the year 2021. Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative (2023) traffic conditions. Lastly, Project traffic is added to assess “With Project” traffic conditions. The 2023 roadway network is similar to the existing conditions roadway network with the exception of intersections proposed to be developed by the Project. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Opening Year Cumulative (2023) Without Project
 - Adjusted Existing 2021 counts
 - Ambient growth traffic (2.33%)
 - Cumulative Development Project traffic
- Opening Year Cumulative (2023) With Project
 - Adjusted Existing 2021 counts
 - Ambient growth traffic (2.33%)
 - Cumulative Development Project traffic
 - Project traffic

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5 OPENING YEAR CUMULATIVE (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2023) Without and With Project traffic forecasts, and the resulting intersection operations, roadway segment, and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2023) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

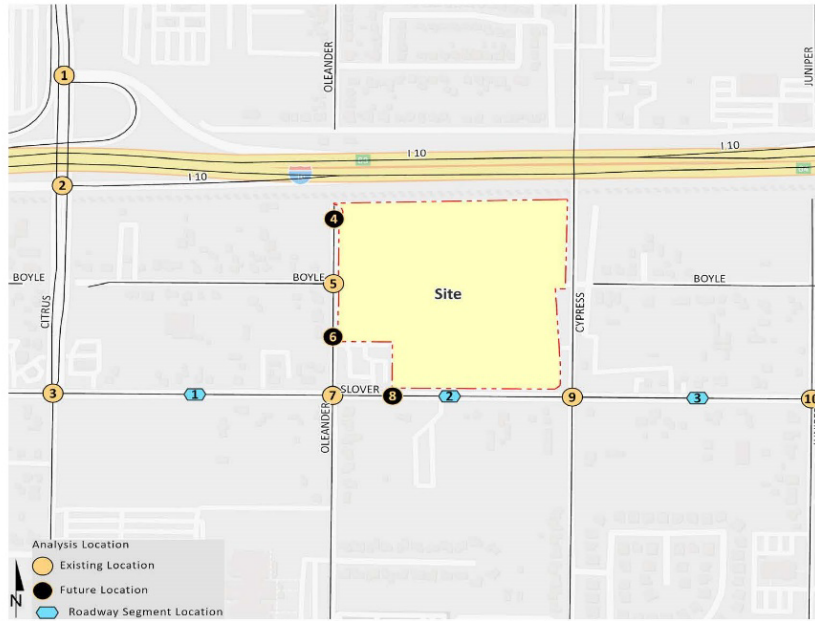
- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities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

5.2 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 2.33% plus traffic from pending and approved but not yet constructed known development projects in the area. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2023) Without Project conditions are shown on Exhibit 5-1.

5.3 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUME FORECASTS

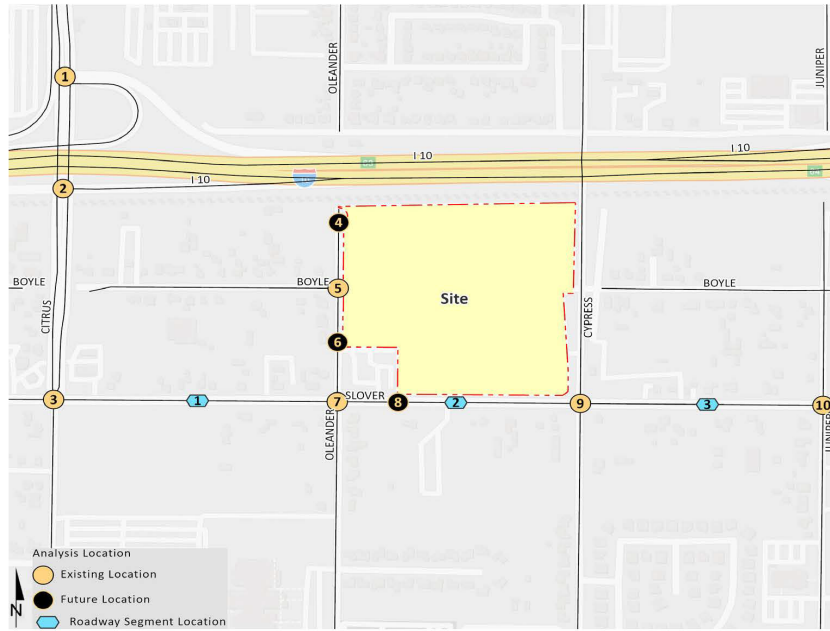
This scenario includes Existing traffic volumes, an ambient growth factor of 2.33%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2023) With Project conditions are shown on Exhibit 5-2.

