Fontana Corporate Center

TRAFFIC STUDY

CITY OF FONTANA

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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
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	Fontana Corporate Center
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
TAZ	Traffic Analysis Zone
TIA	Traffic Impact Analysis
TPA	Transit Priority Area
TS	Traffic Study
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 Fontana Corporate Center development ("Project"), which is located on the northeast corner of Commerce Way 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 Business Drive consistent with the City's standards.

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

There are no off-site improvements recommended as the addition of Project traffic is not anticipated to result in any deficiencies based on the City's thresholds. As such, 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 VMT analysis was conducted 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 Service Population 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.

EXHIBIT 1-1: LOCATION MAP

1.2 PROJECT OVERVIEW

The proposed Project is located north of Slover Avenue and west of Business Drive in the City of Fontana is proposing to redevelop the site with 2 warehouse buildings totaling 355,370 square feet. Building 1 to the east is to consist of 212,677 square feet of warehouse use and Building 2 to the west is to consist of 142,693 square feet of warehousing use. 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 to Slover Avenue via two driveways for each building. Driveway 1 is proposed to restrict access to right-in/right-out access only based on its proximity to Commerce Way. Driveway 2 would prohibit left-out access based on its proximity to the railroad. Driveway 3 would prohibit left-in access only also based on its proximity to the adjacent railroad. Driveway 4 would accommodate full access. Regional access to the Project site is available from the I-10 Freeway via Etiwanda Avenue and Cherry 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, (10th Edition, 2017). The Project is anticipated to generate a total of 622 trip-ends per day with 59 AM peak hour trips and 68 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.

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

Per the City's Guidelines, projects that generate between 50 and 100 two-way peak hour trips only require an opening year assessment. As such, no future long-range (buildout) traffic conditions have been evaluated for the purposes of this TS.

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.

EXHIBIT 1-2: PRELIMINARY SITE PLAN

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

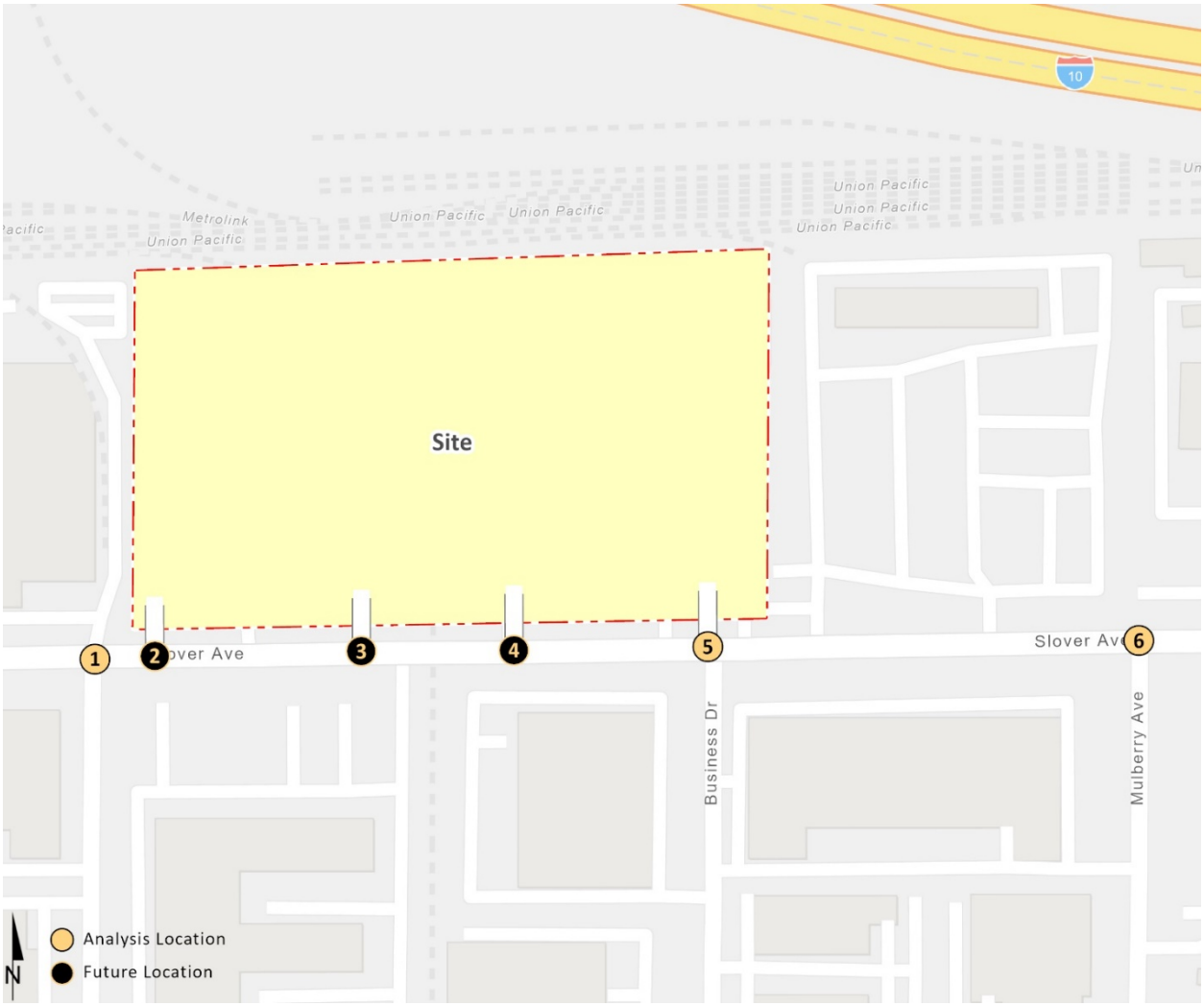
To ensure that this TS satisfies the City of Fontana's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Fontana staff prior to the preparation of this report. This agreement provides an outline of the Project study area, trip generation,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

The 6 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 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).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Commerce Wy. & Slover Av.	City of Fontana	No
2	Driveway 1 & Slover Av.	City of Fontana	No
3	Driveway 2 & Slover Av.	City of Fontana	No
4	Driveway 3 & Slover Av.	City of Fontana	No
5	Driveway 4/Business Dr. & Slover Av.	City of Fontana	No
6	Mulberry Av. & Slover Av.	City of Fontana	No

EXHIBIT 1-3: 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)

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 1-2.

TABLE 1-2: SUMMARY OF LOS

#	Intersection	Existing		2023 Without Project		2023 With Project	
		AM	PM	AM	PM	AM	PM
1	Commerce Wy. & Slover Av.	●	●	●	●	●	●
2	Driveway 1 & Slover Av.	N/A	N/A	N/A	N/A	●	●
3	Driveway 2 & Slover Av.	N/A	N/A	N/A	N/A	●	●
4	Driveway 3 & Slover Av.	N/A	N/A	N/A	N/A	●	●
5	Driveway 4/Business Dr. & Slover Av.	●	●	●	●	●	●
6	Mulberry Av. & Slover Av.	●	●	●	●	●	●

● = A - C
● = D/E
● = F

1.5.2 EXISTING CONDITIONS

None of study area intersections is currently operating at an unacceptable LOS (i.e., LOS D or worse) during the peak hours under Existing (2021) traffic conditions.

1.5.2 OPENING YEAR CUMULATIVE CONDITIONS

None of study area intersections is 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. One intersection is 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:

- Driveway 4/Business Dr & Slover Av (#5) – LOS D in PM Peak Hour Only

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 – Driveway 1 and Slover Avenue (#2) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach (Project driveway).
- Project to accommodate right turn lane on southbound approach.
- Driveway will be restricted to right-in/right-out access only.

Recommendation 2 – Driveway 2 and Slover Avenue (#3) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach (Project driveway).
- Project to accommodate right turn lane on southbound approach.
- Project to accommodate left turn lane on eastbound approach.
- Driveway will be restricted to left-out access.

Recommendation 3 – Driveway 3 and Slover Avenue (#4) – The following improvements are necessary to accommodate site access:

- Project to install a stop control on the southbound approach (Project driveway).
- Project to accommodate shared left-right turn lane on southbound approach.
- Driveway will be restricted to left-in access.

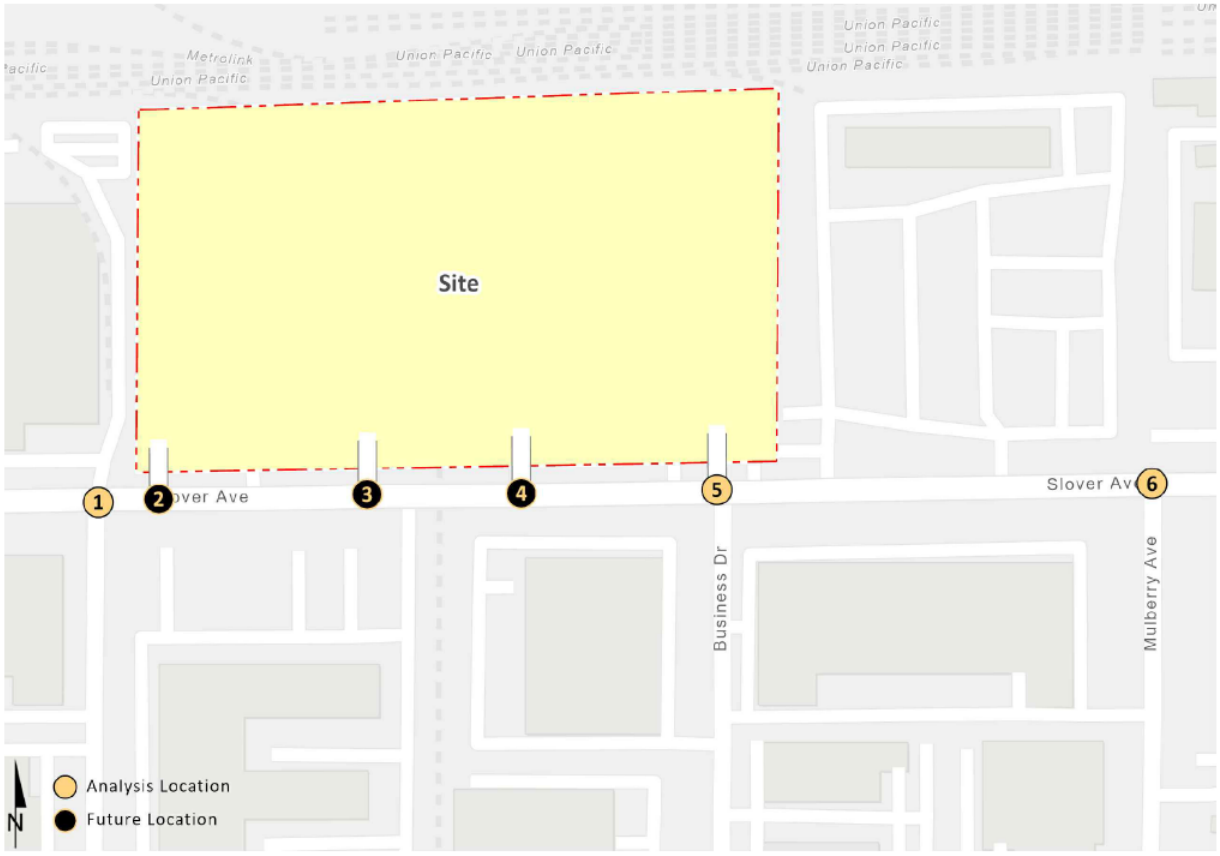
Recommendation 4 – Driveway 4 & Slover Avenue (#5) – The following improvements are necessary to accommodate site access:

