BRE Space Mira Loma (MA200004)

TRAFFIC ANALYSIS

CITY OF JURUPA VALLEY

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
PHF	Peak Hour Factor
Project	BRE Space Mira Loma
RCTC	Riverside County Transportation Commission
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SF	Square Feet
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed BRE Space Mira Loma (MA200004) development ("Project"), which is located at Manitou Court and C Street in the City of Jurupa Valley, as shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential traffic and circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies and to achieve acceptable circulation system operational conditions in accordance with the City's General Plan. This traffic study has been prepared in accordance with the City of Jurupa Valley's Traffic Impact Analysis Guidelines and through consultation with City of Jurupa Valley staff during the scoping process. (1) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TA.

1.1 SUMMARY OF FINDINGS

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

- Project to construct all site access driveways with a stop control on the minor approach (exiting traffic from the site). The Project shall construct all curb, gutter, sidewalk, and landscaping improvements along the Project frontages as needed to accommodate site access. Site adjacent roadways to the Project include Manitou Court and Space Center Court.
- The Project is to construct a median along Hopkins Street (similar to that being installed on Iberia Street) to prohibit trucks from making a right turn to go southbound on Etiwanda Avenue.
- The Project shall contribute its fair share towards the existing deficiency at the intersection of Etiwanda Avenue and Hopkins Street. The Project's rough order of magnitude fair share contribution is $1,497 to the City of Jurupa Valley.

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

1.2 PROJECT OVERVIEW

It is our understanding that the Project is to consist of a Proposed Tentative Parcel Map for 3 parcels and a Major Site Development Permit. The Site Development Permit includes the construction of 3 parcels: Parcel 1 with a 1,379,287-square foot (sf) logistics facility, Parcel 2 with a 560,025-sf logistics facility, and Parcel 3 with the existing 172,800-sf building (which is to remain). The uses proposed on Parcel 1 and Parcel 2 are to replace the existing 9 buildings totaling 1,579,500-sf. See Exhibit 1-2 for layout of existing buildings. The preliminary site plan for the proposed Project is shown on Exhibit 1-3.

EXHIBIT 1-1: LOCATION MAP

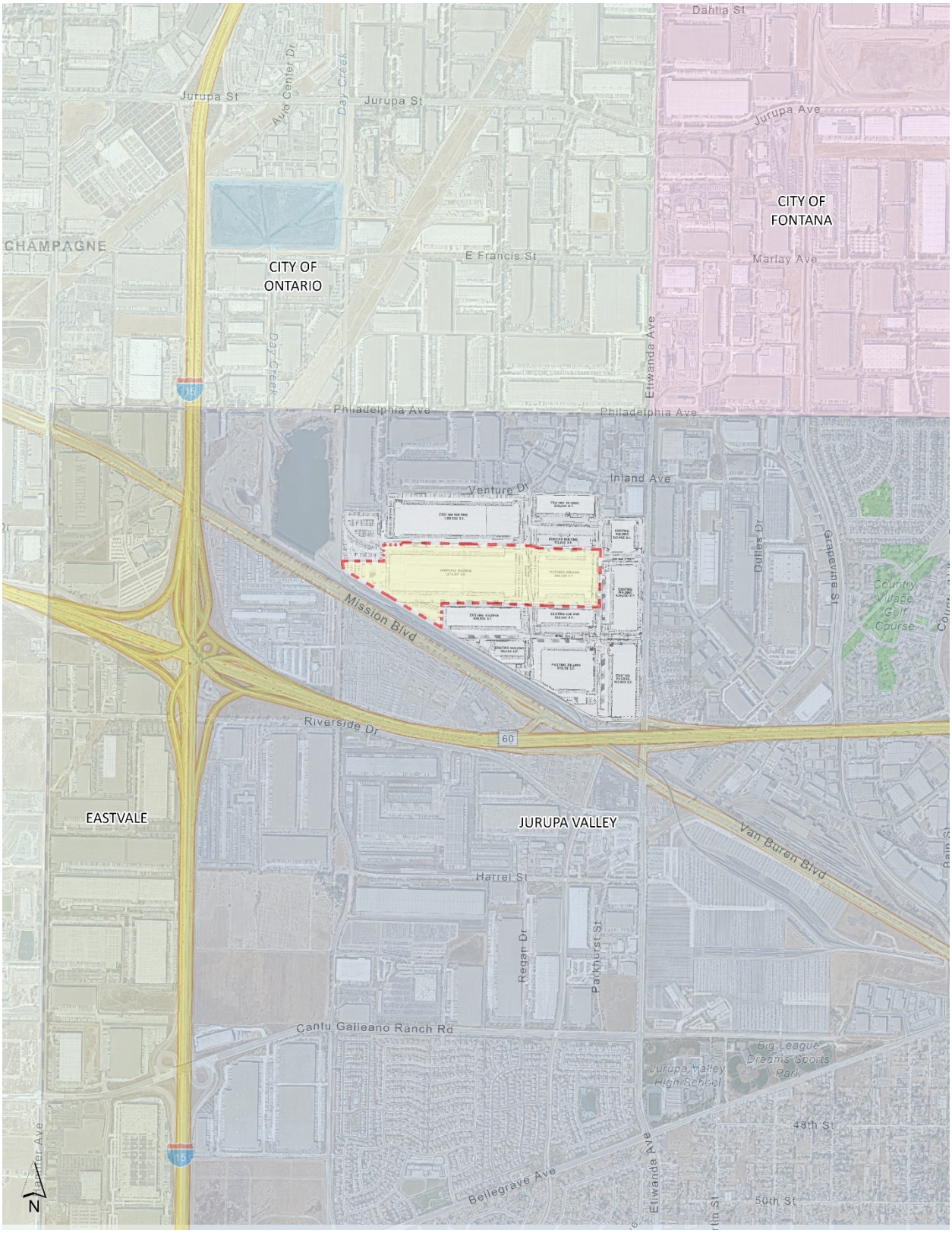


EXHIBIT 1-2: EXISTING SITE PLAN

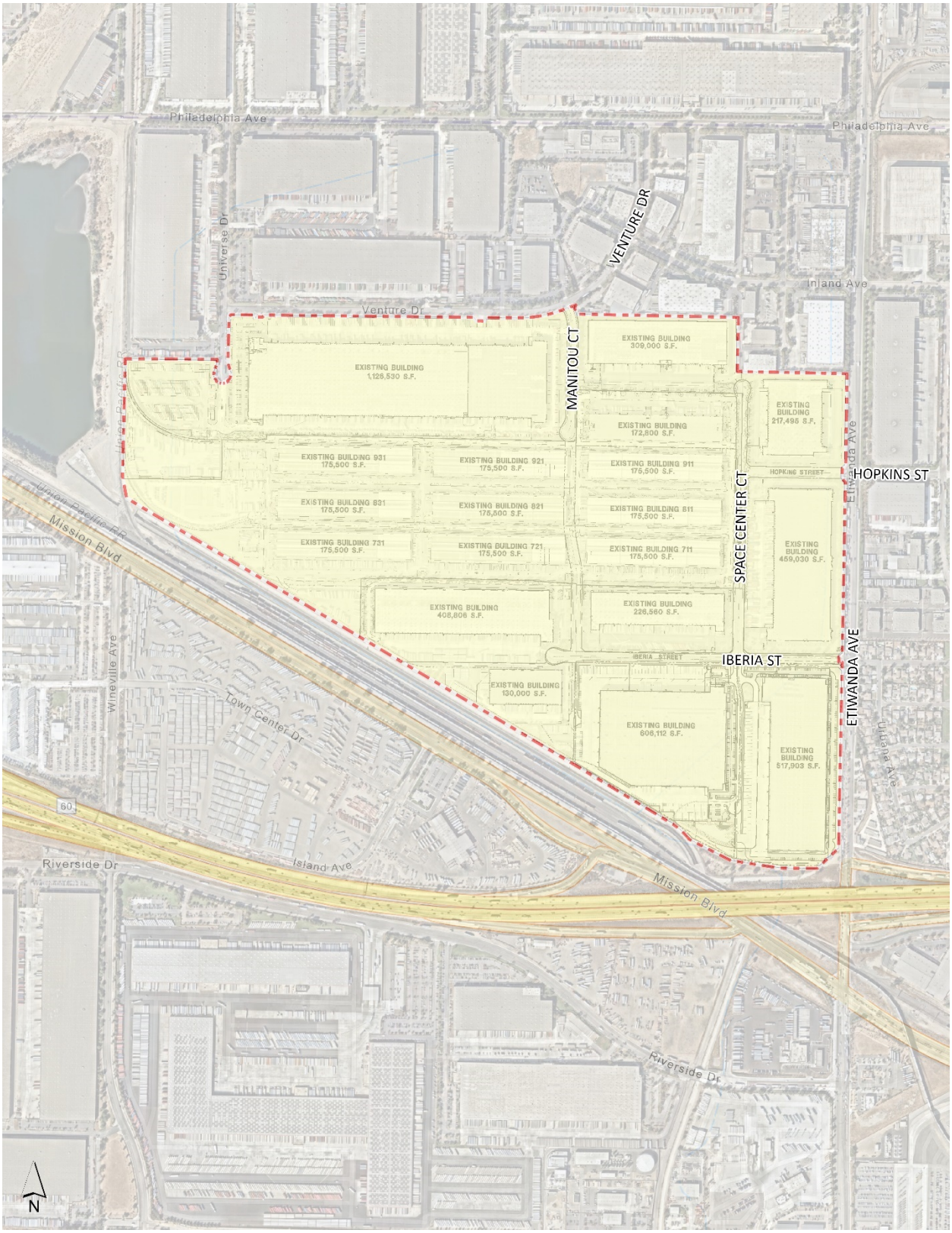
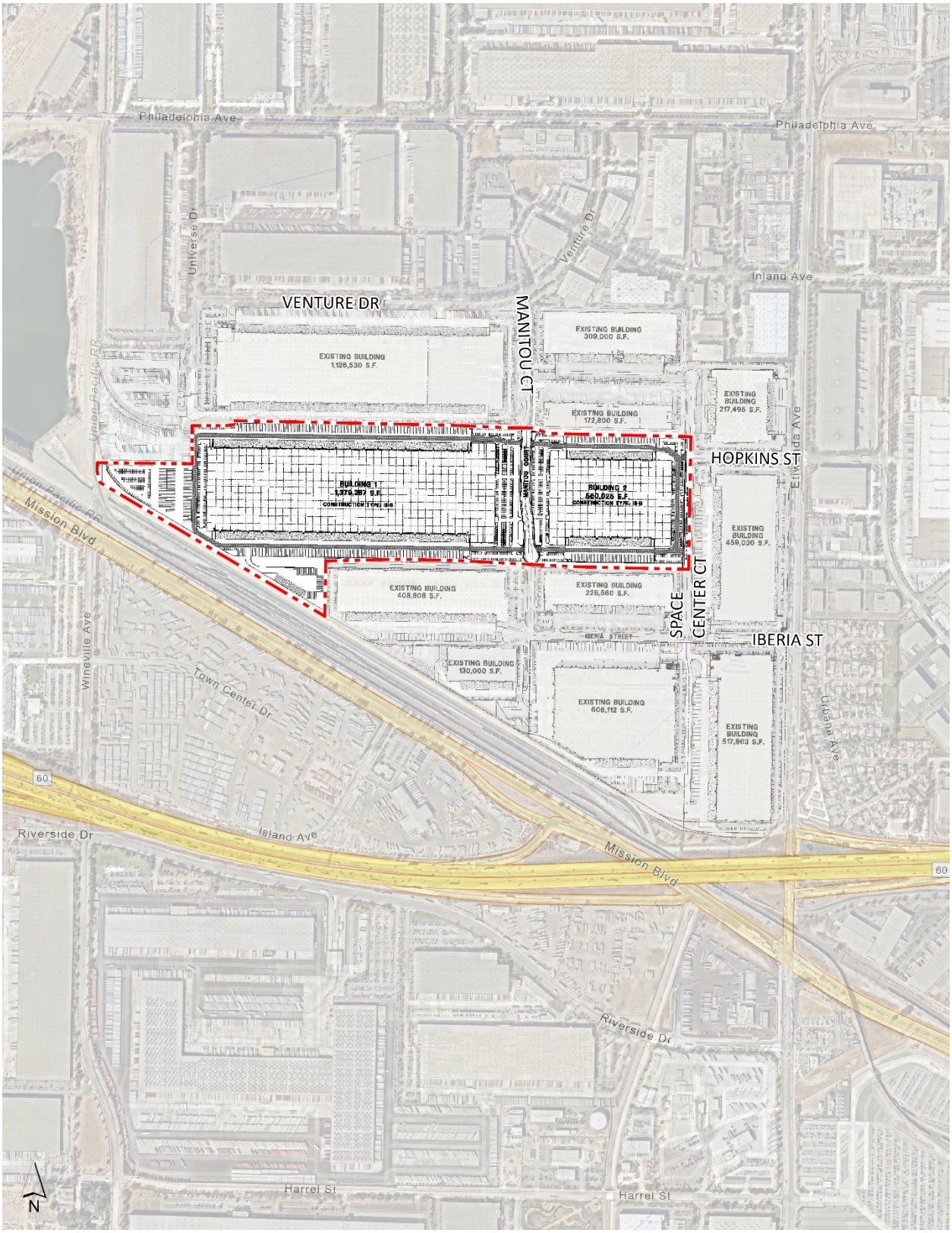


EXHIBIT 1-3: PRELIMINARY SITE PLAN



It is anticipated that the Project will be operational by Year 2022. Access to the Project site will be provided via Manitou Court to the north, an extension of Manitou Court to C Street towards Iberia Street, and Space Center Court to the east. Regional access to the Project site is available from the SR-60 Freeway via Etiwanda Avenue interchange, however, no truck traffic is permitted along Etiwanda Avenue south of Hopkins Street to the SR-60 Freeway. As such, truck traffic is to utilize Etiwanda Avenue to the north to access the I-15 Freeway.