EXHIBIT 5-1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUMES

1	Citrus Av. & I-10 WB Ramps	2	Citrus Av. & I-10 EB Ramps	3	Citrus Av. & Slover Av.	4	Oleander Av. & Driveway 1	5	Oleander Av. & Boyle Av./Driveway 2
56,900 557(479) 1521(890) 218(0) 24(0) 445(0) 5,200	13,500 527(458) 6(0) 442(300) 922(1230) 400(558) 30,850	48,900 200(0) 1532(665) 633(528) 375(470) 24(3) 330(300) 10,100	11,950 2(0) 19(0) 5(0) 8(0) 917(1315) 325(605) 30,800	35,800 522(255) 467(535) 200(357) 216(634) 163(823) 30(40) 23,550	19,400 190(408) 442(278) 91(87) 43(63) 634(993) 46(121) 19,600	150 10(7) 16(10) 150	150 10(6) 0(1) 61(1) 51(17) 265(0) 90(32) 85(25) 15(9) 39(15) 600	350 61(1) 51(17) 15(9) 39(15) 1,100	
6	Oleander Av. & Driveway 3	7	Oleander Av. & Slover Av.	8	Driveway 4 & Slover Av.	9	Cypress Av. & Slover Av.	10	Juniper Av. & Slover Av.
1,100 150(55) 139(50) 1,100	1,100 26(30) 113(5) 11(20) 12(29) 532(1187) 214(88) 15,500	16,700 124(17) 707(566) 296(53) 95(49) 3(4) 322(72) 2,800	17,650 14(0) 49(0) 8(0) 1316(636) 144(0) 610(1279) 17,650	17,550 493(117) 342(261) 153(259) 260(297) 292(880) 36(58) 16,700	17,400 157(275) 523(503) 36(26) 50(25) 300(479) 57(31) 9,150	250 7(7) 1(1) 8(3) 10(7) 390(959) 41(51) 17,200	17,500 11(6) 535(824) 70(74) 34(56) 34(56) 52(65) 2,600		

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

Average Daily Trips

EXHIBIT 5-2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES

1	Citrus Av. & I-10 WB Ramps	2	Citrus Av. & I-10 EB Ramps	3	Citrus Av. & Slover Av.	4	Oleander Av. & Driveway 1	5	Oleander Av. & Boyle Av./Driveway 2
56,950 557(479) 1523(891) 218(0) 442(300) 24(0) 445(0) 5,200	13,800 527(458) 6(0) 923(1233) 407(586) 31,350	49,250 200(0) 1534(666) 633(528) 375(470) 24(3) 353(310) 10,350	11,950 2(0) 19(0) 5(0) 8(0) 925(1346) 325(605) 31,700	36,400 522(255) 467(535) 225(368) 216(634) 163(823) 30(40) 23,550	20,150 198(439) 442(278) 92(93) 43(63) 634(993) 51(123) 19,750	150 10(7) 4(15) 16(10) 13(6) 650	300 4(15) 16(10) 13(6) 650	500 14(21) 0(1) 61(1) 58(47) 265(0) 90(32) 85(25) 28(15) 63(27) 2,100	850 61(1) 58(47) 265(0) 90(32) 85(25) 28(15) 63(27) 2,100
6	Oleander Av. & Driveway 3	7	Oleander Av. & Slover Av.	8	Driveway 4 & Slover Av.	9	Cypress Av. & Slover Av.	10	Juniper Av. & Slover Av.
1,900 161(100) 5(21) 176(67) 18(8) 2,650	400 34(62) 113(5) 19(54) 42(42) 532(1187) 214(88) 16,200	17,350 149(29) 708(570) 296(53) 95(49) 3(4) 322(72) 2,800	100 15(4) 49(0) 10(1) 1341(648) 144(0) 618(1313) 18,300	18,250 10(1) 1341(648) 144(0) 618(1313) 18,300	17,550 493(117) 342(261) 153(259) 260(297) 299(911) 37(61) 17,300	17,950 157(275) 548(514) 36(26) 52(26) 300(479) 57(31) 9,200	250 7(7) 1(1) 8(3) 25(28) 394(975) 41(51) 17,800	18,050 11(6) 548(830) 70(74) 34(56) 34(56) 52(65) 2,600	2,600