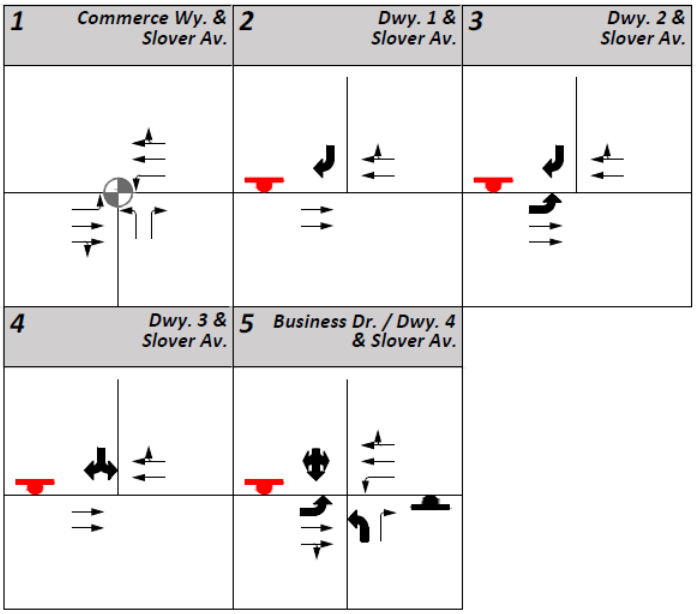
- Project to install a stop control on the southbound approach (Project driveway).
- Project to accommodate shared left-through lane and right turn lane on southbound approach.
- Project to accommodate left turn lane on eastbound approach by restriping the painted median on Slover Avenue.

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.

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





= Traffic Signal
= Stop Sign
= Stop Sign Improvement
= Existing Lane
= Lane Improvement

1.6.2 OFF-SITE RECOMMENDATIONS

Under Opening Year Cumulative (2023) With Project traffic conditions, one intersection is anticipated to operate at an unacceptable LOS (LOS D) during the PM peak hour only. The addition of Project traffic to Opening Year Cumulative (2023) Without Project traffic conditions is anticipated to result in a new deficiency. As such, the Project should contribute its proportionate share towards the improvements needed to bring the intersection operations back to acceptable LOS (see Table 1-3). It should be noted that the intersection of Driveway 4/Business Drive at Slover Avenue currently meets peak hour volume-based traffic signal warrants but is not needed as it currently operates at an acceptable LOS. Lastly, the Project would be required to pay fair share fees consistent with the City's requirements (see Section 6 *Local and Regional Funding Mechanisms*).

1.7 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways of 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 1-4 and Appendix 5.5 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.

TABLE 1-3: 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]
5	Driveway 4/Business Dr. & Slover Av.	Fontana	A Traffic Signal	No	Fair Share	$600,000	10.1%	$60,714
			Restripe EB Left Turn Lane	No	Fair Share	$25,000		$2,530
					Total:	**$625,000**		**$63,244**
Total Costs for Opening Year (2023) Improvements						**$625,000**		**$63,244**
Total Project Fair Share Contribution to the City of Fontana[6]								**$63,244**

[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.

TABLE 1-4: 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
1	Commerce Wy. & Slover Av.	WBL	150	69	25	Yes	Yes
2	Driveway 1 & Slover Av.	SBR	100	15	26	Yes	Yes
3	Driveway 2 & Slover Av.	SBR	100	20	38	Yes	Yes
		EBL	100	26	17	Yes	Yes
4	Driveway 3 & Slover Av.	SBL/R	100	30	54	Yes	Yes
5	Driveway 4/Business Dr. & Slover Av.	SBL/R	100	17	31	Yes	Yes
		EBL	100	29	20	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.

1.8 TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. Exhibit 1-5 shows the ingress and egress truck turns from Driveway 2. Exhibit 1-6 shows the ingress and egress truck turns from Driveway 3.

1.9 VEHICLE MILES TRAVELED (VMT) ANALYSIS

The Project was evaluated against City Guideline's stated VMT screening criteria but was found to not meet the available screening thresholds. As required by City Guidelines, a project level VMT analysis was conducted 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 Service Population 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.

EXHIBIT 1-5: TRUCK ACCESS AT DRIVEWAY 2

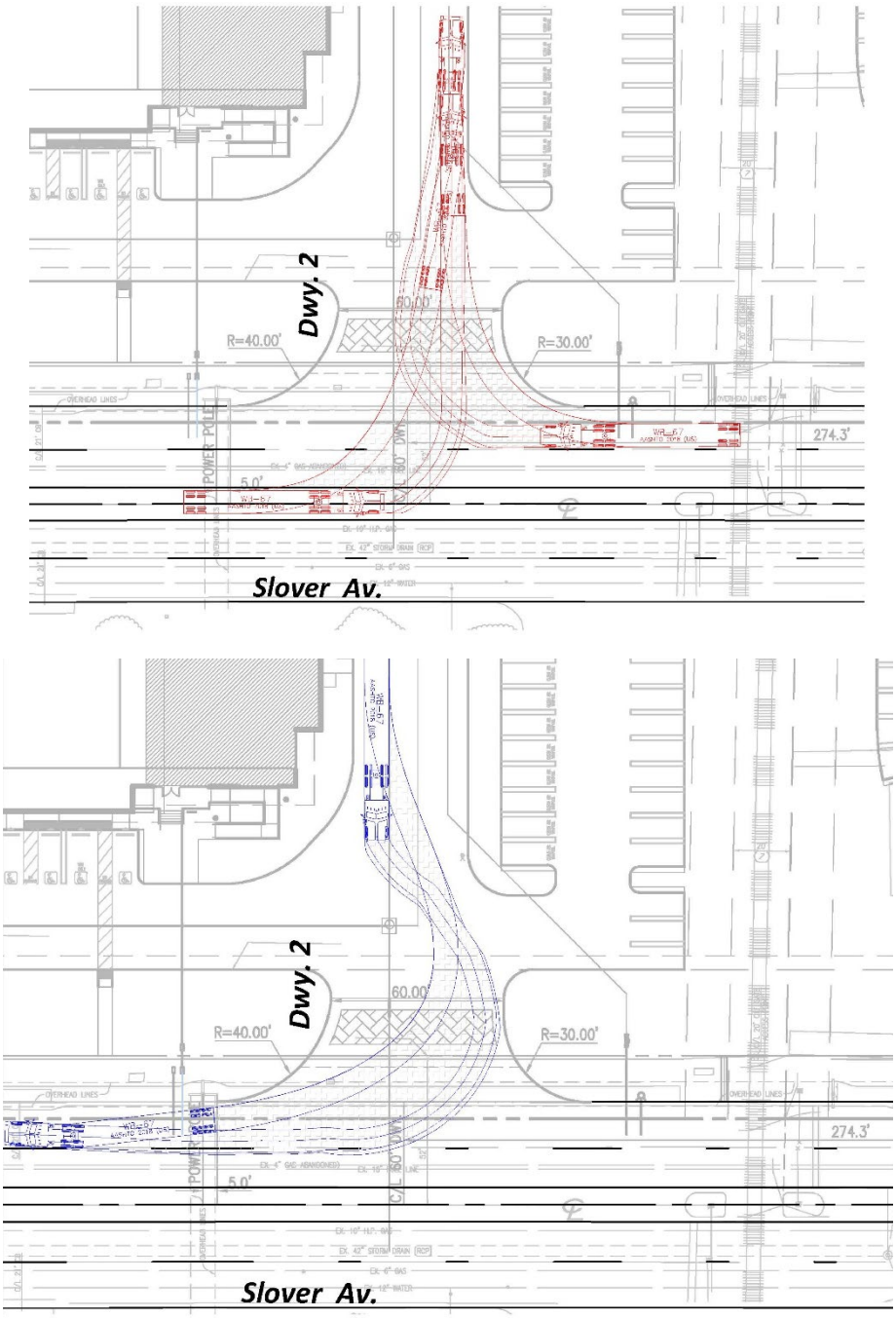
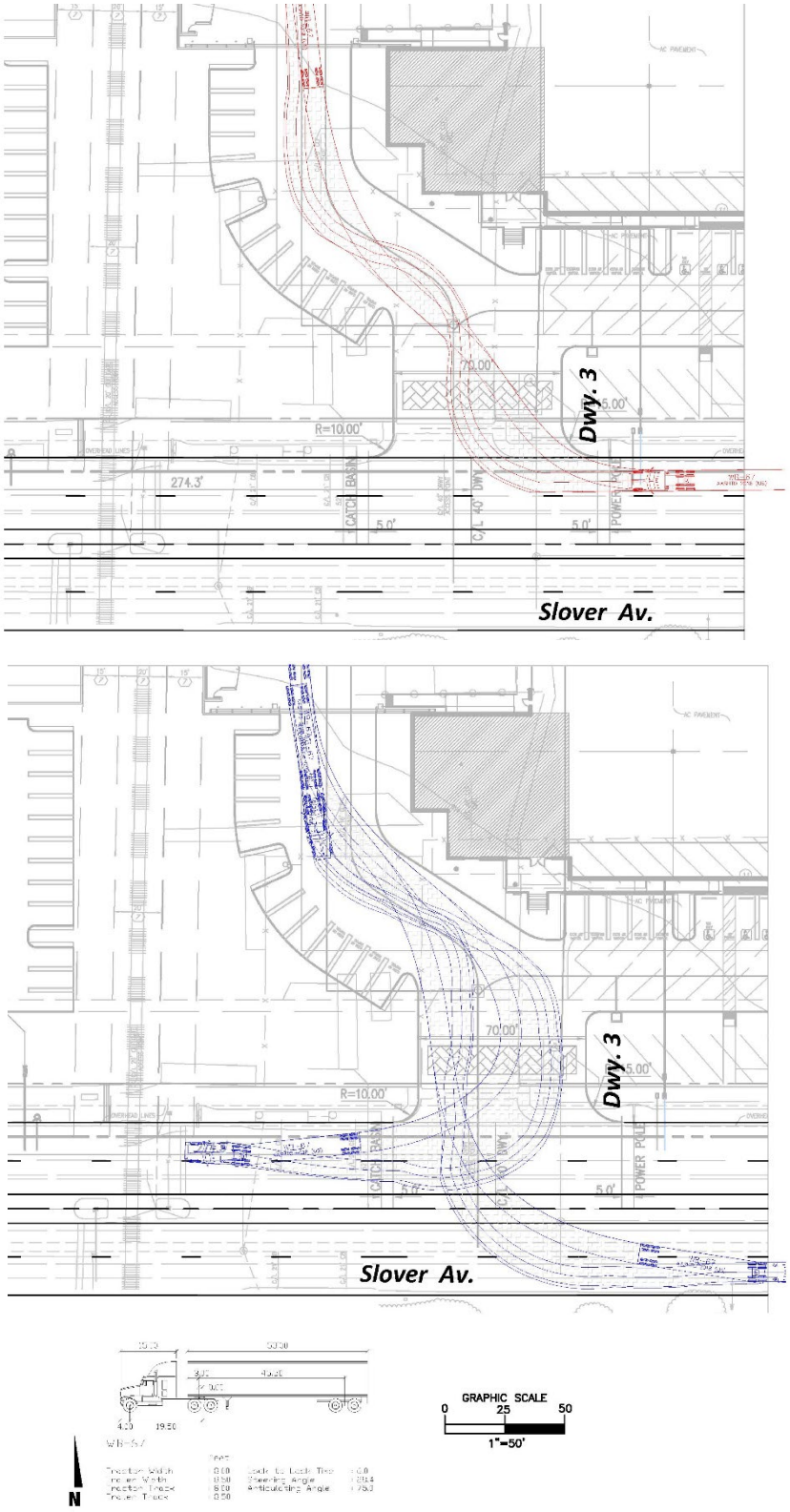


EXHIBIT 1-6: TRUCK ACCESS AT DRIVEWAY 3



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 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (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 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
3	Driveway 2 & Slover Av.	Fontana
4	Driveway 3 & Slover Av.	Fontana
5	Driveway 4/Business Dr. & 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 (e.g., right-in/right-out only).