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) and the High Cube Warehouse Trip Generation Study (WSP, January 2019) were used to estimate the trip generation. (2) (3) The proposed Project is anticipated to generate a net total of 3,928 trip-ends per day with 220 AM peak hour trips and 277 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

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

- Existing (2020) Conditions
- Background (2022) Conditions
- Background (2022) plus Project Conditions
- Background (2022) plus Project plus Cumulative Project Conditions

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic counts collected in October 2020 and historic traffic counts have been utilized in order to establish a pre-COVID baseline. A detailed discussion of the adjustments made to each intersection can be found in Section 3.6 *Existing Traffic Counts* of this report. Traffic counts were collected based on vehicle classification and heavy trucks were accounted for in the peak hour operations analysis as a percentage of total traffic.

1.3.2 BACKGROUND (2022) CONDITIONS

The Background (2022) conditions analysis determines the potential circulation system deficiencies based on a comparison of the Background (2022) plus Project traffic conditions to Background (2022) conditions. Per the City's guidelines, the Background conditions is to be evaluated for the Project's anticipated opening year with traffic from approved projects to be occupied by the Project's opening year plus an ambient growth rate applied to Existing conditions. The roadway network is similar to Existing conditions except for Project access points. To account for background traffic growth, an ambient growth factor from Existing (2020) conditions of 4.04% (2 percent per year, compounded over 2 years) is included for Background (2022) traffic conditions. The Background (2022) analysis is intended to identify "Opening Year"

deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.3 BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS

The Background (2022) plus Project plus Cumulative Project traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. This analysis scenario includes an ambient growth (4.04%) applied to existing traffic volumes up to the Project's proposed opening year, traffic from the Project, plus traffic from other approved and pending projects (even those not anticipated to be occupied by the Project's opening year). The roadway network is similar to Existing conditions except for Project's access points.

The Background (2022) plus Project plus Cumulative Project conditions analyses will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) and Development Impact Fee (DIF) programs, can accommodate the near-term cumulative traffic at the target level of service (LOS) identified in the City of Jurupa Valley (lead agency) General Plan. (4) Each of these regional and local transportation fee programs are discussed in more detail in Section 7 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Jurupa Valley's traffic study requirements, Urban Crossroads, Inc. prepared a project traffic study scoping package for review by City of Jurupa Valley staff prior to the preparation of this report (see Appendix 1.1).

The 12 study area intersections listed in Table 1-1 were selected for evaluation in this TA based on consultation with City of Jurupa Valley staff. Per the City's traffic study guidelines, Exhibit 1-4 shows the study area intersections where the Project is anticipated to contribute 50 or more peak hour trips per the City of Jurupa Valley's traffic study guidelines. (1) The "50 peak hour trip" criteria represents 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 Riverside County for estimating a potential area of influence (i.e., study area).

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (5) CMP intersections are identified in Table 1-1. There are no study area intersections identified as a Riverside County CMP facility.

EXHIBIT 1-4: LOCATION MAP

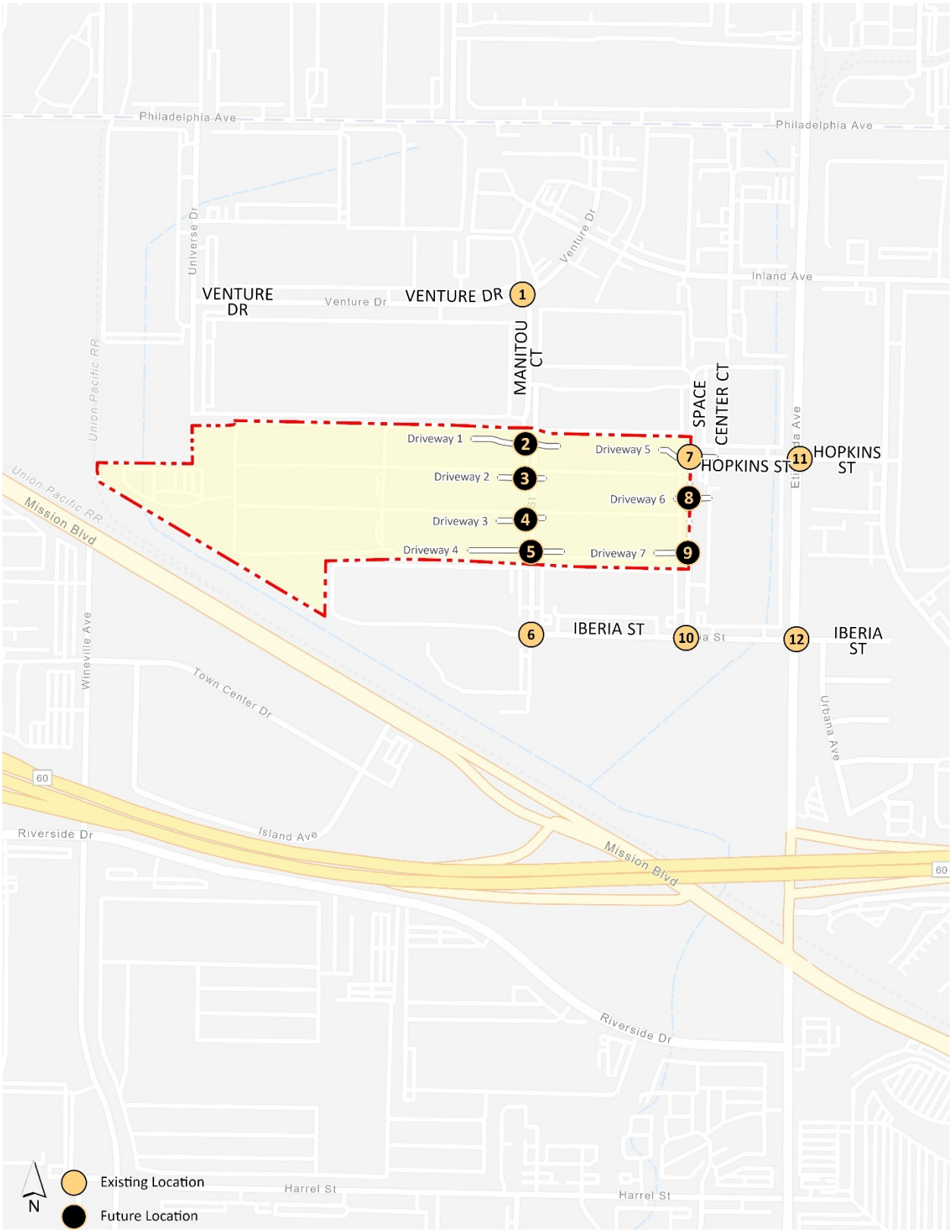


TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Manitou Ct. & Venture Dr.	City of Jurupa Valley	No
2	Manitou Ct. & Driveway 1 – Future Intersection	City of Jurupa Valley	No
3	Manitou Ct. & Driveway 2 – Future Intersection	City of Jurupa Valley	No
4	Manitou Ct. & Driveway 3 – Future Intersection	City of Jurupa Valley	No
5	Manitou Ct. & Driveway 4 – Future Intersection	City of Jurupa Valley	No
6	C St. & Iberia St.	City of Jurupa Valley	No
7	Space Center Ct. & Driveway 5/Hopkins St.	City of Jurupa Valley	No
8	Space Center Ct. & Driveway 6 – Future Intersection	City of Jurupa Valley	No
9	Space Center Ct. & Driveway 7 – Future Intersection	City of Jurupa Valley	No
10	Space Center Ct. & Iberia St.	City of Jurupa Valley	No
11	Etiwanda Av. & Hopkins St.	City of Jurupa Valley	No
12	Etiwanda Av. & Iberia St.	City of Jurupa Valley	No

1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *Background (2022) plus Project Traffic Conditions* and Section 6 *Background (2022) plus Project plus Cumulative Project Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

1.5.1 BACKGROUND (2022) PLUS PROJECT CONDITIONS

Consistent with Existing traffic conditions, the following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for Background (2022) traffic conditions:

- Etiwanda Avenue & Hopkins Street (#11) – LOS E PM peak hour only

The addition of Project traffic is not anticipated to result in any new deficiencies and the addition of Project traffic to the intersection of Etiwanda Avenue and Hopkins Street is anticipated to result in an increase to the delay of less than 3.0 seconds.

1.5.2 BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) for Background (2022) plus Project plus Cumulative Project traffic conditions:

- Etiwanda Avenue & Hopkins Street (#11) – LOS E PM peak hour only

EXHIBIT 1-2: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing		Background		Background + Project		Background + Project + Pending Projects	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Manitou Ct. & Venture Dr.	●	●	●	●	●	●	●	●
2	Manitou Ct. & Driveway 1	N/A	N/A	N/A	N/A	●	●	●	●
3	Manitou Ct. & Driveway 2	N/A	N/A	N/A	N/A	●	●	●	●
4	Manitou Ct. & Driveway 3	N/A	N/A	N/A	N/A	●	●	●	●
5	Manitou Ct. & Driveway 4	N/A	N/A	N/A	N/A	●	●	●	●
6	C St. & Iberia St.	●	●	●	●	●	●	●	●
7	Space Center Ct. & Driveway 5/Hopkins St.	●	●	●	●	●	●	●	●
8	Space Center Ct. & Driveway 6	N/A	N/A	N/A	N/A	●	●	●	●
9	Space Center Ct. & Driveway 7	N/A	N/A	N/A	N/A	●	●	●	●
10	Space Center Ct. & Iberia St.	●	●	●	●	●	●	●	●
11	Etiwanda Av. & Hopkins St.	●	●	●	●	●	●	●	●
12	Etiwanda Av. & Iberia St.	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

1.6 RECOMMENDATIONS

1.6.1 SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access. Exhibit 1-5 shows the site adjacent recommendations.

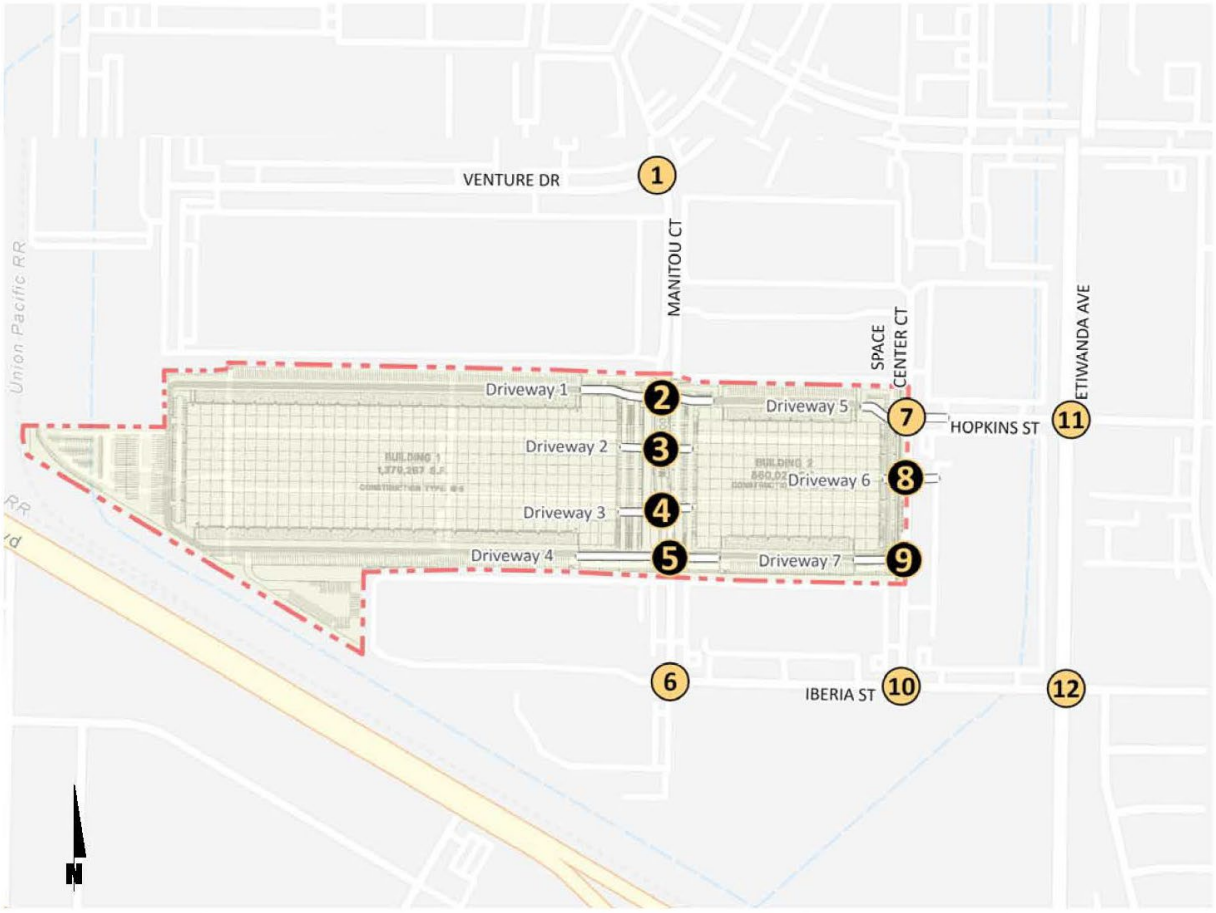
Manitou Ct. & Driveway 1 (#2) – The following improvements are necessary to accommodate site access:

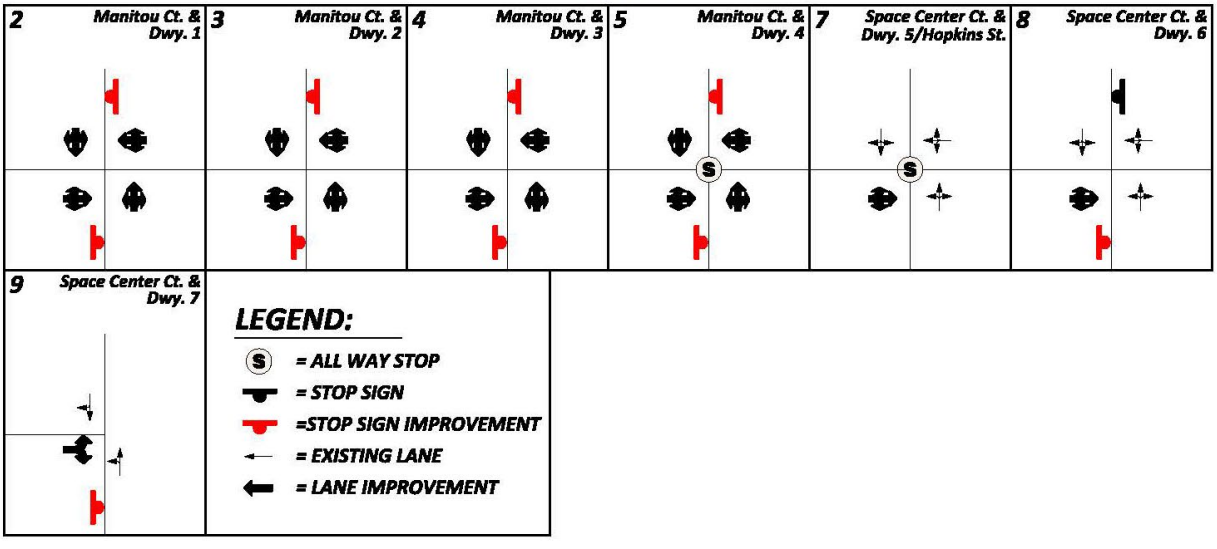
- Project to install stop controls on the east and west legs.
- Project to construct a northbound, southbound, eastbound, and westbound shared left-through-right turn lane.