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

Average Daily Trips

5.4 INTERSECTION OPERATIONS ANALYSIS

5.4.1 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC CONDITIONS

Opening Year Cumulative (2023) 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 analysis results are summarized in Table 5-1, which indicate that the following study area intersections are anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2023) Without Project:

- Citrus Avenue & I-10 EB Ramps (#2) – LOS F AM peak hour only
- Citrus Avenue & Slover Avenue (#3) – LOS F AM and PM peak hours
- Oleander Avenue & Slover Avenue (#7) – LOS E AM peak hour only
- Cypress Avenue & Slover Avenue (#9) – LOS D AM peak hour only
- Juniper Avenue & Slover Avenue (#10) – LOS E AM peak hour; LOS F PM peak hour

The intersection operations analysis worksheets for Opening Year Cumulative Without Project traffic conditions are included in Appendix 5.1 of this TS.

TABLE 5-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS

#	Intersection	Traffic Control ²	2023 Without Project Delay ¹ (secs.)		Level of Service		2023 With Project Delay ¹ (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Citrus Av. & I-10 WB Ramps	TS	29.9	9.1	C	A	30.0	10.6	C	B
2	Citrus Av. & I-10 EB Ramps	TS	82.2	24.6	F	C	91.0	25.7	F	C
3	Citrus Av. & Slover Av.	TS	118.6	99.3	F	F	122.3	108.8	F	F
4	Oleander Av. & Driveway 1	<u>CSS</u>	Future Intersection				8.7	8.7	A	A
5	Oleander Av. & Boyle Av./Driveway 2	CSS	15.1	9.8	C	A	16.6	10.3	C	B
6	Oleander Av. & Driveway 3	<u>CSS</u>	Future Intersection				11.6	9.9	B	A
7	Oleander Av. & Slover Av.	TS	78.6	14.2	E	B	80.3	15.0	F	B
8	Driveway 4 & Slover Av.	<u>CSS</u>	Future Intersection				14.0	11.0	B	B
9	Cypress Av. & Slover Av.	TS	49.2	28.7	D	C	51.1	29.5	D	C
10	Juniper Av. & Slover Av.	CSS	41.8	>200.0	E	F	48.4	>200.0	E	F

BOLD = 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; CSS = Improvement

5.4.2 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 5-1, there are no additional study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the intersections previously identified under Opening Year Cumulative (2023) Without Project traffic conditions. However, the LOS at Oleander Avenue and Slover Avenue is anticipated to go from LOS E to LOS F with the addition of Project traffic. The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project traffic conditions are included in Appendix 5.2 of this TS.

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Opening Year Cumulative (2023) traffic conditions based on peak hour intersection turning movements volumes or planning level (ADT) volumes. There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under Opening Year Cumulative (2023) Without Project or With Project traffic conditions (see Appendix 5.3 and 5.4).

5.6 ROADWAY SEGMENT ANALYSIS

The roadway segment capacities are approximate figures only and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet traffic demand. Table 5-2 provides a summary of the Opening Year Cumulative conditions roadway segment capacity analysis based on the City of Fontana Roadway Segment Capacity Thresholds. As shown on Table 5-2, the study area roadway segments are anticipated to continue to operate at an acceptable LOS based on the City's planning level daily roadway capacity thresholds, consistent with Existing (2021) traffic conditions.

TABLE 5-2: ROADWAY SEGMENT ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS

#	Roadway	Segment Limits	Roadway Section	LOS Capacity ¹	2023 Without Project			2023 With Project			Acceptable LOS
					2023	V/C ²	LOS ³	2023	V/C ²	LOS ³	
1		Between Citrus Av. & Oleander Av.	4D	36,000	15,488	0.43	A	16,538	0.46	A	C
2	Slover Av.	Between Oleander Av. & Cypress Av.	4D	36,000	16,679	0.46	A	17,579	0.49	A	C
3		Between Cypress Av. & Juniper Av.	4D	36,000	17,376	0.48	A	18,126	0.50	A	C

¹ These maximum roadway capacities assume 9,000 vehicles per lane per day for arterials.

² V/C = Volume to Capacity Ratio

³ LOS = Level of Service

5.7 DEFICIENCIES AND IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Fontana's deficiency criteria discussed in Section 2.6 *Deficiency Criteria*, and improvements needed to improve operations back to acceptable levels. The intersection with the change in delay with the addition of Project traffic is anticipated to exceed the City's thresholds, as such, the Project is anticipated to have a significant effect on the pre-project deficiencies (see Table 5-3). The following improvements have been recommended for those intersections exceeding the City's thresholds as listed in Table 2-4. The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project with improvements are included in Appendix 5.5 of this TS.