2.4 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)

2.5 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: DETERMINATION OF EFECT

Pre-Project LOS	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.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TS identifies that the proposed Project would have a cumulative effect to a roadway facility, and the recommended improvement 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:

Project Fair Share % = Project Traffic / (Opening Year Cumulative Total Traffic – 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 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 6 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.

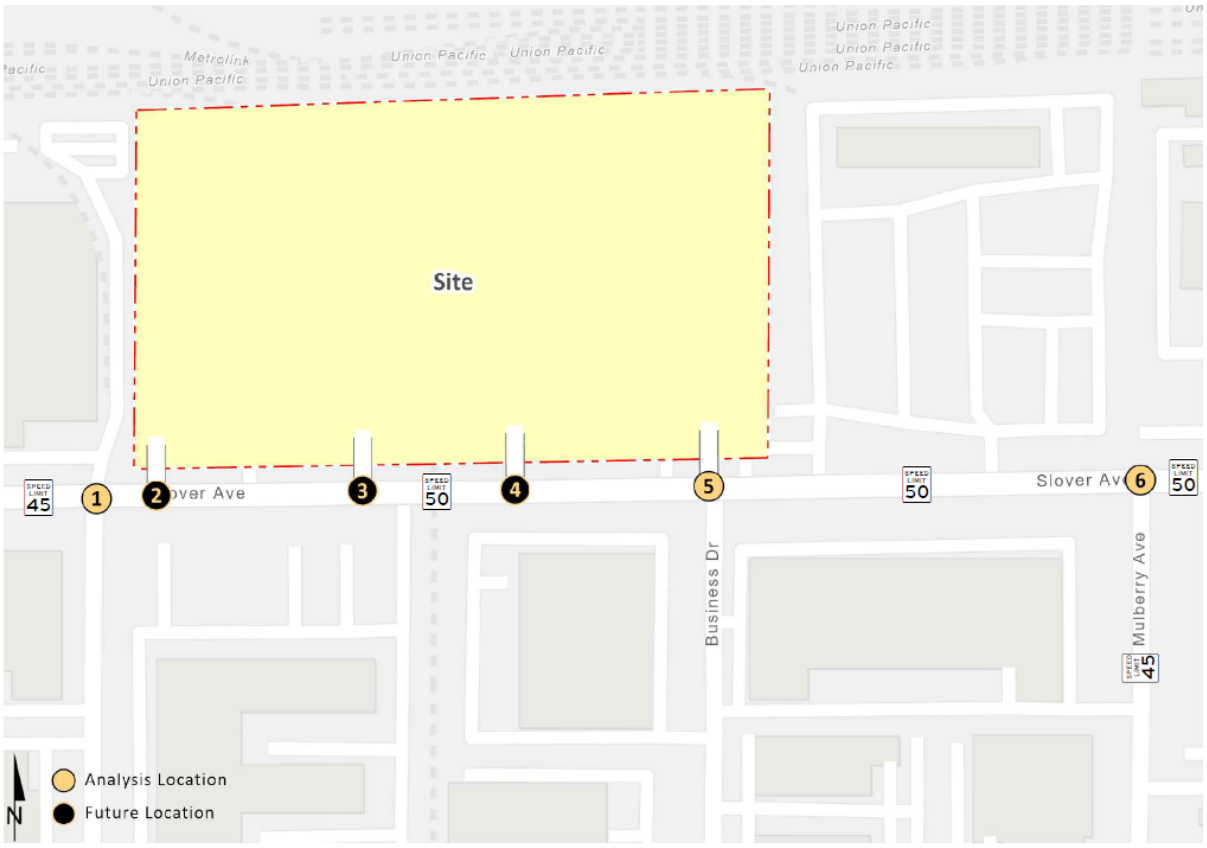
Primary Highways are four-lane roadways and may include a painted median. These roadways typically direct traffic through major development areas. The following study area roadway within the City of Fontana is classified as a Primary Highways:

- Slover Avenue
- Mulberry Avenue

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

- Commerce Way, south of Slover Avenue
- Business Drive, south of Slover Avenue

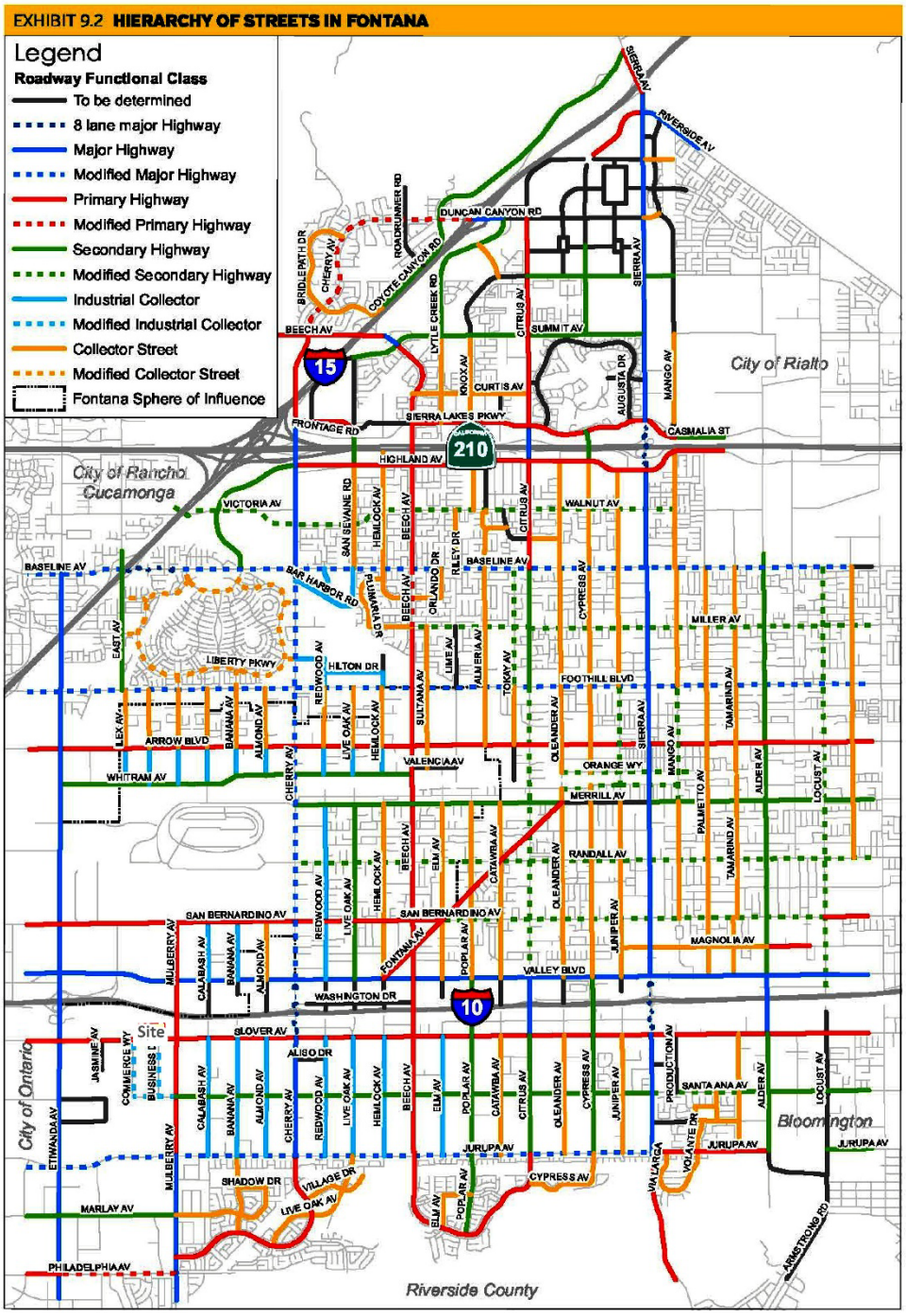
EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROL



1 Commerce Wy. & Slover Av.	2 Dwy. 1 & Slover Av.	3 Dwy. 2 & Slover Av.
4D, 4D, 2U DEF	Future Intersection	Future Intersection
4 Dwy. 3 & Slover Av.	5 Business Dr. & Slover Av.	6 Mulberry Av. & Slover Av.
Future Intersection	4D, 4D, 2D DEF	4D, 4D, 4U

= Traffic Signal
= Stop Sign
4 = Number of Lanes
D = Divided
U = Undivided
DEF = Defacto Right Turn
= 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, Slover Avenue and Mulberry 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, Slover Avenue from Mulberry Avenue eastward is 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

There are no transit services is provided within the study area. However, there are some transit services served by Omnitrans Transit Agency in the nearby roadways:

- North of the Project - San Bernardino Avenue via Route 61 and I-10 via Route 290
- South of the Project - Jurupa Avenue via Route 82

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.