Manitou Ct. & Driveway 2 (#3) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the east and west legs.
- Project to construct a northbound, southbound, eastbound, and westbound shared left-through-right turn lane.

EXHIBIT 1-5: SITE ACCESS RECOMMENDATIONS





Manitou Ct. & Driveway 3 (#4) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the east and west legs.
- Project to construct a northbound, southbound, eastbound, and westbound shared left-through-right turn lane.

Manitou Ct. & Driveway 4 (#5) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the east and west legs.
- Project to construct a northbound, southbound, eastbound, and westbound shared left-through-right turn lane.

Space Center Ct. & Driveway 5/Hopkins St. (#7) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the west leg.
- Project to construct westbound shared left-through-right turn lane.

Space Center Ct. & Driveway 6 (#8) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the west leg.
- Project to construct westbound shared left-through-right turn lane.

Space Center Ct. & Driveway 7 (#9) – The following improvements are necessary to accommodate site access:

- Project to install stop controls on the west leg.
- Project to construct westbound shared left-through-right turn lane.

Project to construct curb, gutter, sidewalk, and landscaping improvement along the Project's frontage as needed to accommodate site access.

The Project is to construct a median along Hopkins Street (similar to that being installed on Iberia Street) to prohibit trucks from making a right turn to go southbound on Etiwanda 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 Jurupa Valley sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

1.6.2 QUEUING ANALYSIS AT THE PROJECT DRIVEWAYS AND SITE ADJACENT INTERSECTIONS

A queuing analysis was conducted for the Project driveways and site adjacent intersections for Background (2022) plus Project plus Cumulative Project traffic conditions to identify the 95th percentile peak hour queues. The analysis was conducted for both the weekday AM and weekday PM peak hours. The 95th percentile queues for the applicable study area intersections can be found in Appendix 1.2.

The traffic modeling and signal timing optimization software package SimTraffic has been utilized to assess queues at the Project driveways and site adjacent intersections. 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 10) to generate random simulations. 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 both the weekday AM and weekday PM peak hours and been seeded for 15-minute periods with 60-minute recording intervals. 95th queuing analysis results were used to determine whether adequate stacking could be accommodated at each of the project driveways and site adjacent intersections during the peak hours.

1.6.3 OFF-SITE RECOMMENDATIONS

The recommended improvement needed to address the cumulative deficiencies identified under Existing (2020) and Background (2022) plus Project plus Cumulative Project traffic conditions are shown in Table 1-3. The Project Applicant's responsibility for the Project's contributions towards deficient intersection is fulfilled through payment of fair share and/or TUMF/DIF fees (if applicable) that would be assigned to construction of the identified recommended improvements, or as identified in the Project's Conditions of Approval. The Project Applicant would be required to pay TUMF/DIF and/or fair share fees consistent with the City's requirements (see Section 7 *Local and Regional Funding Mechanisms*).

TABLE 1-3: SUMMARY OF IMPROVEMENTS AND ROUGH ORDER OF MAGNITUDE COSTS

#	Intersection	Existing (2020), Background (2022), Background + Project (2022)	Background + Project + Cumulative (2022)	Improvements in City DIF or County TUMF?[1]	Project Responsibility[2]	Total Cost	Fair Share %[3]	Fair Share Cost[4]
11	Etiwanda Av. & Hopkins St.	None	Restripe the EB and WB approaches to accommodate a left turn lane and shared through-right turn lane	No	Fair Share	$39,200	5.41%	$2,119
					Total	**$39,200**		**$2,119**
					Total Project Fair Share Contribution to the City of Jurupa Valley (non-DIF/other)[5]			**$2,119**

[1] Improvements included in City of Jurupa Valley DIF or County TUMF programs 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] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 7-1 for Fair Share Calculations.

[4] Rough order of magnitude cost estimate.

[5] 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 of Jurupa Valley.

1.7 SIGHT DISTANCE ANALYSIS

Horizontal sight distance has been evaluated for all Project driveways along Manitou Court and Space Center Court based on the Caltrans Highway Design Manual (HDM). As defined by the Caltrans HDM, sight distance is the continuous length of highway ahead visible to the driver.

At unsignalized intersections, sight distance must provide a substantially clear line of sight between the driver of the vehicle waiting on the minor road (driveway) and the driver of an approaching vehicle. For the purposes of this analysis, a 7 ½ second criterion has been applied to the outside travel lanes in either direction to provide the most conservative sight distance. The 7 ½ second criterion allows waiting vehicles to either cross all lanes of through traffic by turning left or cross the near lanes by turning right without requiring through traffic to radically alter their speed. Vertical sight distance has been evaluated utilizing a 3.5-foot eye height and a 4.25-foot object height. The sight distance is based on the posted speed limit.

Adequate visibility for vehicular and pedestrian traffic can be provided at each Project driveway by limiting sight obstructions within the limited use area. Any landscaping/hardscape within the limited use area should not exceed 3.0-feet in height. The limited use area should be kept clear of any landscaping or any other obstructions that may impede the visibility of the driver, including on-street parking. The limited use area is determined by starting with a point located 15-feet back from the edge of the traveled way which represents the position of the driver in a vehicle waiting to exit the driveway (minor approach) then a line is drawn to the center of the farthest lane (representing the location of an approaching vehicle) at the required distance per the Caltrans HDM (Section 405.1) along the major roadway in both directions of travel. (6) The distance along the major roadway is based on the posted speed limit and the vehicle time gap using the equation: 1.47 x design speed in miles per hour x time gap in seconds (per Table 405.1A of the HDM).

The minimum horizontal sight distances for the Project driveways are illustrated on Exhibit 1-6 for all Project driveways on Manitou Court and on Exhibit 1-7 for the driveways located on Space Center Court. Sight distance should be re-evaluated in the field once the driveway has been constructed. Limited use areas are denoted in green cross-hatching.

EXHIBIT 1-6: SIGHT DISTANCE FOR MANITOU COURT

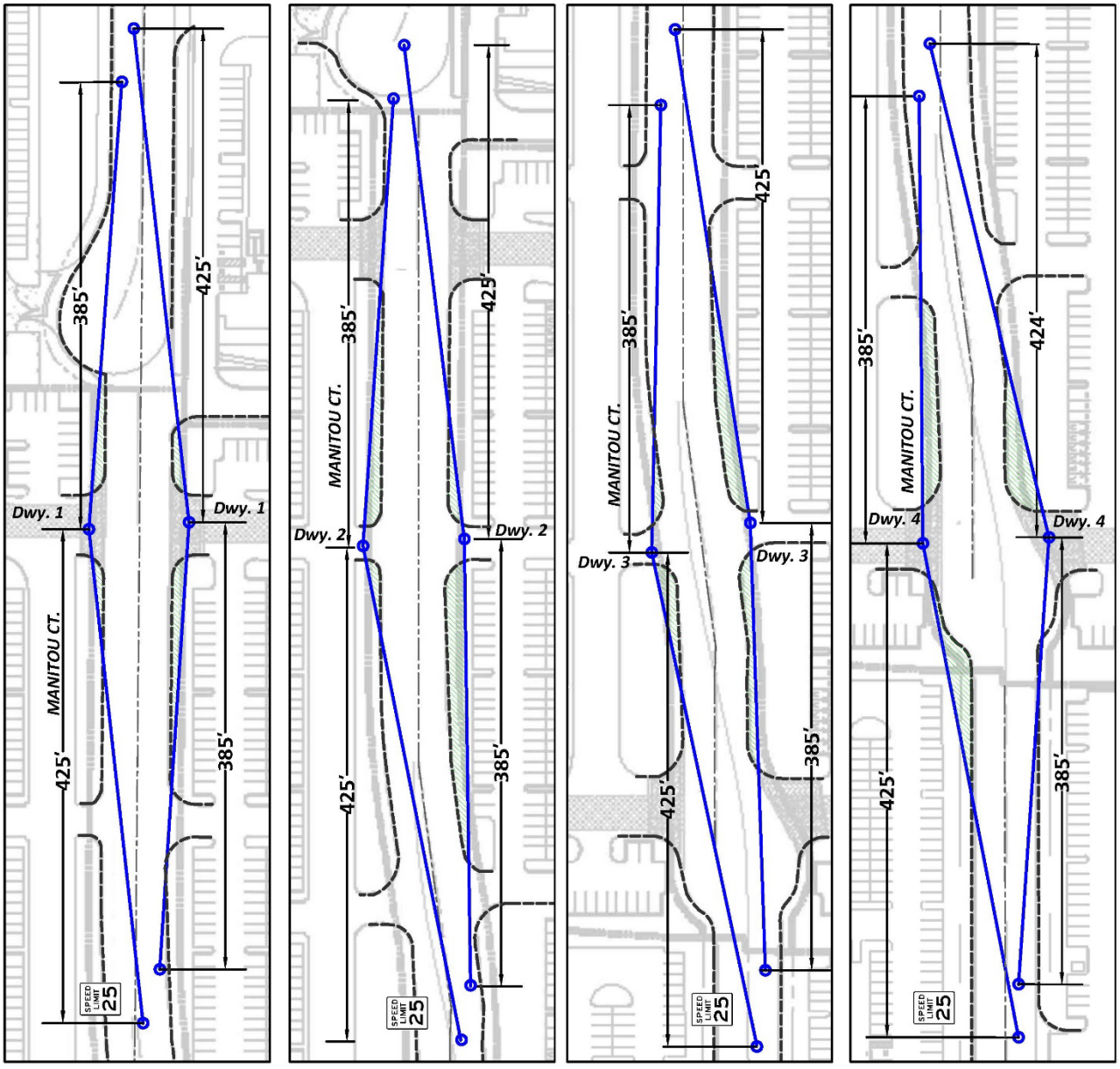
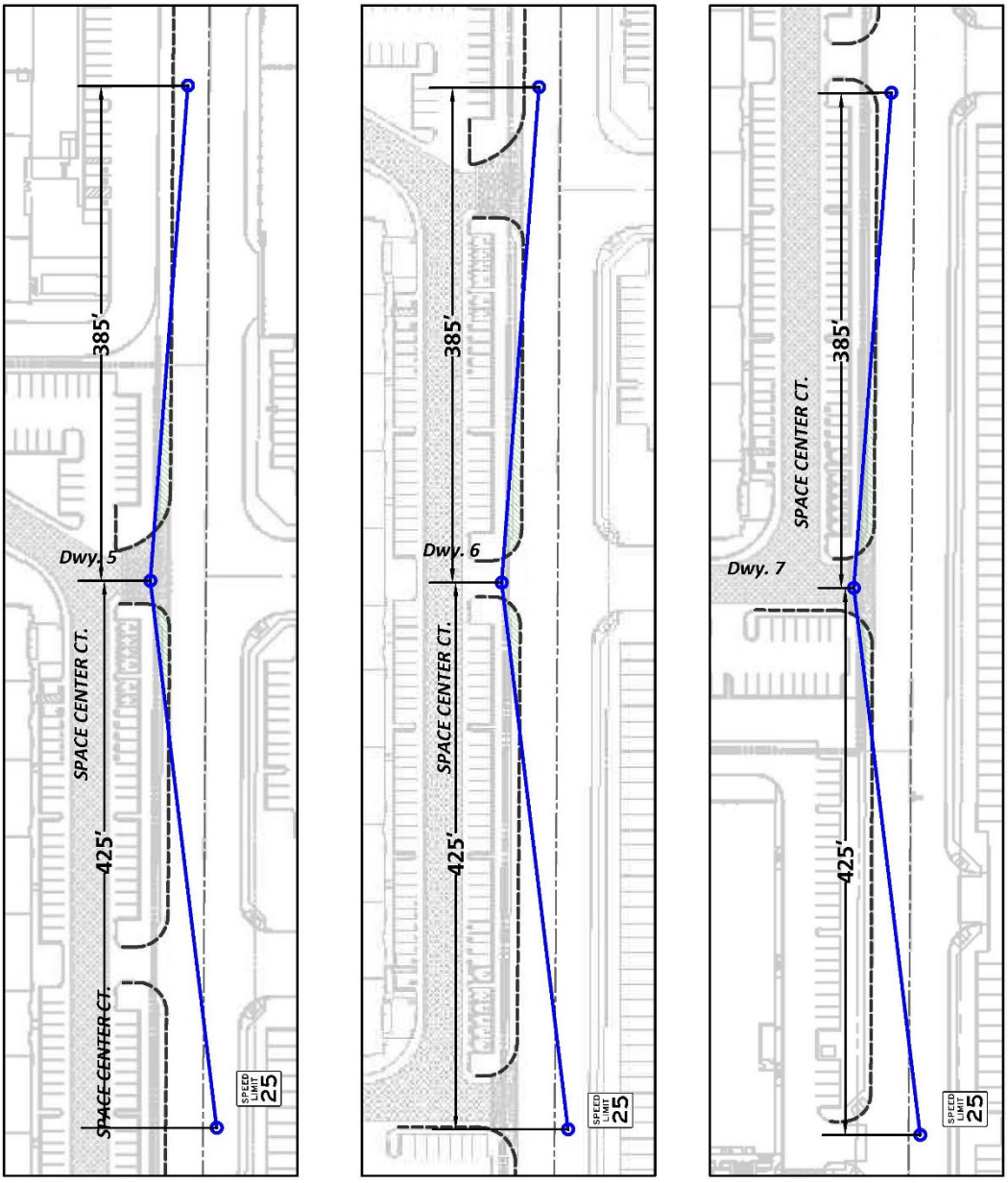


EXHIBIT 1-7: SIGHT DISTANCE FOR SPACE CENTER COURT



LEGEND:

▬ = MINIMUM SIGHT DISTANCE LINES

▨ = LIMITED USE AREA

(THERE SHALL BE NO OBSTRUCTION WITHIN THE LIMITED USE AREA. OBSTRUCTIONS INCLUDE, BUT NOT LIMITED TO, ANY SIGNS OR OBJECTS HIGHER THAN 3' MEASURED FROM PAVEMENT WITHIN THE AREA OF LIMITED USE.)