TABLE 5-3: INTERSECTION DEFICIENCIES AND IMPROVEMENTS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS

#	Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
2	Citrus Av. & I-10 EB Ramps																	
	-Without Improvements	TS	0	3	0	2	2	0	2	1	0	0	0	0	91.0	25.7	F	C
	-With Improvements ⁴	TS	0	3	0	2	2	0	2	1	<u>1</u>	0	0	0	25.6	23.2	C	C
3	Citrus Av. & Slover Av.																	
	-Without Improvements	TS	1	2	1	2	2	<u>1</u> >	2	2	0	1	2	<u>1</u> >	122.3	108.8	F	F
	-With Improvements ⁵	TS	1	2	1	2	2	<u>1</u> >	2	2	0	1	2	<u>1</u> >	51.1	78.5	D	E
10	Juniper Av. & Slover Av.																	
	-Without Improvements	CSS	0	1	0	0	1	0	1	2	0	1	2	0	48.4	>200.0	E	F
	-With Improvements	<u>TS</u>	0	1	0	0	1	0	1	2	0	1	2	0	7.0	7.2	A	A

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; >= Right-turn Overlap Phasing; 1 = Improvement

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) is considered the delay and LOS for the intersection.

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

⁴ Improvements might require additional right-of-way/ramp widening.

⁵ Improvement requires restrictions to SB U-turns.

6 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Fontana are funded through a combination of direct project mitigation, development impact fee programs or fair share contributions, such as the City of Fontana DIF program. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

6.1 MEASURE “I” FUNDS

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure “I”, a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure “I” extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by SBCTA and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure “I” requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction and was most recently updated in May 2018. Revenues collected through these programs are used in tandem with Measure “I” funds to deliver projects identified in the Nexus Study.

While Measure “I” is a self-executing sales tax administered by SBCTA, it bears discussion here because the funds raised through Measure “I” have funded in the past and will continue to fund new transportation facilities in San Bernardino County, including within the City of Fontana.

6.2 CITY OF FONTANA DEVELOPMENT IMPACT FEE (DIF)

The City of Fontana adopted the latest update to their DIF program in February 2016. Fees from new residential, commercial and industrial development are collected to fund Measure “I” compliant regional facilities as well as local facilities. Under the City’s DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

After the City’s DIF fees are collected, they are placed in a separate restricted use account pursuant to the requirements of Government Code sections 66000 *et seq.* The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City’s Engineering Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City’s LOS performance thresholds. The City’s DIF program establishes a timeline to fund, design, and build the improvements.

6.3 FAIR SHARE CONTRIBUTION

Project improvement may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the City's discretion).

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, has been provided on Table 6-1 for the applicable deficient study area intersections.

These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

TABLE 6-1: PROJECT FAIR SHARE CALCULATIONS FOR INTERSECTIONS

#	Intersection		Existing	Project Only	2023 With Project Volume	Net New Traffic	Project % of New Traffic
2	Citrus Av. & I-10 EB Ramps	AM:	3,195	33	4,404	1,209	2.73%
		PM:	3,190	42	3,927	737	5.70%
3	Citrus Av. & Slover Av.	AM:	2,834	39	3,082	248	15.73%
		PM:	3,334	50	4,643	1,309	3.82%
10	Juniper Av. & Slover Av.	AM:	1,097	32	1,191	94	34.04%
		PM:	1,531	43	2,099	568	7.57%

BOLD = Denotes highest fair share percentage.

7 VEHICLE MILES TRAVELED

Changes to California Environmental Quality Act (**CEQA**) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (**LOS**) as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020, consistent with Senate Bill 743 (SB 743). To comply with SB 743, the City of Fontana adopted their Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service (October of 2020) (**City Guidelines**). (1) The adopted City Guidelines have been utilized to prepare this VMT analysis.

7.1 PROJECT SCREENING

For the purposes of this analysis, the VMT screening process has been conducted with the aid of the San Bernardino County Transportation Authority (**SBCTA**) VMT Screening Tool (**Screening Tool**) and uses screening criteria consistent with the screening thresholds described within the City Guidelines. The City Guidelines state that a project may have a less than significant impact and screen out of requiring a project level VMT analysis if it meets at least one of the City's VMT screening steps. The City's adopted VMT screening steps are described in Table 7-1 along with a determination of each screening step's applicability to the Project.