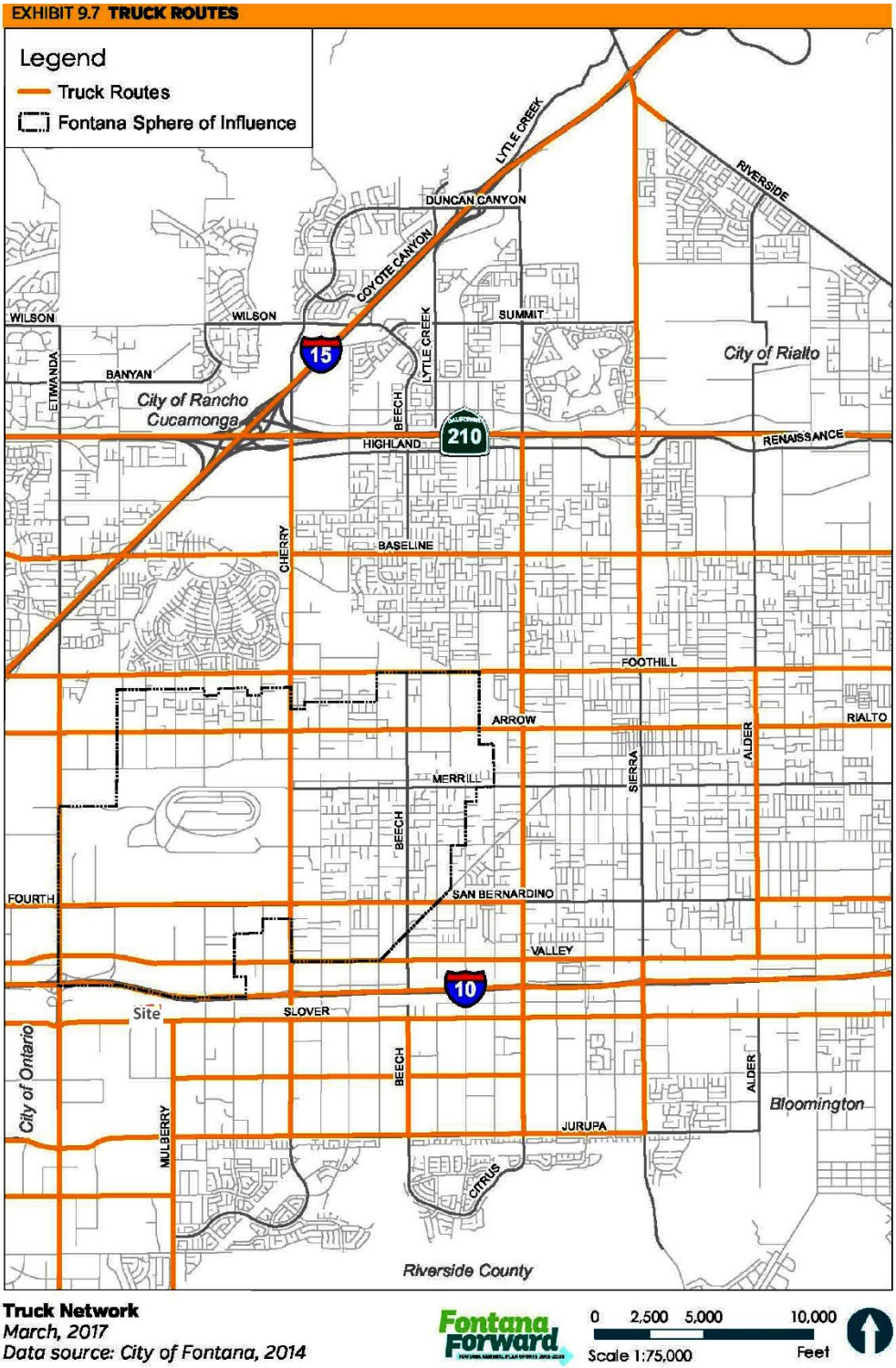
3.6 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in September 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)

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

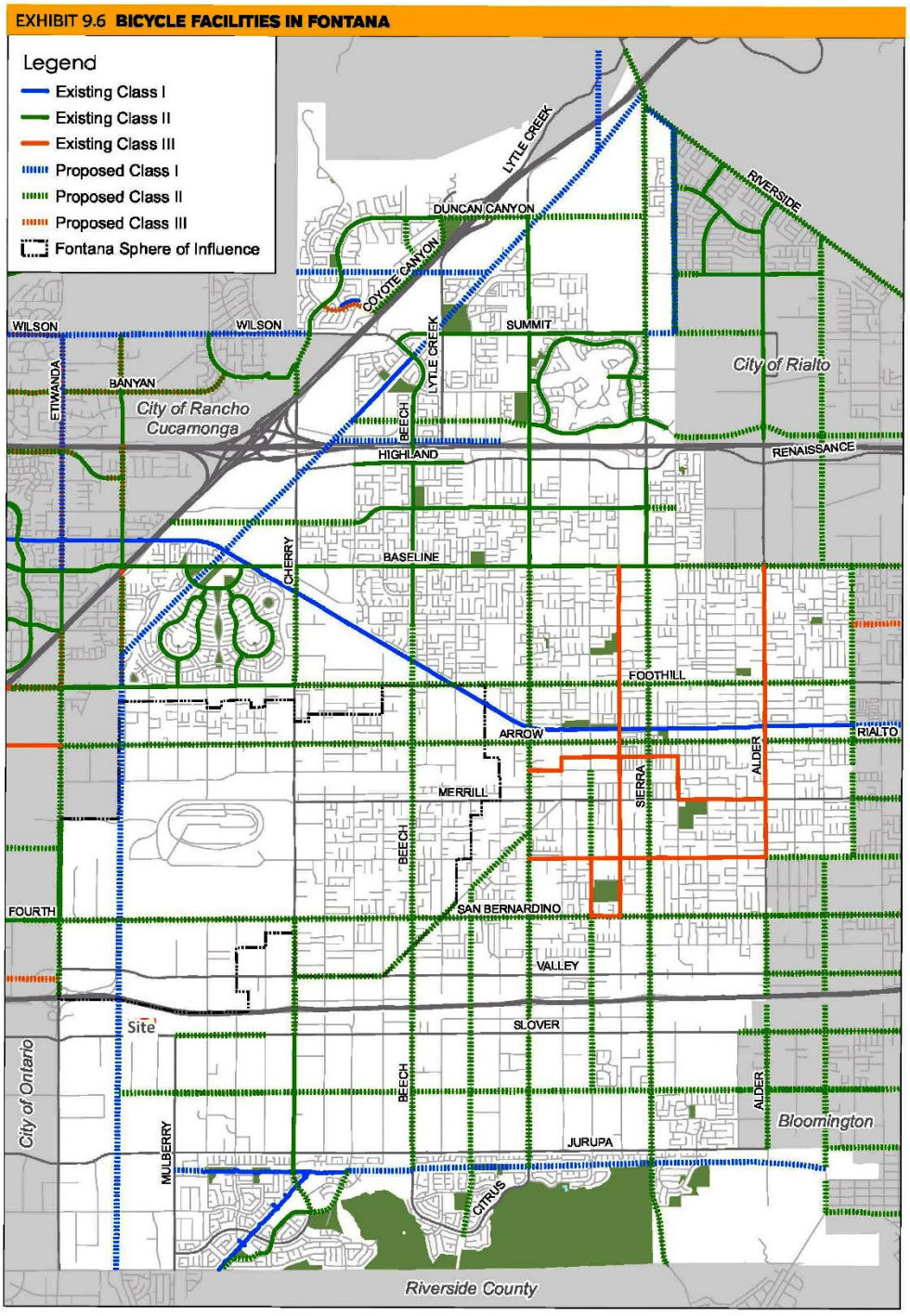
EXHIBIT 3-3: CITY OF FONTANA TRUCK ROUTES



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

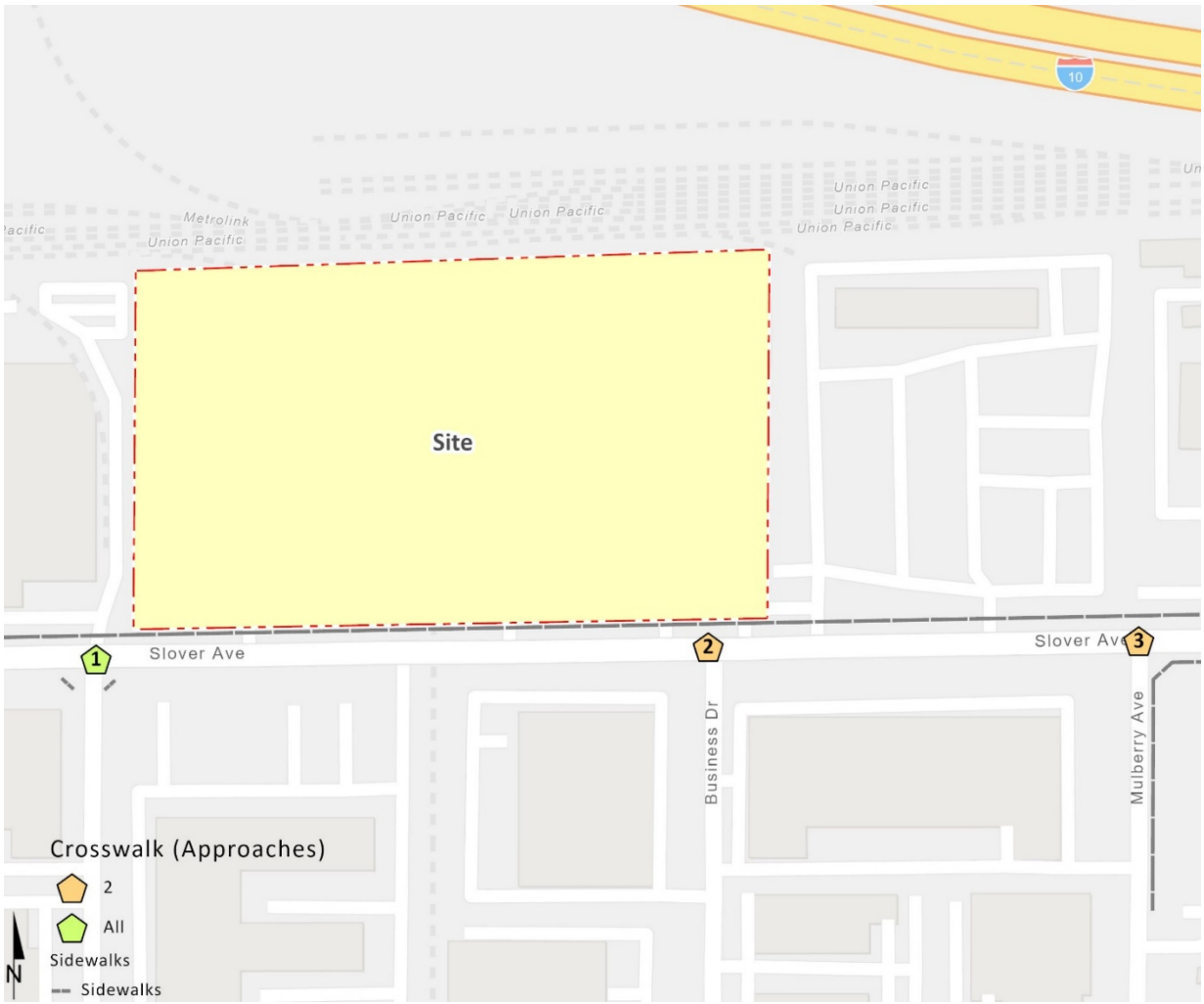
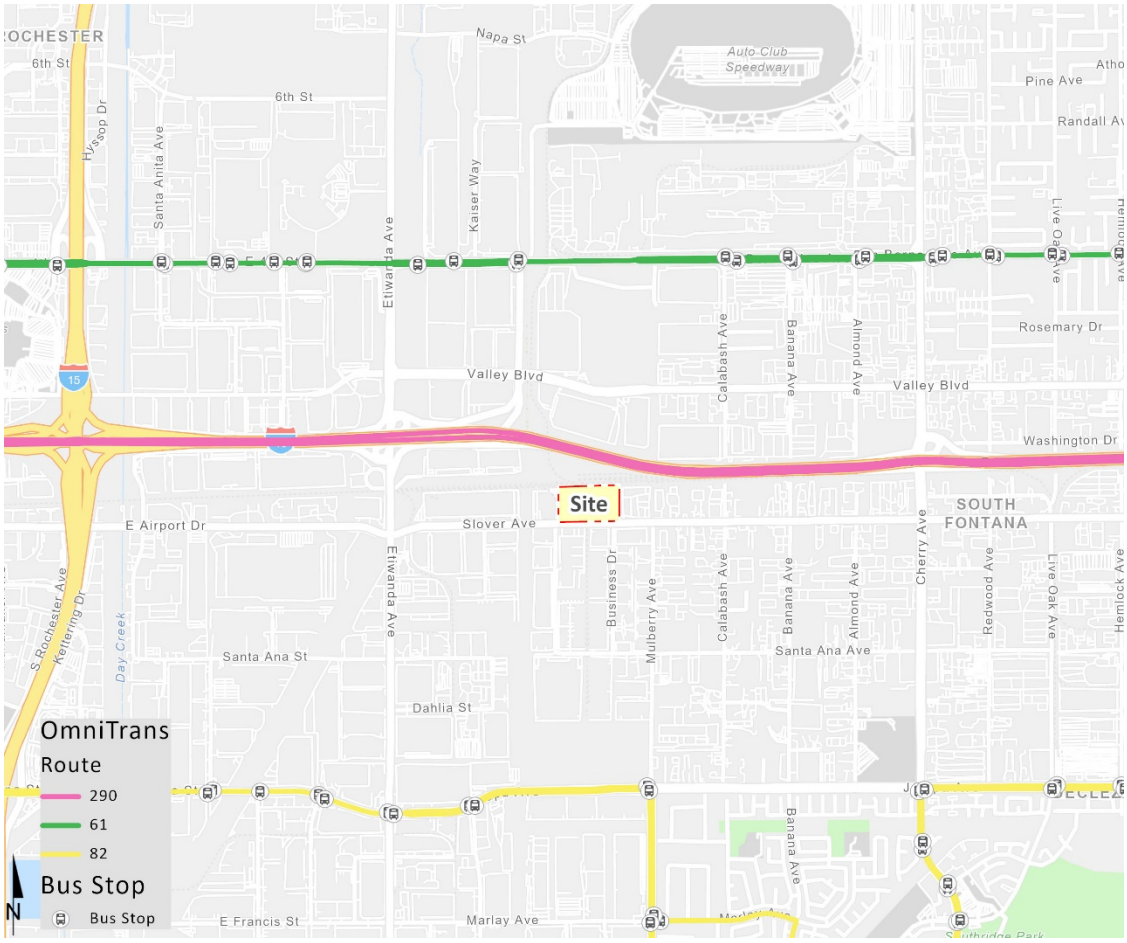