GRAPHIC SCALE
0 60 120
1"=120'

1.8 TRUCK ACCESS AND CIRCULATION

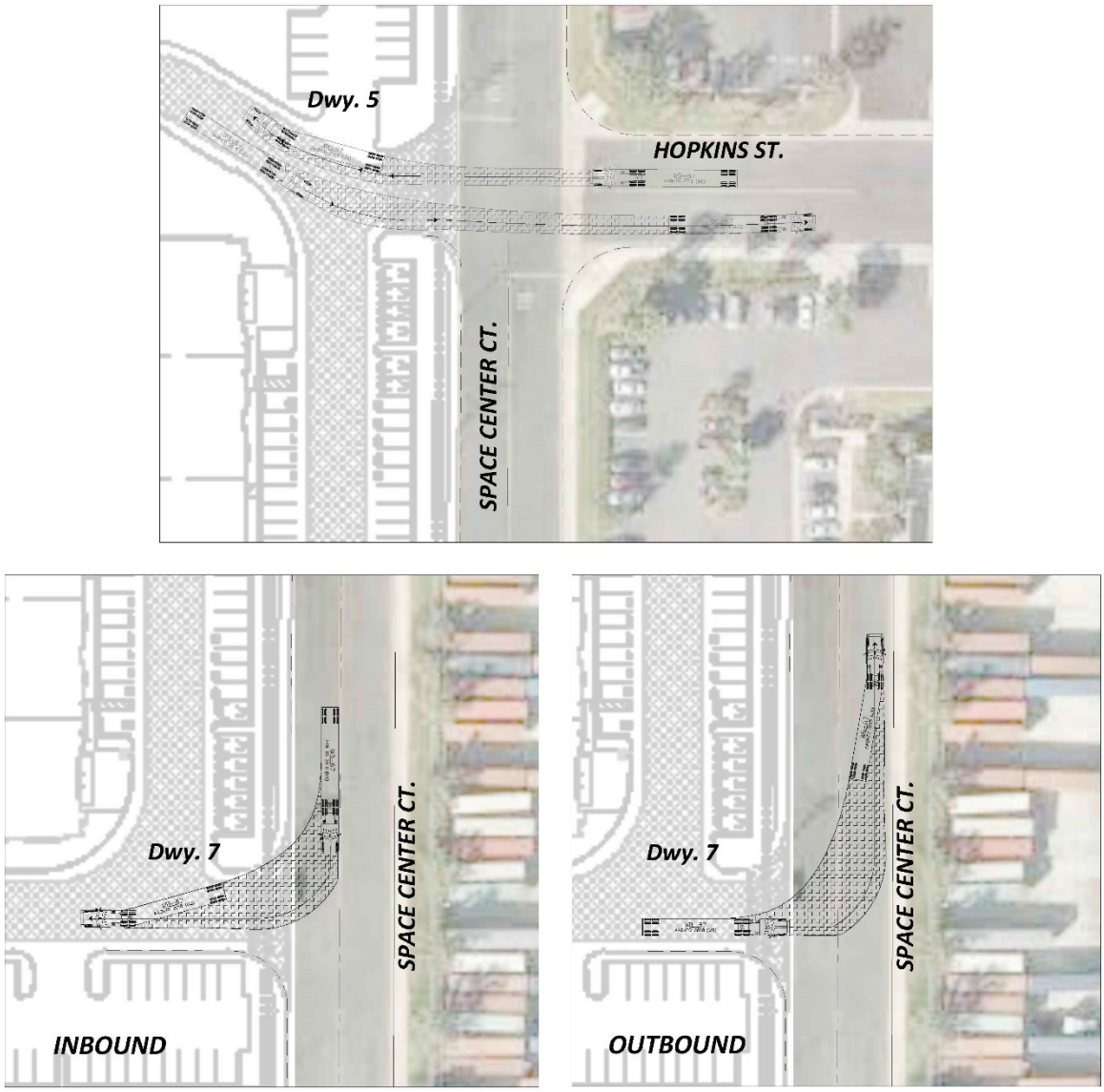
Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at the Project driveways in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-8 for Manitou Court driveways and Exhibit 1-9 for Space Center Court driveways). Only driveways that are to be utilized by heavy trucks have been evaluated. As shown on Exhibits 1-8 and 1-9, it is recommended that the following curb radii be modified in order to accommodate the wide turning radius of heavy trucks (WB-67, which has a 53-foot trailer):

- Manitou Court & Driveway 1: northwest and northeast corners should accommodate a 35-foot curb radius.
- Manitou Court & Driveway 4: northwest, northeast, and southwest corners should accommodate a 35-foot curb radius.
- Space Center Court & Driveway 7: northwest corner should accommodate a 35-foot curb radius.

No changes are necessary to the currently designed Driveway 5 on Space Center Court (which would align with Hopkins Street).

EXHIBIT 1-8: TRUCK ACCESS ON MANITOU COURT

EXHIBIT 1-9: TRUCK ACCESS ON SPACE CENTER COURT



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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with County of Riverside 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. (7) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Jurupa Valley 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 10) analysis software package.

The traffic modeling and signal timing optimization software package Synchro (Version 10) is utilized to analyze signalized intersections. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

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

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. (7)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Jurupa Valley requires the operations of unsignalized intersections be evaluated using the methodology described the HCM. (7) 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. Delay is reported for the worst movement at a side-street stop controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

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 TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices *(CA MUTCD)*. (8)

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. (8) Specifically, this TA 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 TA 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.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

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
1	Manitou Ct. & Venture Dr.	City of Jurupa Valley
2	Manitou Ct. & Driveway 1 – Future Intersection	City of Jurupa Valley
3	Manitou Ct. & Driveway 2 – Future Intersection	City of Jurupa Valley
4	Manitou Ct. & Driveway 3 – Future Intersection	City of Jurupa Valley
5	Manitou Ct. & Driveway 4 – Future Intersection	City of Jurupa Valley
6	C St. & Iberia St.	City of Jurupa Valley
7	Space Center Ct. & Driveway 5/Hopkins St.	City of Jurupa Valley
8	Space Center Ct. & Driveway 6 – Future Intersection	City of Jurupa Valley
9	Space Center Ct. & Driveway 7 – Future Intersection	City of Jurupa Valley
10	Space Center Ct. & Iberia St.	City of Jurupa Valley

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 *Background (2022) plus Project Traffic Conditions* and Section 6 *Background (2022) plus Project plus Cumulative Project 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.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

Consistent with City's traffic study guidelines and the City's General Plan (September 2017): The City's General Plan defines the minimum acceptable intersection LOS as LOS D. Any signalized study intersection operating at an acceptable LOS without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall identify improvements to improve operations to LOS D or better. LOS E may be deemed acceptable by the City Council in designated planning areas and for multimodal mobility corridors that include facilities for at least three transportation modes in addition to motor vehicles, and that support transit-oriented development and walkable communities. LOS F is not considered an acceptable level of service for other than the horizon year unless previously adopted for that intersection in the City's General Plan.

2.5 INTERSECTION OPERATING REQUIREMENTS FOR GENERAL PLAN CONSISTENCY

Per the City's traffic study guidelines:

Signalized Intersections

Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 3.0 or more seconds shall identify improvements to offset the increase in delay. Note that no changes in the traffic signal operations between the Background and With Project conditions shall be included when determining the project's impact at the intersection unless changes are being proposed as part of the project's mitigation program.

Unsignalized intersections

Consistent with the acceptable LOS for the Jurupa Valley General Plan, the City considers the following unsignalized intersection criteria when identifying operational deficiencies:

An operational improvement would be required if the study determines that either section a) or both sections b) and c) occur:

a) The addition of project related traffic causes the intersection to degrade from an acceptable LOS D or better to LOS E or F, OR

b) The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at a LOS E or F; AND

c) The intersection meets the peak-hour traffic signal warrant after the addition of project traffic.

If the conditions above are satisfied, improvements should be identified that achieve the following:

- LOS D or better for case a) above or to pre-project LOS and delay for case b) above.

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

Improvements found to be included in the TUMF and/or DIF will be identified as such. For improvements that do not appear to be in either of the pre-existing fee programs, a fair share contribution based on the Project's proportional share may be imposed in order to address the Project's share of deficiencies in lieu of construction. It should be noted that fair share calculations are for informational purposes only and the City Traffic Engineer will determine the appropriate improvements to be implemented by a project (to be identified in the conditions of approval).

If the intersection is currently operating at acceptable LOS under Existing traffic conditions, the Project's fair share cost of improvements would be determined based on the following equation, which is the ratio of Project traffic to new traffic, where new traffic is total future traffic less existing baseline traffic:

Project Fair Share % = Project Traffic / (Background 2022 plus Project plus Cumulative Project Total Traffic – Existing (2020) Traffic)

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Jurupa Valley 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 Jurupa Valley staff (Appendix 1.1), the study area includes a total of 12 existing and future intersections as shown previously on Exhibit 1-4, where the Project is anticipated to contribute 50 or more peak hour trips or has been added at the direction of City staff. 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

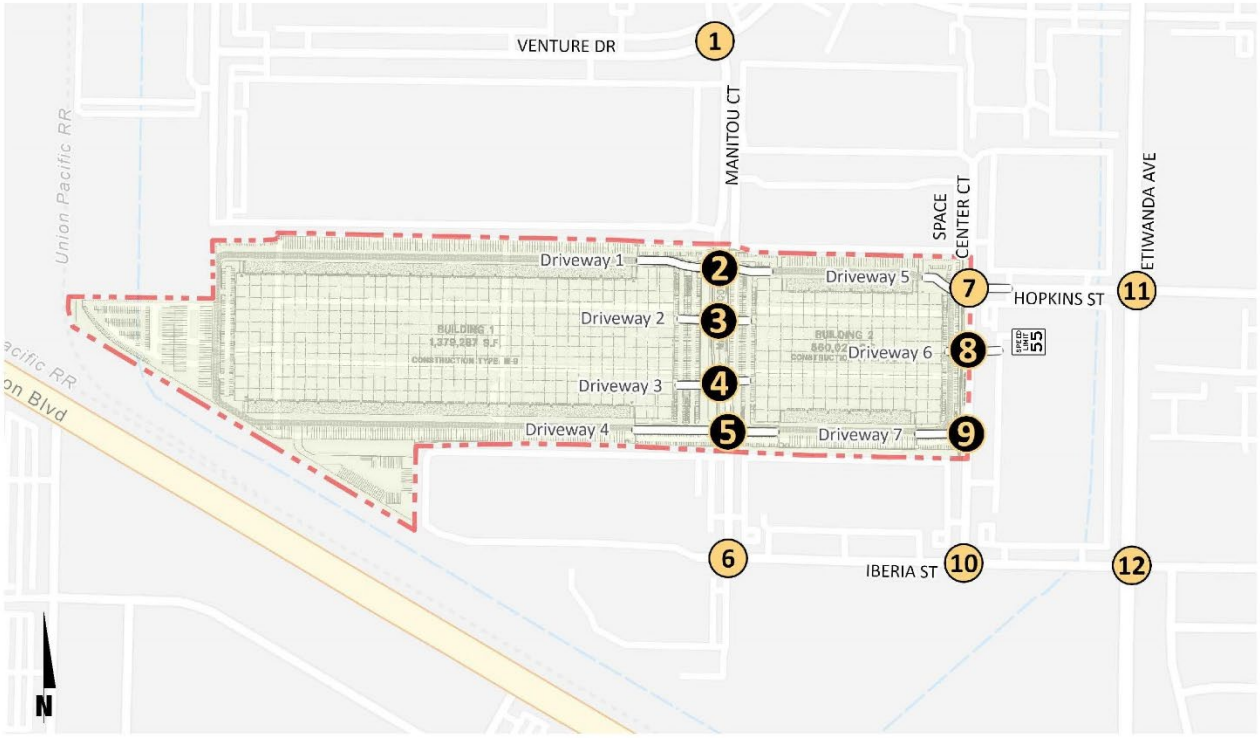
As noted previously, the Project site is located within the City of Jurupa Valley. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on City of Jurupa Valley General Plan Circulation Element, are described subsequently.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

Study area roadways that are classified as 6-lane Urban Arterial Highways are identified as having three lanes of travel in each direction with each direction of travel separated by a curbed median (typical right-of-way is 152-feet). The following study area roadway is classified as a 6-lane Urban Arterial Highway:

- Etiwanda Avenue

There are no other General Plan classified roadways within the study area.