TABLE 7-1: SCREENING STEPS FOR LAND USE PROJECTS EXEMPT FROM VMT ANALYSIS

Screening Steps	Description	Result
1. Transit Priority (TPA) Screening	Projects located within a TPA (i.e., within a half mile of an existing major transit stop or an existing stop along a high-quality transit corridor) are presumed to have less than significant impact on VMT.	Does not meet.
2. Low VMT Area Screening	Projects located within a low VMT generating zone that can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area are presumed to have a less than significant impact on VMT.	Does not meet.
3. Low Project Type Screening	Local-Serving Retail under 50,000 square feet and Local Essential Services such as K-12 schools, day care centers, and community institutions shortens non-discretionary trips by putting those goods and services closer to residents, resulting in an overall reduction in VMT.	Does not meet.
4. Project Net Daily Trips Less Than 500 ADT.	Projects that generate fewer than 500 average daily trips (ADT) would not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have a less than significant impact on VMT.	Does not meet.

The Project was not found to meet any of the above described VMT screening steps, consistent with City Guidelines a VMT analysis was conducted.

The City Guidelines identify the San Bernardino Transportation Analysis Model (**SBTAM**) as the appropriate tool for conducting VMT analysis for land development projects in the City of Fontana. SBTAM is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households, and employment.

SBTAM is a travel forecasting model that represents a sub-area (San Bernardino County) of the Southern California Association of Governments (**SCAG**) regional traffic model. SBTAM was designed to provide a greater level of detail and sensitivity in the San Bernardino County area as compared to the regional SCAG model.

7.3 VMT ANALYSIS

7.3.1 VMT METRIC AND SIGNIFICANCE THRESHOLD

Based on consultation with City Staff, single employment generating land use project in the City of Fontana shall use the VMT metric of VMT per employee as the appropriate measure in a VMT analysis. SBCTA Guidelines have identified the following recommended thresholds:

1. Baseline project generated VMT per employee exceeds 15% below the baseline County of San Bernardino VMT per employee, or
2. Cumulative project generated VMT per employee exceeds 15% below the baseline County of San Bernardino VMT per employee.

Baseline County of San Bernardino VMT estimates can be obtained from the SBCTA, which previously prepared VMT estimates for the SBTAM base year and cumulative year traffic models for each of its member agencies and for the County of San Bernardino region. The County of San Bernardino baseline (2022) VMT per employee is 16.9, while the City's adopted impact threshold of 15% below the regional baseline is calculated as **14.37 VMT per employee**.

7.3.2 PROJECT LAND USE CONVERSION

In order to estimate project generated VMT, standard land use information such as building square footage must first be converted into a SBTAM compatible dataset. The SBTAM model utilizes socio-economic data (**SED**) (e.g., population, households, employment, etc.) instead of land use information to estimate vehicle trips. The Project SED was isolated within the Project TAZ 53724302. The Project's building square footage was converted into employment for input into SBTAM using employment density factors derived by the SCAG Employment Density Study (October 2001) (2). Table 7-2 presents the estimated number of Project employees by land use type used to populate the SBTAM model for the proposed Project.

TABLE 7-2: EMPLOYMENT ESTIMATES

Land Use	Quantity	Employment Density Factor ³	Estimated Employees
Industrial	625,460 SF	1,195 SF per employee	523

³ SCAG Employment Density Study; Table II-B.

7.3.3 PROJECT'S HBW VMT CALCULATION AND COMPARISON TO IMPACT THRESHOLD

As stated previously, for industrial land uses the efficiency metric VMT per employee is used to evaluate Project VMT. VMT per employee is derived by dividing Project generated HBW VMT by the number of estimated Project employees. HBW VMT is obtained from the SBTAM model using the Production/Attraction (**PA**) method for calculating VMT, which sums all weekday VMT generated by trips with at least one trip end in the study area (i.e., Project's TAZ 53724302). Productions are land use types that generate trips (residences), and attractions are land use types that attract trips (employment). Productions and attractions are converted from person trips to vehicle trips for the purposes of calculating VMT and are then multiplied by the distance skims to calculate VMT. Table 7-3 presents Project generated PA HBW VMT from the SBTAM model, along with the estimated number of Project employees, and the resulting VMT per employee. As shown in Table 7-3, the baseline HBW VMT per employee is 0.21% above the City's VMT impact threshold and the cumulative HBW VMT per employee is 49.27 below the City's VMT impact threshold.