EXHIBIT 3-6: EXISTING TRANSIT ROUTES



Slover Avenue between Commerce Way and Business Drive was collected via 24-hour tube count in September 2021, which was utilized to develop a peak-to-daily relationship in order to calculate daily traffic on other roadway segments. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12.08 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes indicated that the peak-to-daily relationship is approximately 8.28 percent. As such, the above equation utilizing a factor of 12.08 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.28 percent (i.e., 1/0.0828 = 12.08) 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.

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 all the study area intersections are currently operating at an acceptable LOS during the peak hours. The intersection operations analysis worksheets are included in Appendix 3.2 of this TS.

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

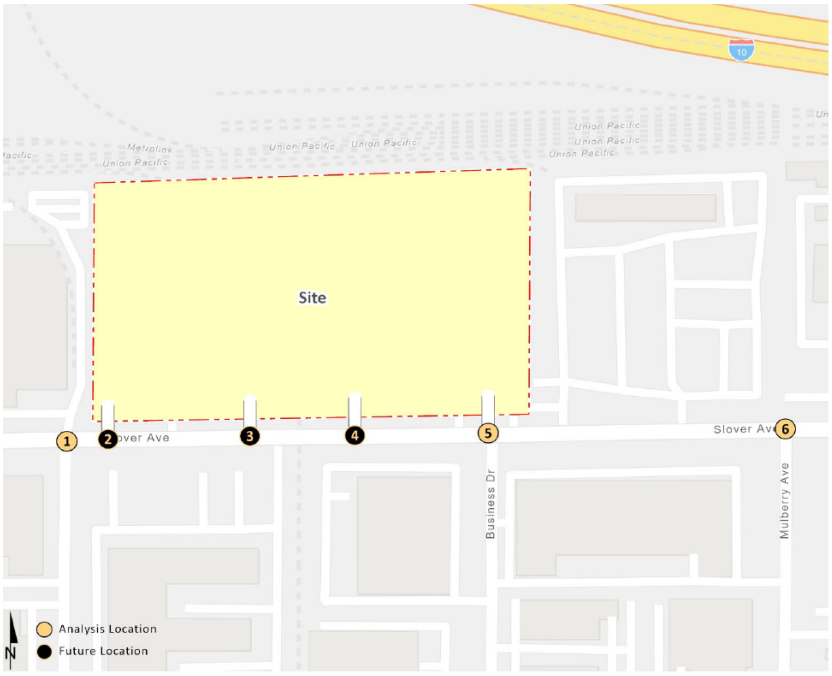
#	Intersection	Traffic Control[2]	Delay[1] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Commerce Wy. & Slover Av.	TS	6.3	4.9	A	A
2	Driveway 1 & Slover Av.		Future Intersection			
3	Driveway 2 & Slover Av.		Future Intersection			
4	Driveway 3 & Slover Av.		Future Intersection			
5	Driveway 4/Business Dr. & Slover Av.	CSS	15.0	19.9	C	C
6	Mulberry Av. & Slover Av.	TS	13.1	16.9	B	B

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 in seconds.

[2] TS = Traffic Signal; CSS = Cross-Street Stop

EXHIBIT 3-7: EXISTING (2021) TRAFFIC VOLUMES



1 Commerce Wy. & Slover Av.	2 Driveway 1 & Slover Av.	3 Driveway 2 & Slover Av.	4 Driveway 3 & Slover Av.	5 Driveway 4 / Business Dr. & Slover Av.
13,650 ← 505(515) ↰ 38(5) 272(581) → 37(10) ↴ 19(35) 11(27) ***13,800*** ***950***	***Future Intersection***	***Future Intersection***	***Future Intersection***	***13,750*** ← 528(463) ↰ 63(13) 224(592) → 59(16) ↴ 15(57) 13(70) ***13,650*** ***1,900***

6 Mulberry Av. & Slover Av.
14,500 ← 441(328) ↰ 160(131) 179(563) → 58(99) ↴ 150(148) 138(179) ***6,750***

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

Average Daily Trips

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):

- Driveway 4/Business Dr & Slover Av (#5)

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4 PROJECTED FUTURE TRAFFIC

The proposed Project is located north of Slover Avenue and west of Business Drive in the City of Fontana is proposing to redevelop the site with 2 warehouse buildings totaling 355,370 square feet. Building 1 to the east is to consist of 212,677 square feet of warehouse use and Building 2 to the west is to consist of 142,693 square feet of warehousing use. The Project is anticipated to be developed within a single phase with an Opening Year of 2023. Access to the Project site will be provided to Slover Avenue via two driveways for each building. Driveway 1 is proposed to restrict access to right-in/right-out access only based on its proximity to Commerce Way. Driveway 2 would prohibit left-out access based on its proximity to the railroad. Driveway 3 would prohibit left-in access only also based on its proximity to the adjacent railroad. Driveway 4 would accommodate full access. Regional access to the Project site is available from the I-10 Freeway via Etiwanda Avenue and Cherry Avenue interchanges.

4.1 PROJECT TRIP GENERATION

4.1.1 EXISTING USE

The site is currently occupied by a plant for a manufacturer of prefabricated building systems located at 13592 Slover Avenue in the City of Fontana. As such, for the purposes of this assessment, a credit has been taken for the trips associated with the existing uses. Traffic counts were collected at the driveways for the existing use on June 9th and 10th, 2021 (see Appendix 1.1). Table 4-1 summarizes the total trip generation for the existing site (accounting for all driveways). As shown on Table 4-1, the existing use generates 163 two-way trips per day, with 6 trips during the AM peak hour and 8 trips during the PM peak hour.

TABLE 4-1: EXISTING SURVEY DATA FOR EXISTING USE

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Day 1: June 9, 2021							
Passenger Cars:	6	1	7	0	8	8	153
2-axle Trucks:	0	0	0	0	0	0	6
3-axle Trucks:	0	0	0	0	0	0	4
4+-axle Trucks:	0	0	0	0	0	0	6
Total Truck Trips:	0	0	0	0	0	0	16
Total Trips[1]	6	1	7	0	8	8	169
Day 2: June 10, 2021							
Passenger Cars:	3	0	3	1	7	8	144
2-axle Trucks:	0	0	0	0	0	0	10
3-axle Trucks:	0	0	0	0	0	0	0
4+-axle Trucks:	1	1	2	0	0	0	2
Total Truck Trips:	1	1	2	0	0	0	12
Total Trips[1]	4	1	5	1	7	8	156
2-Day Average Trip Generation:							
Passenger Cars:	5	1	5	1	8	8	149
2-axle Trucks:	0	0	0	0	0	0	8
3-axle Trucks:	0	0	0	0	0	0	2
4+-axle Trucks:	1	1	1	0	0	0	4
Total Truck Trips:	1	1	1	0	0	0	14
Total Trips[1]	**5**	**1**	**6**	**1**	**8**	**8**	**163**

* Note: data collected on June 9 and 10, 2021.

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

[2] Trip generation represents the sum of all driveways, by day.

4.1.2 PROPOSED PROJECT

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 (10th Edition, 2017) was used to estimate the trip generation. Trip generation rates for the Project are shown in Table 4-2.

TABLE 4-2: PROJECT TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates:									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars			0.114	0.034	0.148	0.044	0.118	0.162	1.270
2-Axle Trucks			0.003	0.001	0.004	0.001	0.003	0.005	0.078
3-Axle Trucks			0.004	0.001	0.005	0.002	0.004	0.006	0.097
4+-Axle Trucks			0.011	0.003	0.014	0.005	0.013	0.018	0.294
Passenger Car Equivalent (PCE) Trip Generation Rates:[4]									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.051	0.139	0.190	1.740
Passenger Cars			0.114	0.034	0.148	0.044	0.118	0.162	1.270
2-Axle Trucks (PCE = 2.0)			0.004	0.001	0.006	0.002	0.005	0.007	0.118
3-Axle Trucks (PCE = 2.5)			0.007	0.002	0.009	0.003	0.009	0.012	0.194
4+-Axle Trucks (PCE = 3.0)			0.032	0.010	0.042	0.014	0.039	0.054	0.882

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: ITE Trip Generation Handbook Supplement (2020), Appendix C.
Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

[4] PCE factors per City's Guidelines: 2-axle = 2.0; 3-axle = 2.5; 4+-axle = 3.0.