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



1 Manitou Ct. & Venture Dr.	2 Manitou Ct. & Dwy. 1	3 Manitou Ct. & Dwy. 2	4 Manitou Ct. & Dwy. 3	5 Manitou Ct. & Dwy. 4	6 Manitou Ct. & Iberia St.	
2U, 2U, 2U	Future Intersection	Future Intersection	Future Intersection	Future Intersection	2U, 2U, S, 2U, 2U	
7 Space Center Ct. & Dwy. 5/Hopkins St.	8 Space Center Ct. & Dwy. 6	9 Space Center Ct. & Dwy. 7	10 Space Center Ct. & Iberia St.	11 Etiwanda Av. & Hopkins St.	12 Etiwanda Av. & Iberia St.	
2U, 2U, S, 2U, 2U	Future Intersection	Future Intersection	2U, 2U, S, 2U, 2U	6D, DEF, 2U, 2U, DEF, 6D	6D, 2U, 2U, 6D	

LEGEND:

	= TRAFFIC SIGNAL	D	= DIVIDED
S	= ALL WAY STOP	U	= UNDIVIDED
	= STOP SIGN	DEF	= DEFACTO RIGHT TURN
4	= NUMBER OF LANES	SPEED LIMIT 25	= SPEED LIMIT (MPH)

EXHIBIT 3-2: CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENT

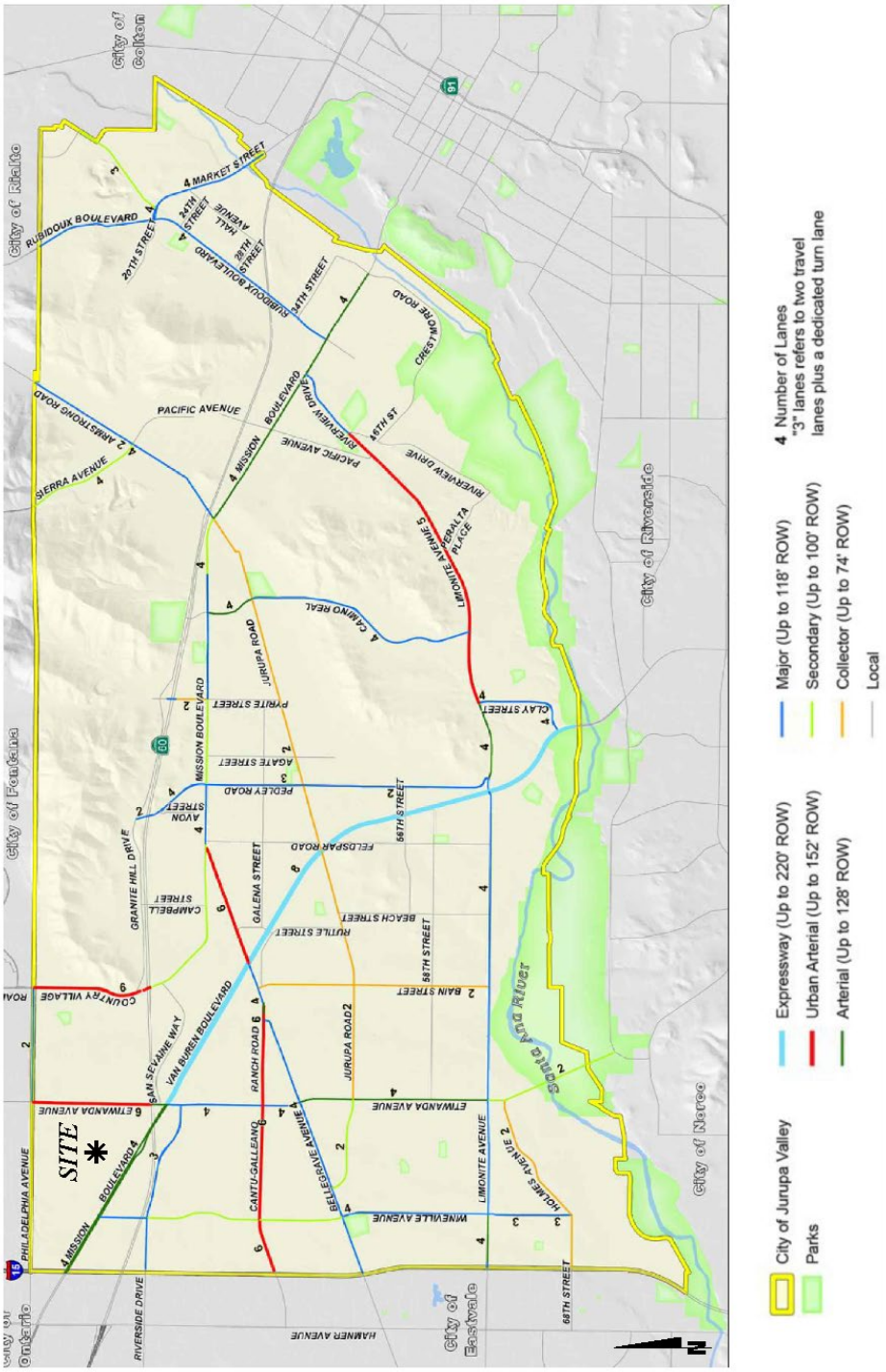


EXHIBIT 3-3: CITY OF JURUPA VALLEY GENERAL PLAN ROADWAY CROSS-SECTIONS

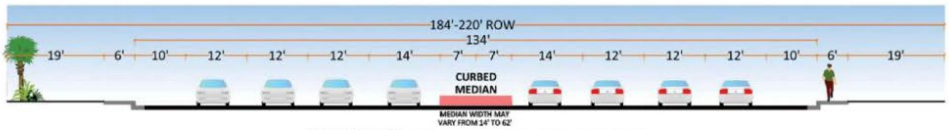


EXHIBIT 1: EXPRESSWAY- 6 TO 8 LANES

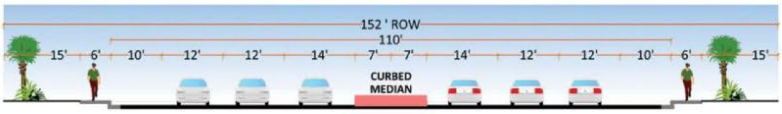


EXHIBIT 2: URBAN ARTERIAL

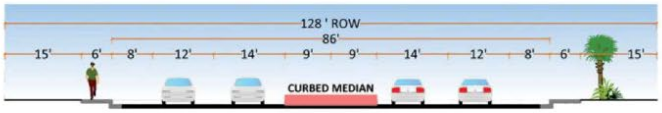


EXHIBIT 3: ARTERIAL

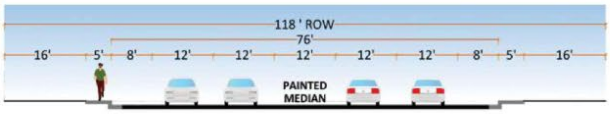


EXHIBIT 4: MAJOR - 4 LANES

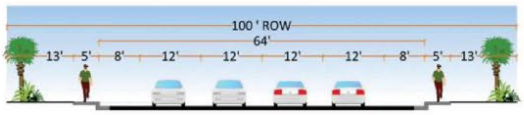


EXHIBIT 5: SECONDARY

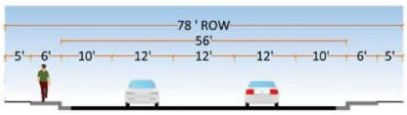


EXHIBIT 6: INDUSTRIAL COLLECTOR

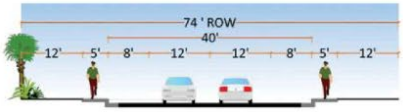


EXHIBIT 7: COLLECTOR

3.3 TRUCK ROUTES

The City of Jurupa Valley does not have designated truck routes, however, the City does have a truck access restriction on Etiwanda Avenue between the SR-60 Freeway and Hopkins Street. As such, truck routes for the proposed Project have been determined based on discussions with City staff and have accordingly been routed to the north on Etiwanda Avenue. The same truck access restriction has been assumed for the distribution of future cumulative development project traffic within the study area.

3.4 TRANSIT SERVICE

The City of Jurupa Valley is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the unincorporated Riverside County region. As shown on Exhibit 3-4, there are currently no existing bus routes that serve the roadways within the study area in close proximity to the proposed Project. The Metrolink (Riverside Route) runs along the Mission Boulevard/Van Buren Boulevard alignment to the south of the proposed Project. Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the Project Applicant work in conjunction with RTA to potentially accommodate bus service to the site.

3.5 BICYCLE & PEDESTRIAN FACILITIES

The City of Jurupa Valley General Plan currently does not include an existing and future trails and bikeway system. Exhibit 3-5 shows the City of Jurupa Valley Bicycle and Pedestrian Plan. Existing pedestrian facilities, such as sidewalks and crosswalk locations within the study area, are shown on Exhibit 3-6.

3.6 EXISTING TRAFFIC COUNTS

Manual weekday AM and PM peak hour turning movement counts were conducted in October 2020, during the currently ongoing COVID-19 pandemic, at locations where historic traffic count data was not available. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. The traffic counts collected on October 20, 2020 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