TABLE 7-3: PROJECT VMT PER EMPLOYEE

	Baseline	Cumulative
HBW VMT	7,539	3,816
Employees	523	523
Project HBW VMT per Employee	14.40	7.29
City Threshold	14.37	14.37
Percent Change	+0.21%	-49.27%
Potentially Significant?	Yes	No

As the Project would generate total HBW VMT per employee above the City's adopted impact threshold by 0.21% for the baseline condition. The Project would be required to reduce its VMT impact by 17.55 VMT or less than 1% to achieve a less than significant finding. However, the SBTAM model does adequately account for Project design features that would result in reductions to project generated VMT. When these design features are included in the calculation of VMT per employee, the resulting reduction in VMT falls below the City's impact threshold.

7.4 PROJECT DESIGN FEATURES

The Project as contemplated includes design features that would result in reductions to commute VMT, which could not be accurately accounted for by the calculations conducted using the SBTAM Model. The level of effectiveness of each Project design feature has therefore been calculated based on the Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (CAPCOA, 2021) (2021 Handbook).

⁵ $(14.4 \text{ VMT/Emp}_{\text{Project}} \times 523 \text{ Employees}) - (14.37 \text{ VMT/Emp}_{\text{Threshold}} \times 523 \text{ Employees}) = 17.5 \text{ VMT}$

7.4.1 DESIGN FEATURE 1: RIDESHARING PROGRAM

The Project could provide a ridesharing program and establish a permanent transportation management association with funding requirements for employers. Ridesharing encourages carpoled vehicle trips in place of single-occupied vehicle trips, thereby reducing the number of trips and VMT. Ridesharing must be promoted through a multifaceted approach. Examples include the following.

- Designating a certain percentage of desirable parking spaces for ridesharing vehicles.
- Designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles.
- Providing an app or website for coordinating rides.

TABLE 7-4: VMT CALCULATION VARIABLES

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project/site employee commute VMT	0-8.0	%	calculated
User Inputs				
B	Percent of employees eligible for program	0-100	%	user input
Constants, Assumptions, and Available Defaults				
C	Percent reduction in employee commute VMT	4	%	SANDAG 2019

$$A = B \times C$$

$$4\% = 100\% \times 4\%$$

The Project as designed, will provide carpool/vanpool/EV parking designated spaces in locations of easy and convenient accessibility to the Project building. As calculated for the Project, with proper implementation and 100% of the Project's employees eligible, the Project is expected to reduce VMT by 4%. As outlined through the VMT reduction calculations presented above, with the inclusion of the Project's design feature will further reduce VMT by 4%, which would bring the Project's VMT per employee to below the City's threshold. Additionally, the previous calculation was conducted with only 5% of the employees eligible and the net reduction would reduce the Project's VMT by 1.3%, which is also below the City's VMT impact threshold – in other words, the Project's potential impact to VMT would be less than significant.

7.4.2 PROJECT'S CUMULATIVE EFFECT ON VMT

The City Guidelines note that if a project is consistent with the regional transportation plan (**RTP**) and sustainable community strategies (**SCS**), then the cumulative impacts shall be considered less than significant subject to consideration of other substantial evidence. The project site has a General Plan land use designation of Light Industrial (I-L) and is zoned Light Industrial (M-1). As the Project is an allowed use consistent with the General Plan land use designation and zoning, the cumulative effect on VMT is considered less than significant.

Based on the results of this analysis the following findings are made:

- The Project's VMT impact was evaluated against screening criteria as outlined in the City Guidelines. The Project was not found to meet any available screening criteria, and a model based VMT analysis was performed.
- The Project's VMT analysis found the Project to exceed the City's VMT per employee threshold by 0.21% in baseline conditions and be below the City's VMT threshold by 49.27% in cumulative conditions. However, with the inclusion of project design features, the Project reduces its VMT per employee to below the City's impact threshold in the baseline conditions.
- The Project was found to be consistent with the underlying land use and zoning assumptions in the City's General Plan and the cumulative effect on VMT is considered less than significant.
- The Project is found to have a less than significant impact.

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8 REFERENCES

1. **City of Fontana Public Works Department.** *Traffic Impact Analysis (TIA) Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment.* Fontana : s.n., October 21, 2020.
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10. **San Bernardino County Transportation Authority (SBCTA).** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* February 2020.
11. **Southern California Association of Governments.** *Employment Density Study.* October 2001.

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