The trip generation summary for the Project in actual vehicles is shown on Table 4-3. As shown on Table 4-3, the Project is anticipated to generate a total of 622 two-way trips per day with 59 AM peak hour trips and 68 PM peak hour trips.

TABLE 4-3: TRIP GENERATION SUMMARY (ACTUAL VEHICLES)

Land Use	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:								
Warehousing	355.370 TSF							
Passenger Cars:		40	12	52	15	42	57	452
2-axle Trucks:		1	0	1	0	1	1	28
3-axle Trucks:		1	0	1	1	2	3	36
4+-axle Trucks:		4	1	5	2	5	7	106
Total Trucks:		6	1	7	3	8	11	170
Total Trips (Actual Vehicles)[2]		**46**	**13**	**59**	**18**	**50**	**68**	**622**

[1] TSF = thousand square feet

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

The trip generation summary for the Project in passenger car equivalent (PCE) is shown on Table 4-4. As shown on Table 4-4, the Project is anticipated to generate a total of 878 PCE two-way trips per day with 72 PCE AM peak hour trips and 83 PCE PM peak hour trips.

TABLE 4-4: TRIP GENERATION SUMMARY (PCE)

Land Use	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Passenger Car Equivalent (PCE):								
Warehousing	355.370 TSF							
Passenger Cars:		40	12	52	15	42	57	452
2-axle Trucks:		2	0	2	1	2	3	42
3-axle Trucks:		3	1	4	1	3	4	70
4+-axle Trucks:		11	3	14	5	14	19	314
Total Trucks (PCE):		16	4	20	7	19	26	426
Total Trips (PCE)[2]		**56**	**16**	**72**	**22**	**61**	**83**	**878**

[1] TSF = thousand square feet

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

4.1.3 TRIP GENERATION COMPARISON

Table 4-5 shows the trip generation comparison and the resulting net change in trips between the existing use and the proposed Project. As shown on Table 4-5, the proposed Project would result in a net increase of 697 two-way PCE trips per day and net increase of 60 PCE AM peak hour trips and 74 PCE PM peak hour trips.

TABLE 4-5: TRIP GENERATION COMPARISON (PCE)

Trip Generation Comparison	Quantity Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Proposed Project	355.370 TSF							
Passenger Cars:		40	12	52	15	42	57	452
Total Truck Trips (PCE):		16	4	20	7	19	26	426
Total Trips[2]		**56**	**16**	**72**	**22**	**61**	**83**	**878**
Existing Use								
Passenger Cars:		5	1	6	1	8	9	149
Total Truck Trips (PCE):		3	3	6	0	0	0	32
Total Trips[2]		**8**	**4**	**12**	**1**	**8**	**9**	**181**
Variance								
Passenger Cars:		35	11	46	14	34	48	303
Total Truck Trips (PCE):		13	1	14	7	19	26	394
Total Trips[2]		**48**	**12**	**60**	**21**	**53**	**74**	**697**

[1] TSF = thousand square feet

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

4.1.4 11TH EDITION ITE TRIP GENERATION RATES

After the approved scope and while wrapping up the initial draft of the TS, the ITE released its latest Trip Generation Manual (11th Edition, 2021). Upon review of the updated trip generation rates for the proposed Warehousing use (ITE Land Use Code 150) shown on Table 4-6, it was determined that while there is a slight increase in daily traffic (based on PCE only) the trip

generation for the AM and PM peak hours show reductions in total traffic as compared to the 10th Edition based trip generation currently utilized in the traffic study for the operations analyses. As such, the analysis currently based on the 10th Edition rates are more conservative.

TABLE 4-6: PROJECT TRIP GENERATION BASED ON 11TH EDITION

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates:									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks			0.007	0.006	0.013	0.010	0.009	0.019	0.376
Passenger Car Equivalent (PCE) Trip Generation Rates:[4]									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.116	0.034	0.150	0.042	0.108	0.150	1.110
2-Axle Trucks (PCE = 2.0)			0.003	0.002	0.005	0.005	0.003	0.008	0.150
3-Axle Trucks (PCE = 2.5)			0.004	0.004	0.008	0.006	0.006	0.012	0.248
4+-Axle Trucks (PCE = 3.0)			0.021	0.017	0.038	0.030	0.026	0.056	1.127

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

[2] TSF = thousand square feet

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

[4] PCE factors per City's Guidelines: 2-axle = 2.0; 3-axle = 2.5; 4+-axle = 3.0.

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:									
Warehousing	355.370	TSF							
Passenger Cars:			41	12	53	15	38	53	394
2-axle Trucks:			1	0	1	1	1	2	36
3-axle Trucks:			1	1	2	1	1	2	44
4+-axle Trucks:			2	2	4	4	3	7	134
Total Trucks:			4	3	7	6	5	11	214
Total Trips (Actual Vehicles)[2]			**45**	**15**	**60**	**21**	**43**	**64**	**608**
Passenger Car Equivalent (PCE):									
Warehousing	355.370	TSF							
Passenger Cars:			41	12	53	15	38	53	394
2-axle Trucks:			1	1	2	2	1	3	54
3-axle Trucks:			1	2	3	2	2	4	88
4+-axle Trucks:			7	6	13	11	9	20	400
Total Trucks (PCE):			9	9	18	15	12	27	542
Total Trips (PCE)[2]			**50**	**21**	**71**	**30**	**50**	**80**	**936**
Project PCE (Table 4-3)			**56**	**16**	**72**	**22**	**61**	**83**	**878**
Variance			**-6**	**5**	**-1**	**8**	**-11**	**-3**	**58**

[1] TSF = thousand square feet

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

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. 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.

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.