EXHIBIT 3-4: TRANSIT ROUTES

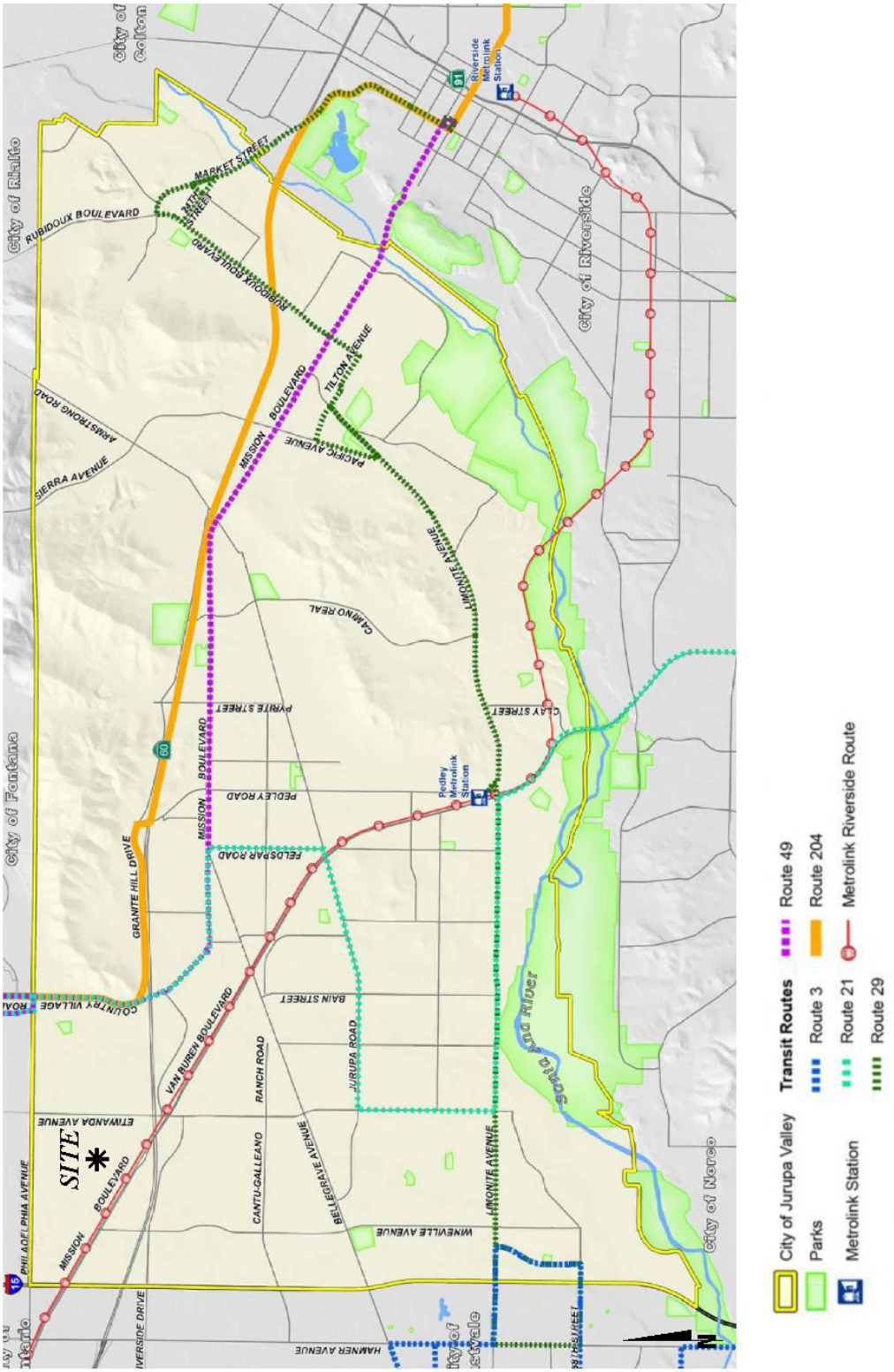


EXHIBIT 3-5: CITY OF JURUPA VALLEY BICYCLE AND PEDESTRIAN PLAN

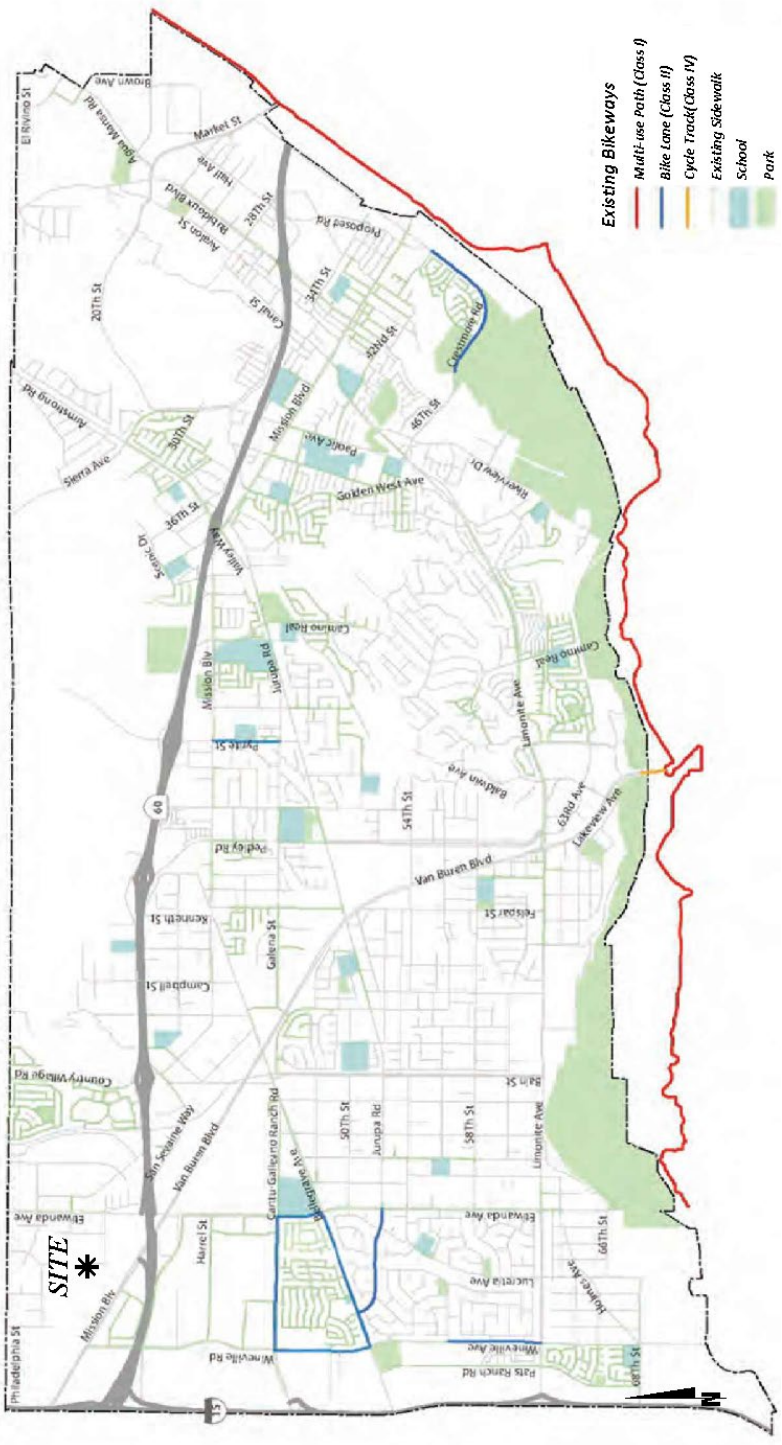
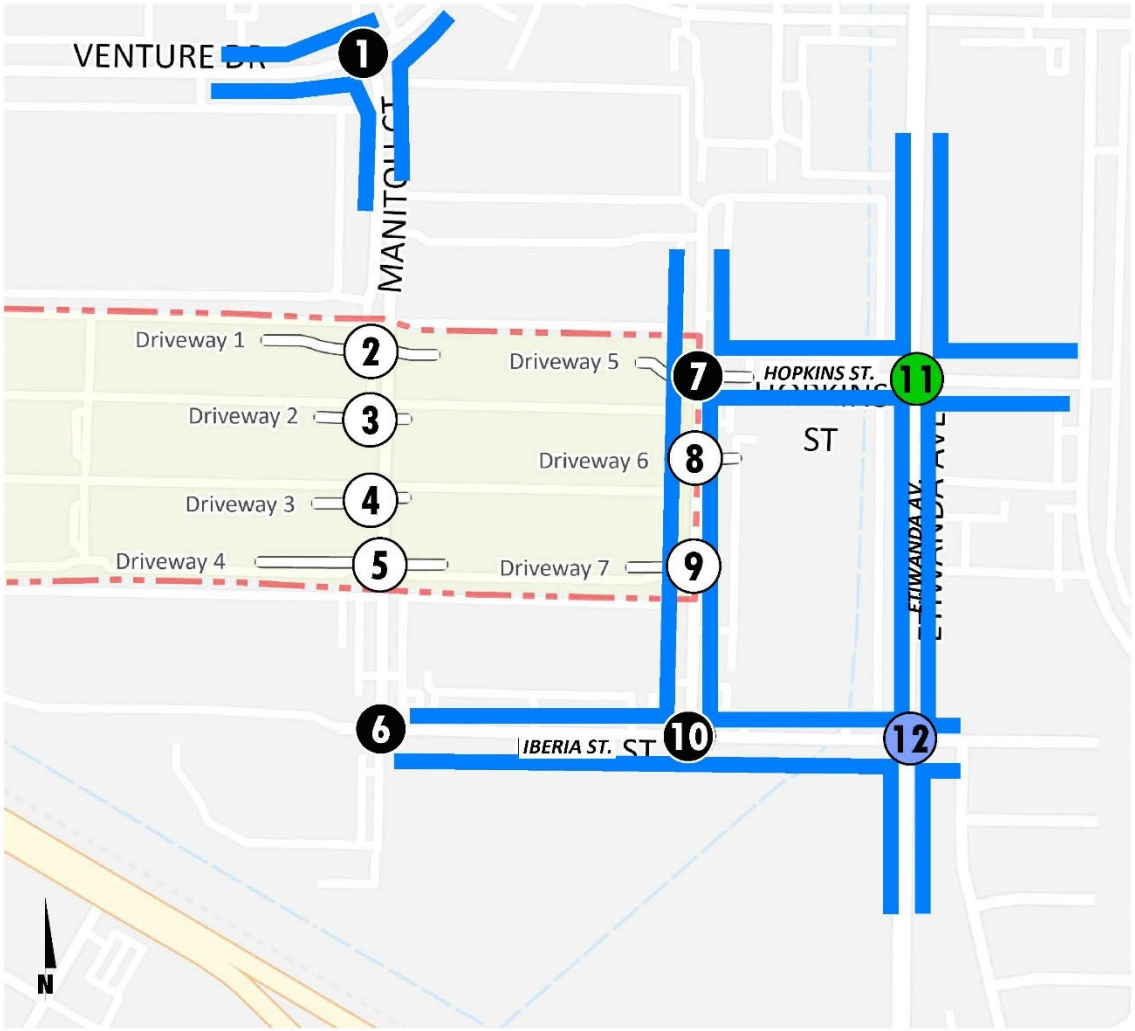


EXHIBIT 3-6: EXISTING PEDESTRIAN FACILITIES



LEGEND:

- = SIDEWALK
- 0 = NO CROSSWALK
- 0 = FUTURE INTERSECTION
- 0 = CROSSWALK ON ALL APPROACHES
- 0 = CROSSWALK ON THREE APPROACHES

Based on a review of historic data (May 2015 and February 2018) versus the October 2020 count data, it appears that growth is observed between the historic count data (which has been adjusted to 2020) and the actual 2020 counts. As such, the following adjustments have been made to the existing study area intersections as follows (see also Appendix 3.1 for summary of adjustments in tabular form):

ID	Intersection Location	Adjustment
1	Manitou Ct. & Venture Dr.	No historic count data available. Based on a comparison of Feb. 2018 (adjusted to 2020) to the Oct. 2020 count data collected at the intersections Etiwanda Av./Hopkins St. and Etiwanda Av./Iberia St., use the same growth to adjust the Oct. 2020 counts collected at Manitou Ct./Venture Dr.
6	C St. & Iberia St.	Historic counts from May 2015 were adjusted by conservatively applying a 2% per year growth over 5 years to reflect a 2020 baseline.
7	Space Center Ct. & Hopkins St.	Historic counts from May 2015 were adjusted by conservatively applying a 2% per year growth over 5 years to reflect a 2020 baseline.
10	Space Center Ct. & Iberia St.	Historic counts from May 2015 were adjusted by conservatively applying a 2% per year growth over 5 years to reflect a 2020 baseline.
11	Etiwanda Av. & Hopkins St.	Adjusted 2020 baseline developed by taking the higher of the two: Oct. 2020 count or the adjusted Feb. 2018 count adjusted to 2020 (increased by 2% per year). The comparison was made on a per movement basis. Intersection volume flow conserved with Etiwanda Av./Iberia St. to ensure no loss of vehicles.
12	Etiwanda Av. & Iberia St.	Adjusted 2020 baseline developed by taking the higher of the two: Oct. 2020 count or the adjusted Feb. 2018 count adjusted to 2020 (increased by 2% per year). The comparison was made on a per movement basis. Intersection volume flow conserved with Etiwanda Av./Hopkins St. to ensure no loss of vehicles.

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:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 14.3 = Leg Volume

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.0 percent. As such, the above equation utilizing a factor of 14.3 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.0 percent (i.e., 1/0.07 = 14.3) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing AM and PM peak hour intersection volumes are also shown on Exhibit 3-7. All of the intersection turning movement volumes illustrated on the exhibits and used in the peak hour operations analyses are shown in terms of actual vehicles.

3.7 EXISTING (2020) 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 of the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better), with the exception of the following intersection:

- Etiwanda Av. & Hopkins St. (#11) – LOS E PM peak hour only

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

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2020) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.) AM	Delay[2] (secs.) PM	Level of Service AM	Level of Service PM
1	Manitou Ct. & Venture Dr.	CSS	10.1	11.4	B	B
2	Manitou Ct. & Driveway 1		Future Intersection			
3	Manitou Ct. & Driveway 2		Future Intersection			
4	Manitou Ct. & Driveway 3		Future Intersection			
5	Manitou Ct. & Driveway 4		Future Intersection			
6	C St. & Iberia St.	AWS	8.8	8	A	A
7	Space Center Ct. & Driveway 5/Hopkins St.	AWS	7.8	7.9	A	A
8	Space Center Ct. & Driveway 6		Future Intersection			
9	Space Center Ct. & Driveway 7		Future Intersection			
10	Space Center Ct. & Iberia St.	CSS	8.8	8.5	A	A
11	Etiwanda Av. & Hopkins St.	TS	34.3	**55.6**	C	**E**
12	Etiwanda Av. & Iberia St.	TS	14.3	10.4	B	B

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

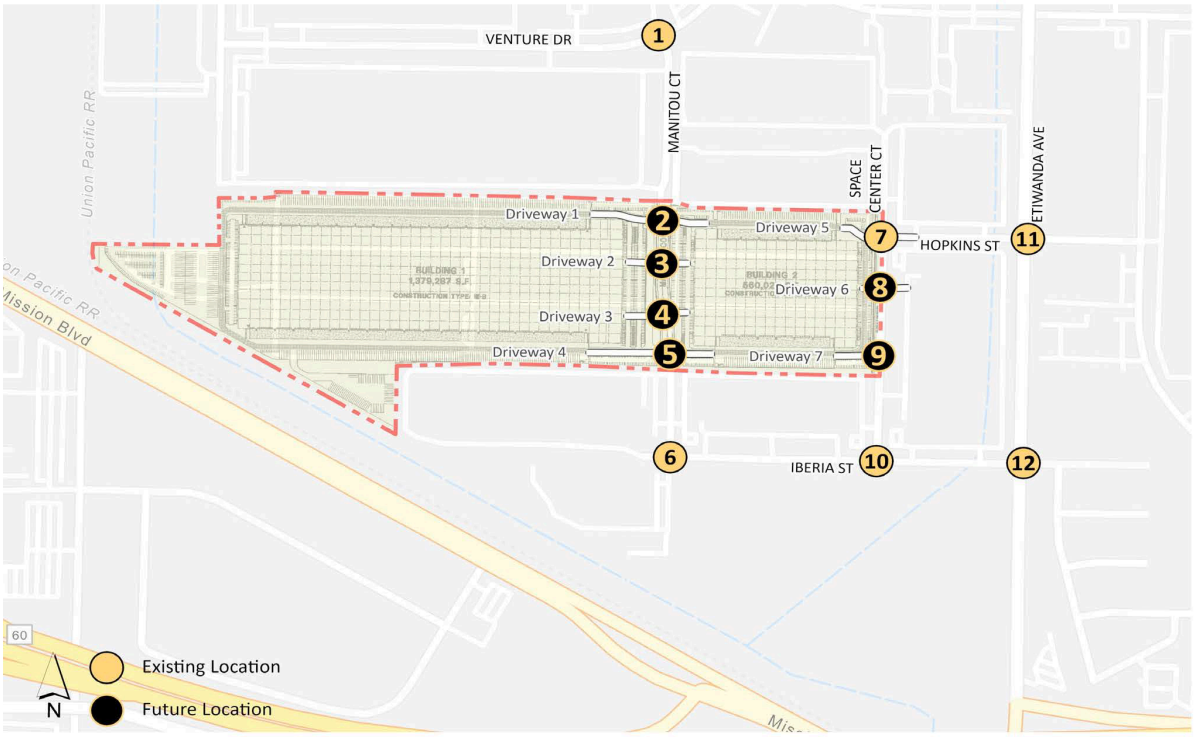
[1] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

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

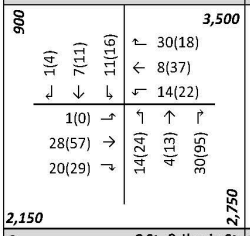
3.8 EXISTING (2020) TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. There are currently no unsignalized study area intersections warranting a traffic signal for Existing (2020) traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

EXHIBIT 3-7: EXISTING (2020) TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.



2 Manitou Ct. & Driveway 1

Future Intersection

3 Manitou Ct. & Driveway 2

Future Intersection

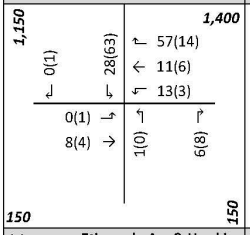
4 Manitou Ct. & Driveway 3

Future Intersection

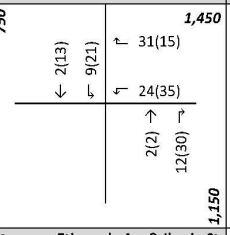
5 Manitou Ct. & Driveway 4

Future Intersection

6 C St. & Iberia St.



7 Space Center Ct. & Driveway 5/Hopkins St.



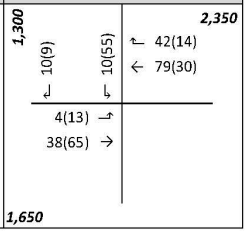
8 Space Center Ct. & Driveway 6

Future Intersection

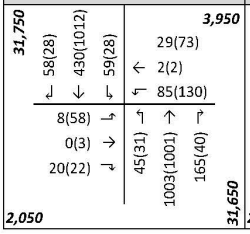
9 Space Center Ct. & Driveway 7

Future Intersection

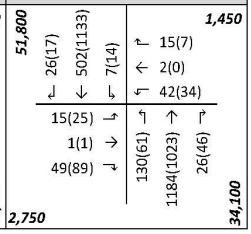
10 Space Center Ct. & Iberia St.



11 Etiwanda Av. & Hopkins St.



12 Etiwanda Av. & Iberia St.



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

Average Daily Trips

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project's trip assignment onto the study area roadway network. The Project is to consist of a Proposed Tentative Parcel Map for 3 parcels and a Major Site Development Permit. The Site Development Permit includes the construction of 3 parcels: Parcel 1 with a 1,379,287-sf logistics facility, Parcel 2 with a 560,025-sf logistics facility, and Parcel 3 with the existing 172,800-sf building (which is to remain). The uses proposed on Parcel 1 and Parcel 2 are to replace the existing 9 buildings totaling 1,579,500-sf.

4.1 TRIP GENERATION

4.1.1 EXISTING USE

As noted previously, the site is currently occupied by 9 existing buildings that total 1,579,500-sf. These existing buildings will be demolished and replaced by new 1,379,287-sf and 560,025-sf logistics facilities. 24-hour traffic counts were conducted for the driveways on 10th Street/Manitou Street, C Street, and Space Center Court in order to capture the trips associated with the existing 9 buildings. Traffic counts were conducted on July 7 through July 9, 2020 (3 consecutive days). The count worksheets and summary of count data are provided in Appendix 4.1.

It is unclear whether the existing uses are affected by COVID-19 and would therefore have a lower trip generation. However, as the trip generation is being utilized to take credit against the proposed uses, the use of lower existing trip generation would result in a more conservative reduction. Appendix 4.1 includes a summary of the total trip generation for each day and calculates an average trip generation of the 3 days for the existing uses. The average trip generation will be utilized to take credit for the existing uses. The existing 9 buildings currently generate 1,360 trip-ends per day with 115 AM peak hour trips and 128 PM peak hour trips.

4.1.2 PROPOSED PROJECT

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1. These estimates are based on the trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, (10th Edition, 2017) and the High Cube Warehouse Trip Generation Study (WSP, January 2019) were used to estimate the trip generation. (2) (3)

For purposes of the traffic study, the following ITE land use codes and vehicle mixes will be utilized:

- High-Cube Transload and Short-Term Storage Warehouse (Without Cold Storage) (ITE 154) has been used to derive site specific trip generation estimates for up to 280,013-sf of the proposed Project (50% of Building 1). Transload facilities have a primary function of consolidation and distribution of pallet loads (or larger) for manufacturers, wholesalers, or retailers. They typically have little storage duration, high throughput, and are high-efficiency facilities. Short-term high-

cube warehouses are high-efficiency distribution facilities often with custom/special features built into structure movement of large volumes of freight with only short-term storage of products. Based on the ITE Trip Generation 10th Edition Supplement (February 2020), the following vehicle mix was utilized: 20% trucks during the AM peak hour, 16% trucks during the PM peak hour, and 16% daily trucks. (9) Based on this interim guidance from the South Coast Air Quality Management District (SCAQMD), the following truck fleet mix was utilized for the purposes of estimating the truck trip generation for the site: 16.7% of the total trucks as 2-axle trucks, 20.7% of the total trucks as 3-axle trucks, and 62.6% of the total trucks as 4+-axle trucks.

- ITE land use code 157 (High-Cube With Cold Storage Warehouse) has been used to derive site specific trip generation estimates for up to 580,012-sf of the proposed Project (50% of Building 1 and 300,000-sf of Building 2). The truck percentage was obtained from the ITE's High Cube Warehouse Vehicle Trip Generation Analysis (October 2016). (10) The vehicle mix varies by peak hour and overall daily: 69.2% passenger cars in the AM peak hour, 78.3% passenger cars in the PM peak hour, and 67.8% passenger cars weekday daily. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. For the purposes of this analysis, the percentage of trucks, by axle type, were obtained from the SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014) recommended truck mix. The SCAQMD has recently performed surveys of existing facilities and compiled the data to provide interim guidance on the mix of heavy trucks for these types of high-cube warehousing/distribution facilities. Based on this interim guidance from the SCAQMD, the following truck fleet mix was utilized for the purposes of estimating the truck trip generation for the site (with cold storage): 34.7% of the total trucks as 2-axle trucks, 11.0% of the total trucks as 3-axle trucks, and 54.3% of the total trucks as 4+-axle trucks.
- High-Cube Fulfillment Center has been used to derive site specific trip generation estimates for up to 1,079,287-sf of the proposed Project (remaining sf of Building 2). 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). (9) 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). The proposed Project is speculative and whether a non-sort or sort facility end-user would occupy the buildings is not known at this time. Lastly, the ITE Trip Generation Manual recommends the use of local data sources where available. The best available source for high-cube fulfilment 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 (specifically Riverside County and San Bernardino County). However, the WSP study does not include a split for inbound and outbound vehicles, as such, the inbound and outbound splits per the ITE Trip Generation Manual for ITE Land Use Code 154 have been utilized.

Per the City's traffic study guidelines, the existing baseline traffic, cumulative traffic and project traffic are proposed to be developed based on actual vehicles. Heavy trucks will be accounted for in the operational analysis software as a percentage of total traffic. As shown on Table 4-2, the proposed Project is anticipated to generate a net total of 3,928 trip-ends per day with 220 AM peak hour trips and 277 PM peak hour trips.

TABLE 4-1: 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
High-Cube Transload and Short-Term Storage Warehouse	TSF	154	0.062	0.018	0.080	0.028	0.072	0.100	1.400
High-Cube Fulfillment Center Warehouse	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
High-Cube Cold Storage Warehouse (With Cold Storage)	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120

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

[2] TSF = thousand square feet

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Building 1:									
High-Cube Transload	280.013	TSF							
Passenger Cars:			14	4	18	7	17	24	330
Truck Total:			4	1	5	1	4	5	64
High-Cube Cold Storage	280.012	TSF							
Passenger Cars:			17	5	22	7	19	26	386
Truck Total:			6	2	8	2	6	8	210
Building 1 Passenger Car Total:			31	9	40	14	36	50	716
Building 1 Truck Total (Actual Vehicles)			10	3	13	3	10	13	274
Building 1 Total Trips (Actual Vehicles)[2]			**41**	**12**	**53**	**17**	**46**	**63**	**990**
Building 2:									
High-Cube Cold Storage	300.000	TSF							
Passenger Cars:			19	6	25	7	20	27	414
Truck Total:			7	2	9	2	6	8	224
High-Cube Fulfillment (WSP)	1,079.287	TSF							
Passenger Cars:			86	26	112	44	112	156	1,890
Truck Total:			16	5	21	6	17	23	410
Building 2 Passenger Car Total:			105	32	137	51	132	183	2,304
Building 2 Truck Total (Actual Vehicles)			23	7	30	8	23	31	634
Building 2 Total Trips (Actual Vehicles)[2]			**128**	**39**	**167**	**59**	**155**	**214**	**2,938**
Buildings 1 & 2 Total Trips (Actual Vehicles)[2]			**169**	**51**	**220**	**76**	**201**	**277**	**3,928**

[1] TSF = thousand square feet

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

In the northwest corner of the site (adjacent to Building 2) is an existing rail spur. No reductions are to be taken for the purposes of the traffic study, however, use of the rail spur in the future would likely reduce heavy truck trip generation associated with Building 2.

4.1.3 NET NEW PROJECT TRAFFIC

Table 4-3 provides a summary of the net new Project trip generation based on the proposed Project trip generation less traffic associated with the existing uses. As shown on Table 4-3, the proposed Project is anticipated to generate 2,568 new trip-ends per day with 105 new AM peak hour trips and 149 new PM peak hour trips. The net new trip generation shown on Table 4-3 will be utilized for the purposes of the traffic study for all off-site study area intersections while the total Project trip generation shown on Table 4-2 will be used for the Project driveways.

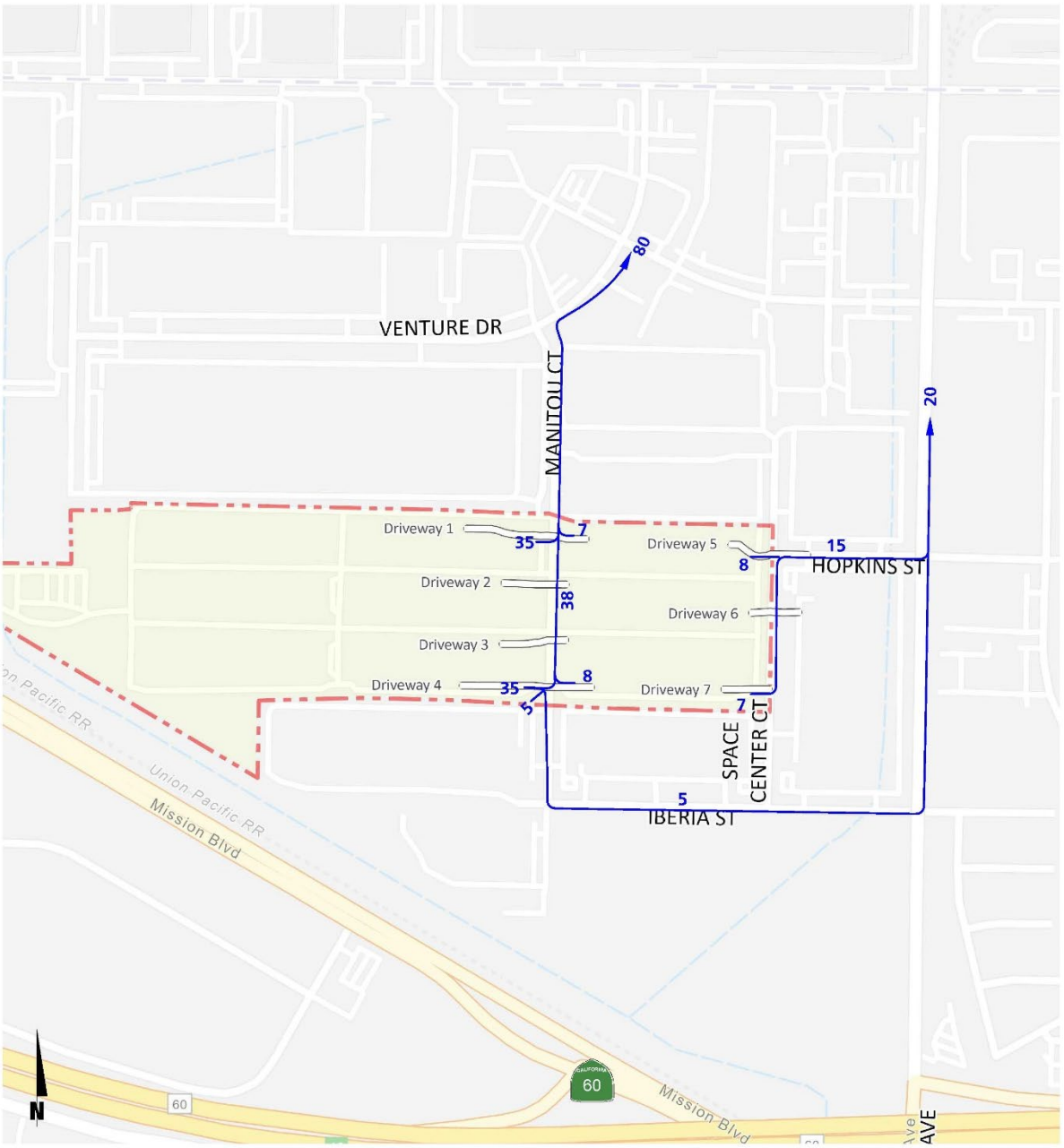
TABLE 4-3: NET NEW PROJECT TRIP GENERATION

	AM Peak Hour			PM Peak Hour			
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Daily**
Existing Use							
Passenger Cars:	70	8	78	10	82	92	786
Truck Total:	21	16	37	22	14	36	574
Existing Total Trips (Actual Vehicles)	90	24	115	31	96	128	1,360
Proposed Project							
Passenger Cars:	136	41	177	65	168	233	3,020
Truck Total:	33	10	43	11	33	44	908
Proposed Project Total Trips (Actual Vehicles)	169	51	220	76	201	277	3,928
Net New Project Trips							
Passenger Cars:	66	33	99	55	86	141	2,234
Truck Total:	12	-6	6	-11	19	8	334
Net New Project Total Trips (Actual Vehicles)	**79**	**27**	**105**	**45**	**105**	**149**	**2,568**

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution 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. Exhibit 4-1 illustrates the Project truck trip distribution patterns. A median is to be constructed on Iberia Street and the Project will construct a similar median on Hopkins Street that will prohibit trucks from turning right to go southbound on Etiwanda Avenue. Truck traffic shall go north on Etiwanda Avenue to access the regional freeway system at the I-15 Freeway and Jurupa Avenue or SR-60 Freeway at Milliken Avenue. No truck traffic is permitted along Etiwanda Avenue south of Hopkins Street to the SR-60 Freeway. Exhibit 4-2 illustrates the Project passenger car trip distribution patterns.