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

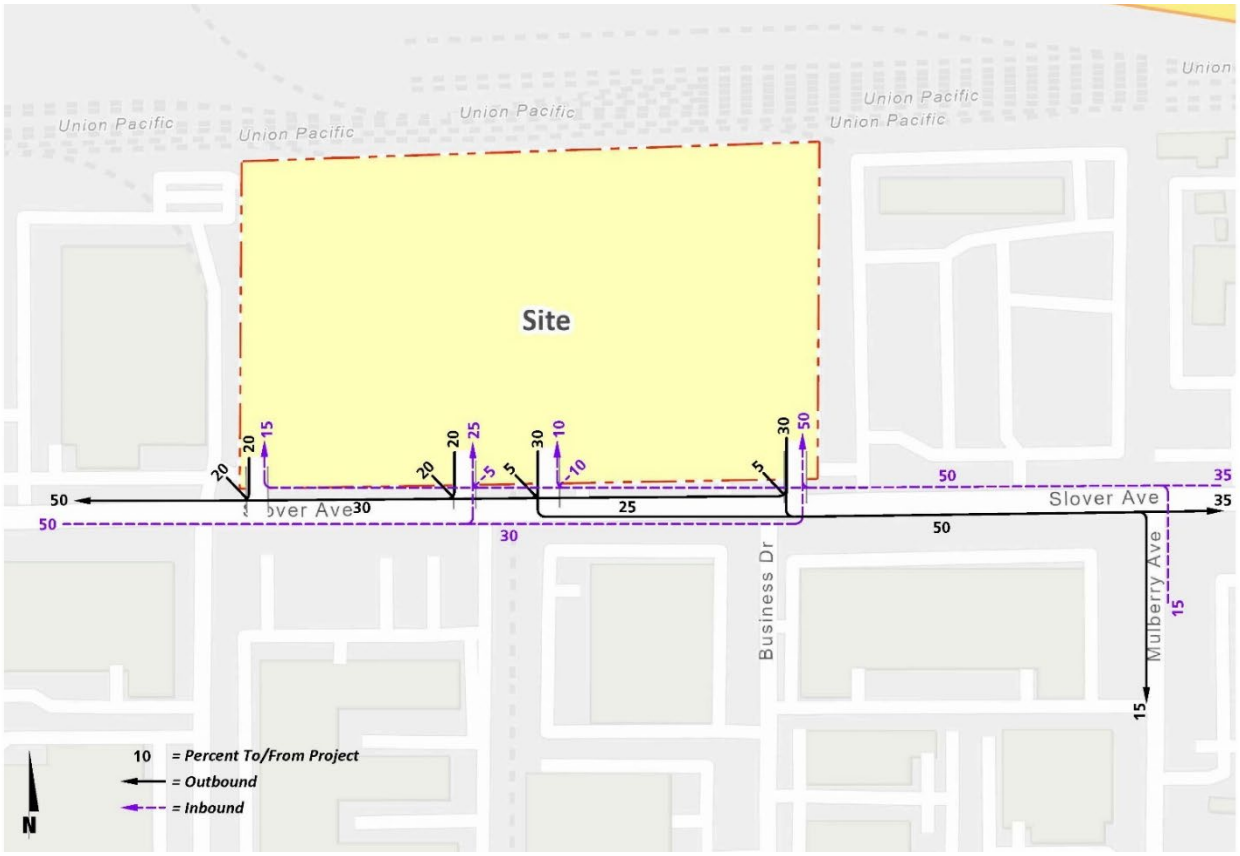


EXHIBIT 4-2: PROJECT (TRUCKS) TRIP DISTRIBUTION

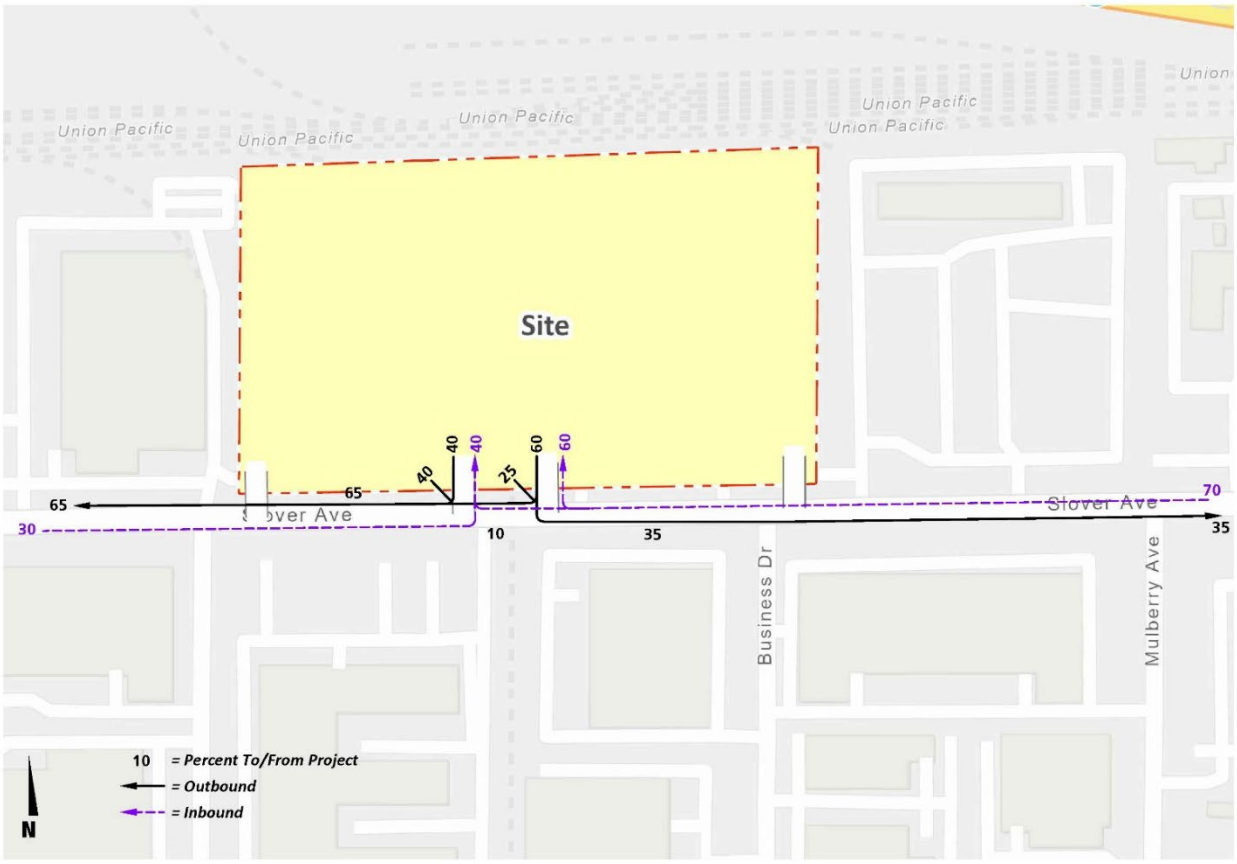
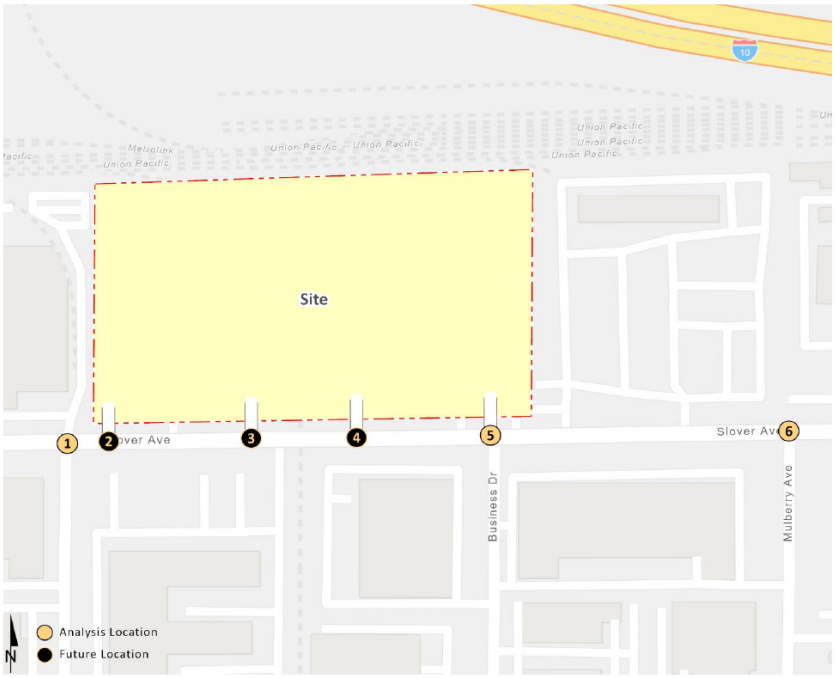


EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Commerce Wy. & Slover Av.	2 Driveway 1 & Slover Av.	3 Driveway 2 & Slover Av.	4 Driveway 3 & Slover Av.	5 Driveway 4 / Business Dr. & Slover Av.
250	*100* *300*	*150* *150*	*200* *300*	*200* *300*
← 6(22)	2(8) ↲ ; ↱ 6(2) ; ← 4(18)	3(12) ↲ ; ↱ 3(1) ; ← 7(8)	1(4) ↲ ; 3(13) ↳ ; ↱ 8(3) ; ← 9(5)	1(2) ↲ ; 3(11) ↳ ; ↱ 8(3) ; ← 16(7)
19(8) →	22(8) →	10(4) ⇀ ; 12(5) →	12(5) →	12(5) ⇁ ; 3(13) →
250	*300*	*300*	*150*	*300*

6 Mulberry Av. & Slover Av.
200
← 16(7)
4(15) → ; 2(5) ⇁ ; ↰ 5(2)
Nominal

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

Average Daily Trips

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of 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 4-7, 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

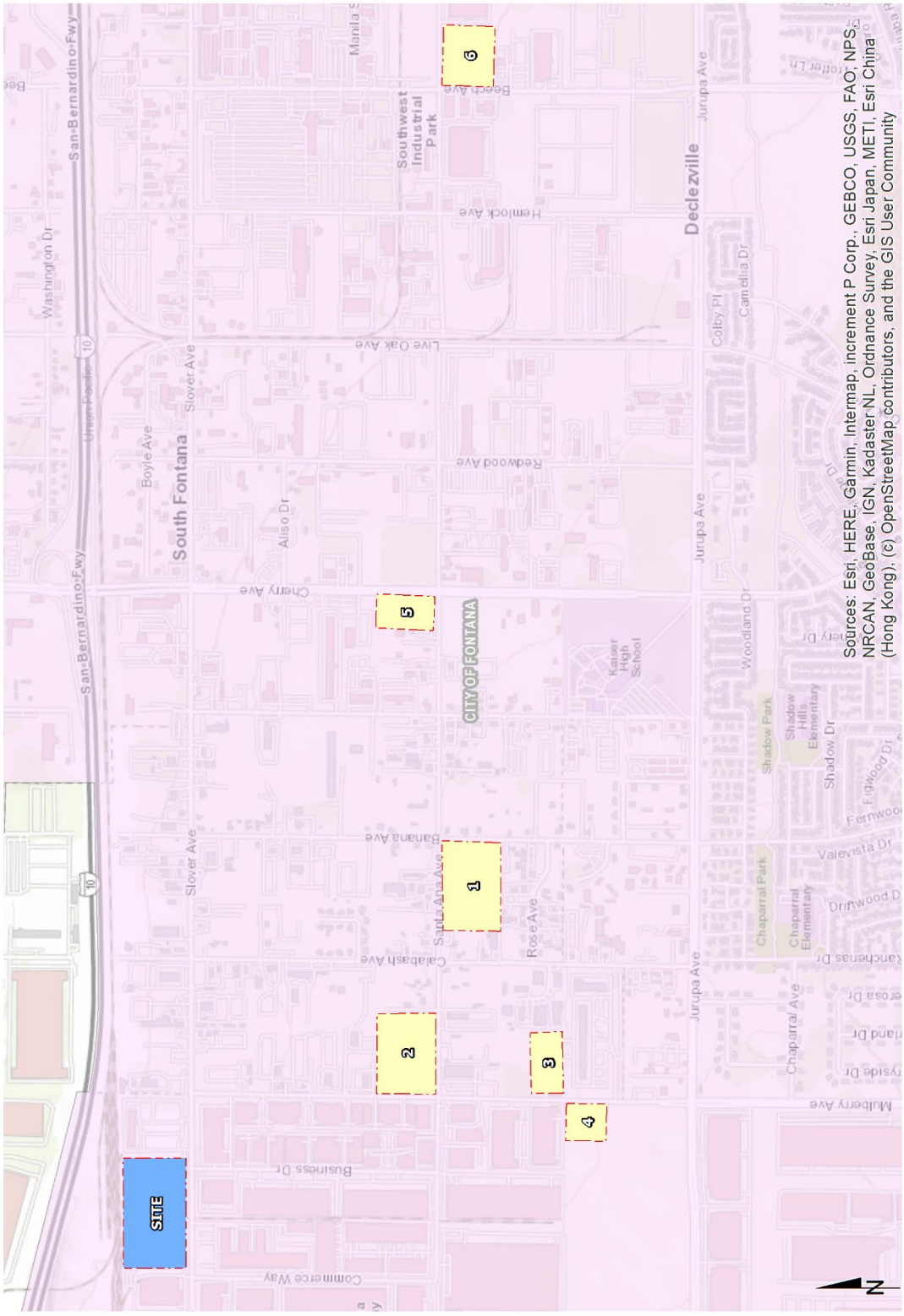
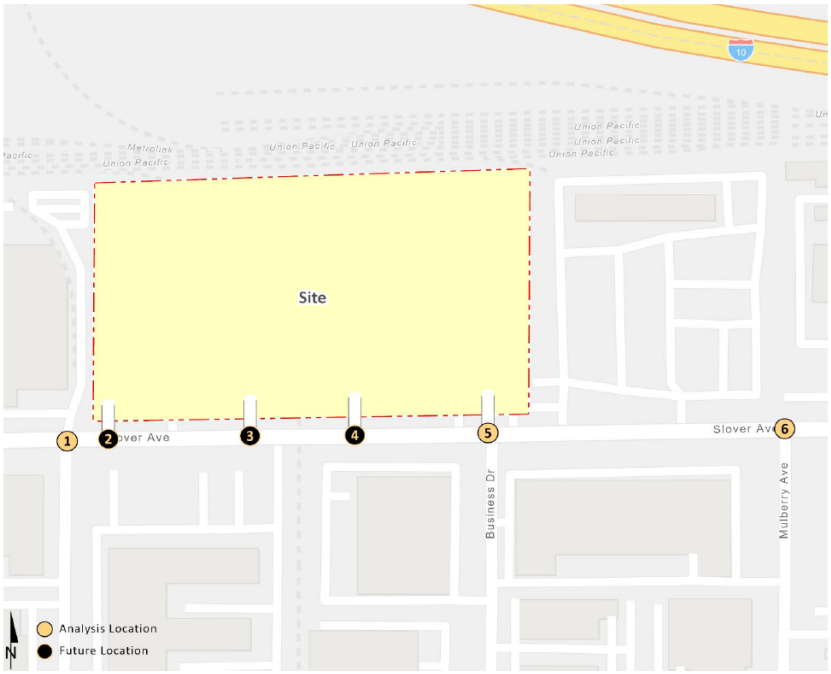


EXHIBIT 4-5: CUMULATIVE ONLY TRAFFIC VOLUMES



1 Commerce Wy. & Slover Av.	2 Driveway 1 & Slover Av.	3 Driveway 2 & Slover Av.	4 Driveway 3 & Slover Av.	5 Driveway 4 / Business Dr. & Slover Av.
4,400 ← 64(357) 358(100) → *4,400*	*4,400* ← 64(357) 358(100) → *4,400*	*4,400* ← 64(357) 358(100) → *4,400*	*4,400* ← 64(357) 358(100) → *4,400*	*4,400* ← 64(357) 358(100) → *4,400*

6 Mulberry Av. & Slover Av.
4,400 ← 64(357) 358(100) →

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

***Average Daily Trips***

TABLE 4-7: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

TAZ	Project	Land Use	Quantity[1]
1	Birtcher Commerce Center	Warehousing	256.379 TSF
		High-Cube Cold Storage	85.460 TSF
2	Fontana Trailer Storage Yard	Truck Trailer Storage Yard	17.4 AC
3	MG Home International Warehouse	Warehouse	15.570 TSF
4	Calabash Industrial Building	Warehouse	64.692 TSF
5	Cherry Av. Warehouse	Warehouse	174.280 TSF
6	Beech & Santa Ana Warehouse	Warhouse	174.000 TSF

[1] TSF = Thousand Square Feet; AC = Acres

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 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).

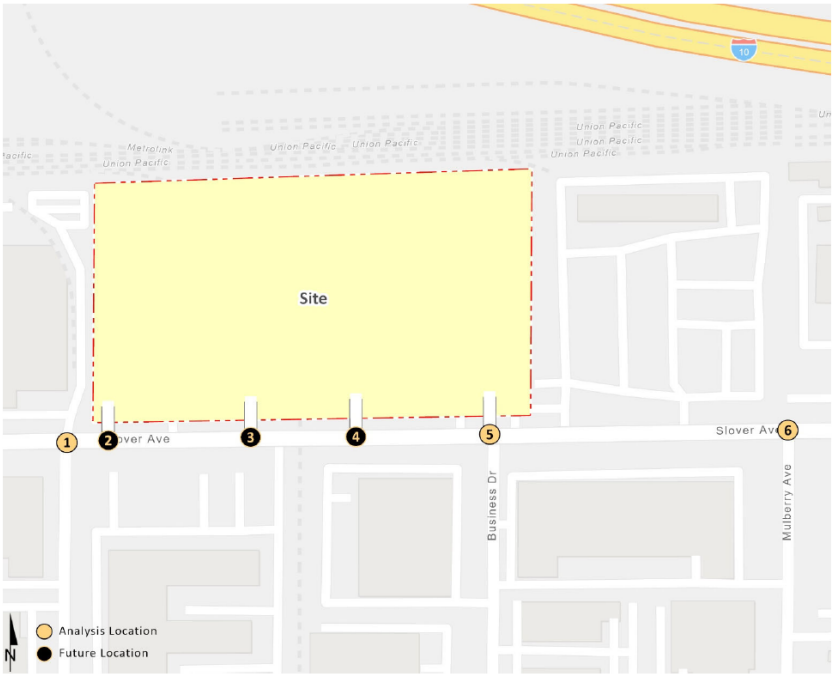
5.2 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

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 Commerce Wy. & Slover Av.

18,350

← 581(884)
↰ 39(5)

	↰	↱
636(695) →	19(36)	11(28)
38(10) ↴		

18,500 *950*

2 Driveway 1 & Slover Av.

Future Intersection

3 Driveway 2 & Slover Av.

Future Intersection

4 Driveway 3 & Slover Av.

Future Intersection

5 Driveway 4 / Business Dr. & Slover Av.

18,450

← 604(831)
↰ 64(13)

	↰	↱
587(706) →	15(58)	13(72)
60(16) ↴		

18,350 *1,950*

6 Mulberry Av. & Slover Av.

19,250

← 515(693)
↰ 164(134)

	↰	↱
541(676) →	154(151)	141(183)
59(101) ↴		

6,900

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

***Average Daily Trips***

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

1 Commerce Wy. & Slover Av.

18,550

← 587(906)
↰ 39(5)

655(703) →
38(10) ↴
19(36) ↰
11(28) ↱

18,750 *950*

2 Driveway 1 & Slover Av.

100 *18,650*

2(8) ↲
↱ 6(2)
← 624(907)

670(730) →

18,650

3 Driveway 2 & Slover Av.

150 *18,500*

3(12) ↲
↱ 3(1)
← 627(897)

10(4) ↳
660(727) →

18,650

4 Driveway 3 & Slover Av.

200 *18,650*

1(4) ↲
3(13) ↳
↱ 8(3)
← 629(894)

660(727) →

18,500

5 Driveway 4 / Business Dr. & Slover Av.

200 *18,800*

1(2) ↲
3(11) ↳
↱ 8(3)
← 620(838)
↰ 64(13)

12(5) ↳
590(719) →
60(16) ↴
15(58) ↰
13(72) ↱

18,650 *1,950*

6 Mulberry Av. & Slover Av.

19,450

← 531(700)
↰ 164(134)

545(691) →
61(106) ↴
159(153) ↰
141(183) ↱

6,950

##(##) 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 none of study area intersections is anticipated to operate at an unacceptable LOS during the peak hours under Opening Year Cumulative (2023) Without Project. 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.)		2023 Without Project Level of Service		2023 With Project Delay[1] (secs.)		2023 With Project Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	Commerce Wy. & Slover Av.	TS	7.7	4.8	A	A	7.8	4.8	A	A
2	Driveway 1 & Slover Av.	**CSS**	Future Intersection				11.8	13.3	B	B
3	Driveway 2 & Slover Av.	**CSS**	Future Intersection				11.9	13.3	B	B
4	Driveway 3 & Slover Av.	**CSS**	Future Intersection				15.8	20.0	C	C
5	Driveway 4/Business Dr. & Slover Av.	CSS	19.7	24.9	C	C	24.3	**34.4**	C	**D**
6	Mulberry Av. & Slover Av.	TS	16.3	16.8	B	B	16.5	17.1	B	B

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 in seconds.

[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 is one of study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic under Opening Year Cumulative (2023) With Project traffic conditions:

- Driveway 4/Business Dr & Slover Av (#5)

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. No additional unsignalized study area intersections is anticipated to meet a traffic signal warrant under Opening Year Cumulative (2023) With Project traffic

conditions. Traffic signal warrants for Opening Year Cumulative (2023) With Project traffic conditions are included in Appendix 5.3.

5.6 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 addition of Project traffic is anticipated to result in a peak hour operations deficiency during the PM peak hour at the intersection of Driveway 4/Business Drive and Slover Avenue. As such, the following improvements have been recommended for those intersections exceeding the City's thresholds as listed in Table 2-4 in order to bring the intersection operations back to acceptable levels. It should be noted that the intersection currently meets peak hour volume-based traffic signal warrants for Existing conditions. The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project with improvements are included in Appendix 5.4 of this TS.

TABLE 5-2: INTERSECTION DEFICIENCIES AND IMPROVEMENTS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS

			Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
5	Driveway 4/Business Dr. & Slover Av.																	
	-Without Improvements	CSS	0	1	1	0	1	0	1	2	0	1	2	0	24.3	**34.4**	C	**D**
	-With Improvements	**TS**	0	1	1	0	1	0	1	2	0	1	2	0	5.9	7.8	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

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6 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Fontana are funded through a combination of construction of off-site improvements, 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
5	Driveway 4/Business Dr. & Slover Av.						
		AM:	1,342	51	1,846	504	**10.12%**
		PM:	1,642	47	2,184	542	8.67%

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 LOS as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (8) Based on OPR's Technical Advisory specific procedures for complying with the new CEQA requirements for VMT analysis the City of Fontana adopted Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (**City Guidelines**), which documents the City's VMT analysis methodology and approved impact thresholds. The VMT screening evaluation presented in this report has been developed based on the adopted City Guidelines. (1) The City Guidelines identify that the SBCTA VMT Screening Tool (**Screening Tool**) is utilized to assess project VMT screening criteria. The Screening Tool uses the project's assessor's parcel number (APN) to determine if its location meets one or more of the VMT screening thresholds for land use projects.

7.1 PROJECT SCREENING

The City Guidelines provides information on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less than significant impact without conducting a more detailed project-level assessment. Screening thresholds are broken into the following four steps:

- Step 1: Transit Priority Area (TPA) Screening
- Step 2: Low VMT Area Screening
- Step 3: Low Project Type Screening
- Step 4: Project net daily trips less than 500 ADT

7.1.1 STEP 1: TPA SCREENING

Consistent with guidance identified in the City Guidelines, projects located within a Transit Priority Area (TPA) (i.e., within ½ mile of an existing "major transit stop"[1] or an existing stop along a "high-quality transit corridor"[2]) may be presumed to have a less than significant impact absent substantial evidence to the contrary. However, the presumption may NOT be appropriate if a project:

- Has a Floor Area Ratio (FAR) of less than 0.75;

[1] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

[2] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

- Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
- Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Based on the Screening Tool results presented in Attachment A, the Project site is not located within ½ mile of an existing major transit stop, or along a high-quality transit corridor.

TPA screening criteria is not met.

7.1.2 STEP 2: LOW VMT AREA SCREENING

As described in the City Guidelines, "residential and office projects located within a low VMT generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project 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."

The Screening Tool uses the sub-regional SBTAM to measure VMT performance within individual traffic analysis zones (TAZ's) within the City. The Project's physical location based on parcel number is selected in the Screening Tool to determine project generated VMT as compared to the City's threshold. The parcel containing the proposed Project was selected and the Screening Tool was run for the Production/Attraction (PA) VMT per service population measure of VMT. The Project is not located within a low VMT generating zone as compared to the City threshold of 15% below baseline County of San Bernardino PA VMT per service population (see Appendix 7.1).

Low VMT Area screening criteria is not met.

7.1.3 STEP 3: LOW PROJECT TYPE SCREENING

City Guidelines state that local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact. In addition to local serving retail, other local serving land uses such as public facilities, day care centers, gas stations, etc. would tend to provide local services and result in reducing overall VMT.

Project Type screening criteria is not met.

7.1.4 STEP 4: PROJECT NET DAILY TRIPS LESS THAN 500 ADT SCREENING

Identified in City Guidelines, Projects that generate fewer than 500 ADT would not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have less than significant impact on VMT. Trips generated by the Project's proposed land use have been estimated based on trip generation rates collected by the ITE Trip Generation Manual. (2) The existing land use has been estimated to generate 163 vehicle trip-ends per day. Whereas the

proposed Project is estimated to generate 622 vehicle trip-ends per day. Resulting in a net new increase of 459 vehicle trip-ends per day, which would not exceed the City's screening threshold of 500 ADT.

Project net daily trips less than 500 ADT screening criteria is met.

7.2 CONCLUSION

Based on our findings, the Project was found to meet the project net daily trips less than 500 ADT screening criteria. Therefore, the Project would result in a less than significant impact for VMT; no further VMT analysis required.

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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.

2. **Institute of Transportation Engineers (ITE).** *Trip Generation Manual.* 10th Edition. 2017.

3. **WSP.** *High Cube Warehouse Trip Generation Study.* January 29, 2019.

4. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated June 2016.

5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.

6. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.

7. **Institute of Transportation Engineers.** *Trip Generation Manaul Supplement.* February 2020.

8. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.

9. **San Bernardino County Transportation Authority (SBCTA).** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* February 2020.

10. **Southern California Association of Governments.** *Employment Density Study.* October 2001.

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