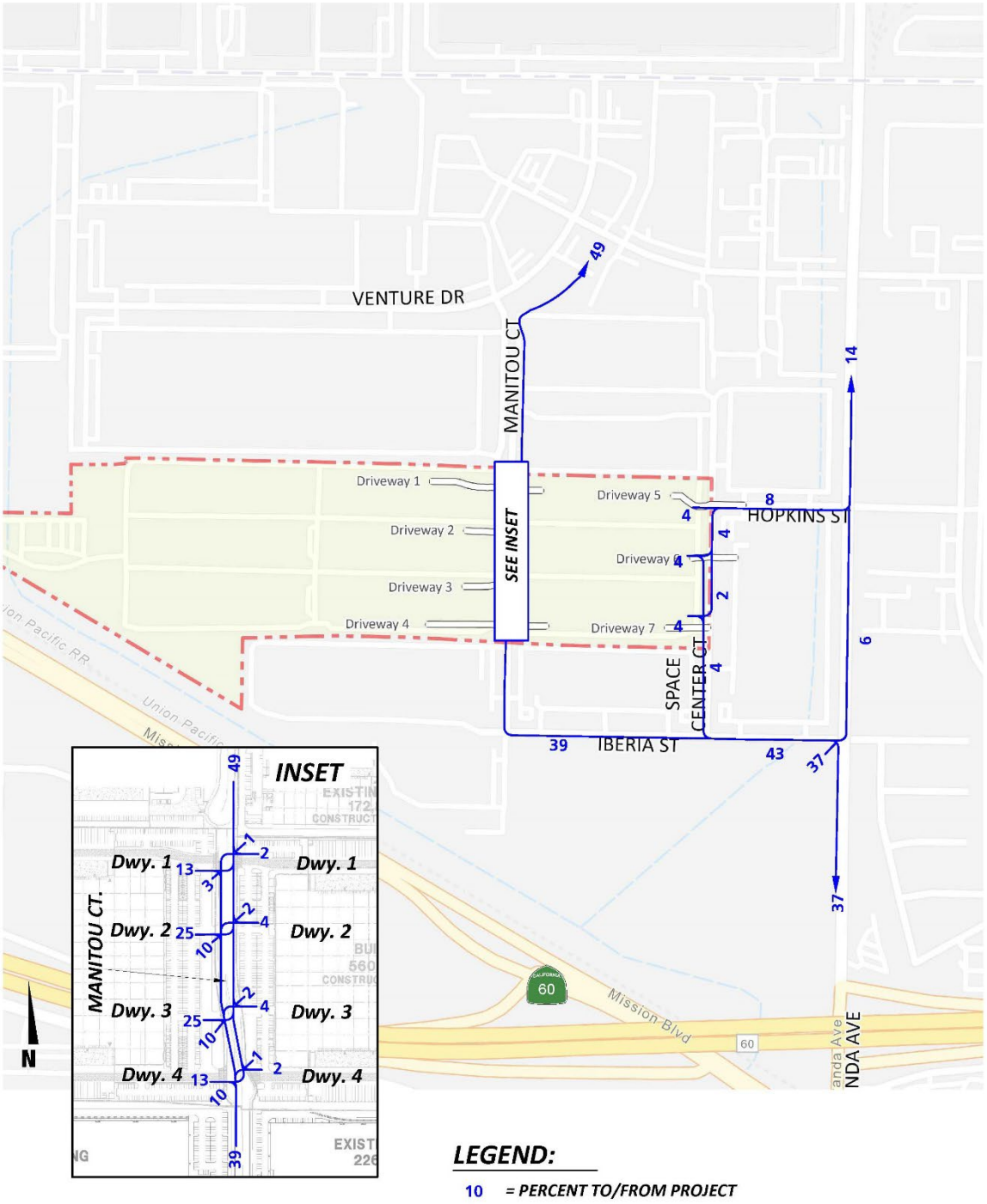
EXHIBIT 4-1: PROJECT (TRUCK) TRIP DISTRIBUTION



LEGEND:

10 = *PERCENT TO/FROM PROJECT*

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



4.3 MODAL SPLIT

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

4.4 PROJECT TRIP ASSIGNMENT

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

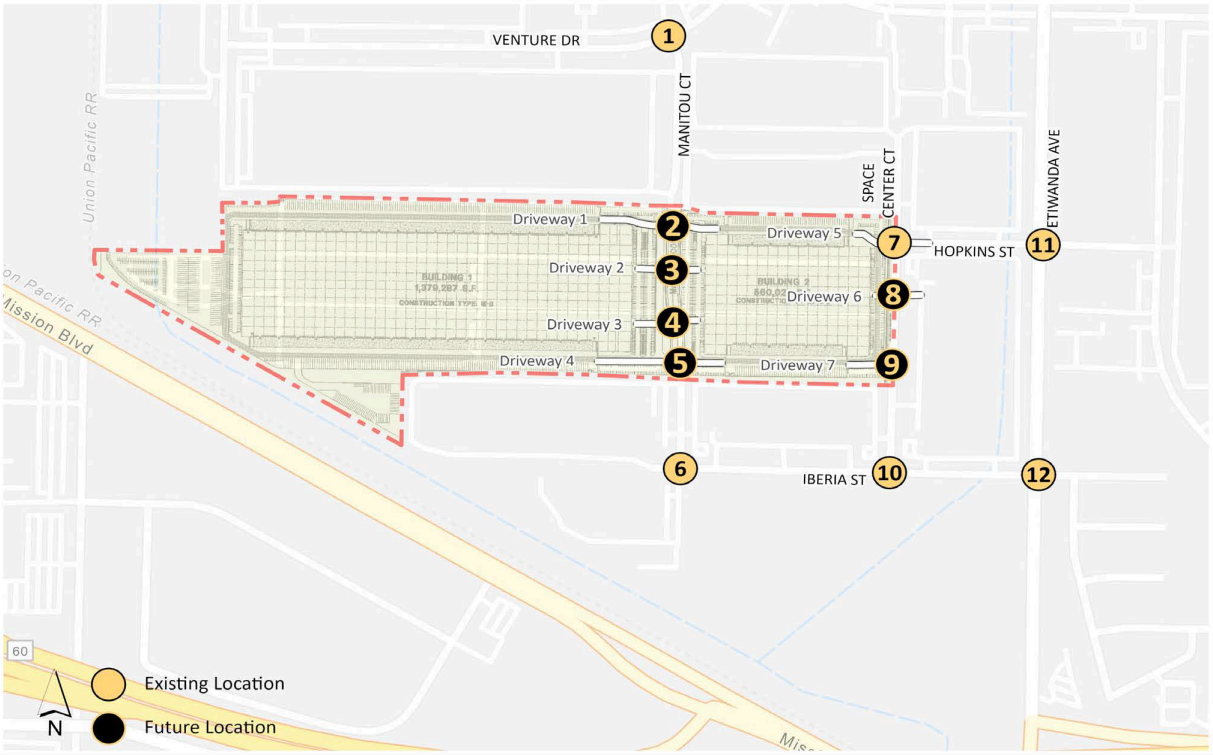
4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon a background (ambient) growth factor of 2% per year for 2022 traffic conditions. The ambient growth factor is intended to approximate traffic growth. The total ambient growth is 4.04% for 2022 traffic conditions (compounded growth of 2 percent per year over 2 years). 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.

The adopted Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (Connect SoCal, adopted September 2020) growth forecasts for the City of Jurupa Valley identifies projected growth in population of 100,100 in 2016 to 117,800 in 2045, or a 17.7% increase over the 29-year period. (11) The change in population equates to roughly a 0.56% growth rate, compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 25.7%, or a 0.79% annual growth rate. Finally, growth in employment over the same 29-year period is projected to increase by 15.5%, or a 0.50% annual growth rate. As such, the 2.0 percent per year ambient growth rate utilized in this TA would appear to conservatively estimate annual traffic growth and overstate as opposed to understate future traffic forecasts.

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.

		1,350
	↰ 42(18)	↱ 11(57)
		1,350

2 Manitou Ct. & Driveway 1

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

3 Manitou Ct. & Driveway 2

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

4 Manitou Ct. & Driveway 3

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

5 Manitou Ct. & Driveway 4

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

6 C St. & Iberia St.

900		900
↳ 13(34)	↱ 26(21)	

7 Space Center Ct. & Driveway 5/Hopkins St.

		500
	← 8(4)	
	↰ 8(3)	
2(9) →		↱ 2(9)
250		250

8 Space Center Ct. & Driveway 6

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

9 Space Center Ct. & Driveway 7

2,950		200
↲ 25(10) ↓ 65(29) ↳ 4(1)		↰ 1(4)
8(28) ↳		↰ 4(2) ↑ 19(77) ↱ 2(1)
1,000		1,950

10 Space Center Ct. & Iberia St.

100		1,000
↳ 1(3)		↰ 3(2)
		← 26(21)
13(34) →		
900		

11 Etiwanda Av. & Hopkins St.

400		
↲ 7(3) ↓ 4(3)		
2(10) ↳	↑ 2(6)	
250		150

12 Etiwanda Av. & Iberia St.

150		
↳ 4(3)		← 2(6)
		↰ 12(32)
	↱ 24(20)	
950		850

##(##) 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 Jurupa Valley and City of Ontario. 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 Background (2022) and Background (2022) plus Project plus Cumulative Project 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).

Per the City's traffic study guidelines, the Background (2022) analysis scenario includes ambient growth plus approved projects that are anticipated to open by the Project's opening year. The Background (2022) plus Project plus Cumulative Project analysis scenario includes ambient growth plus approved and pending projects (not expected to be occupied by the Project's opening date). 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.

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 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 Exhibit 4-5 for approved projects and on Exhibit 4-6 for approved/pending projects.

EXHIBIT 4-4: CUMULATIVE DEVELOPMENT LOCATION MAP

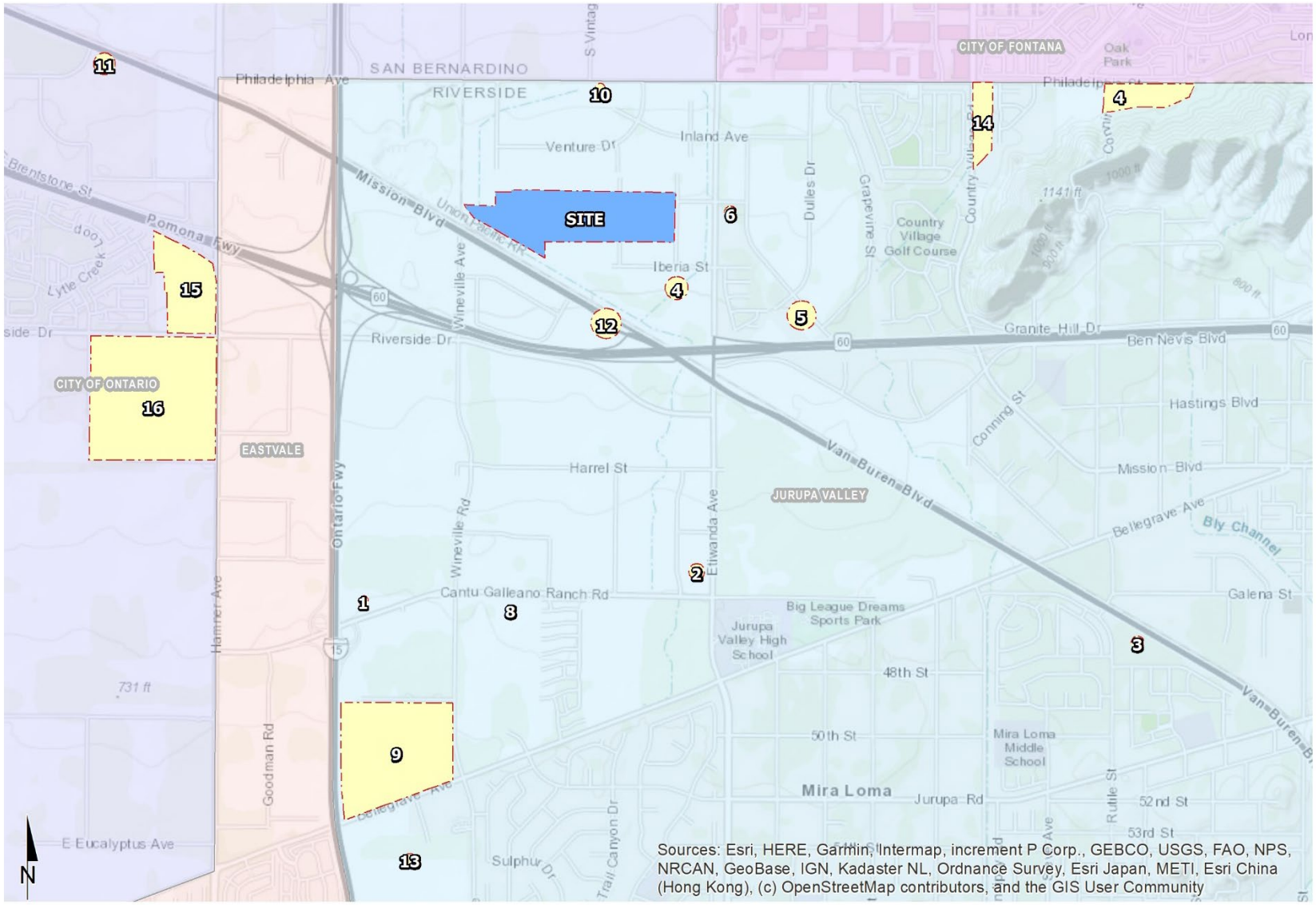
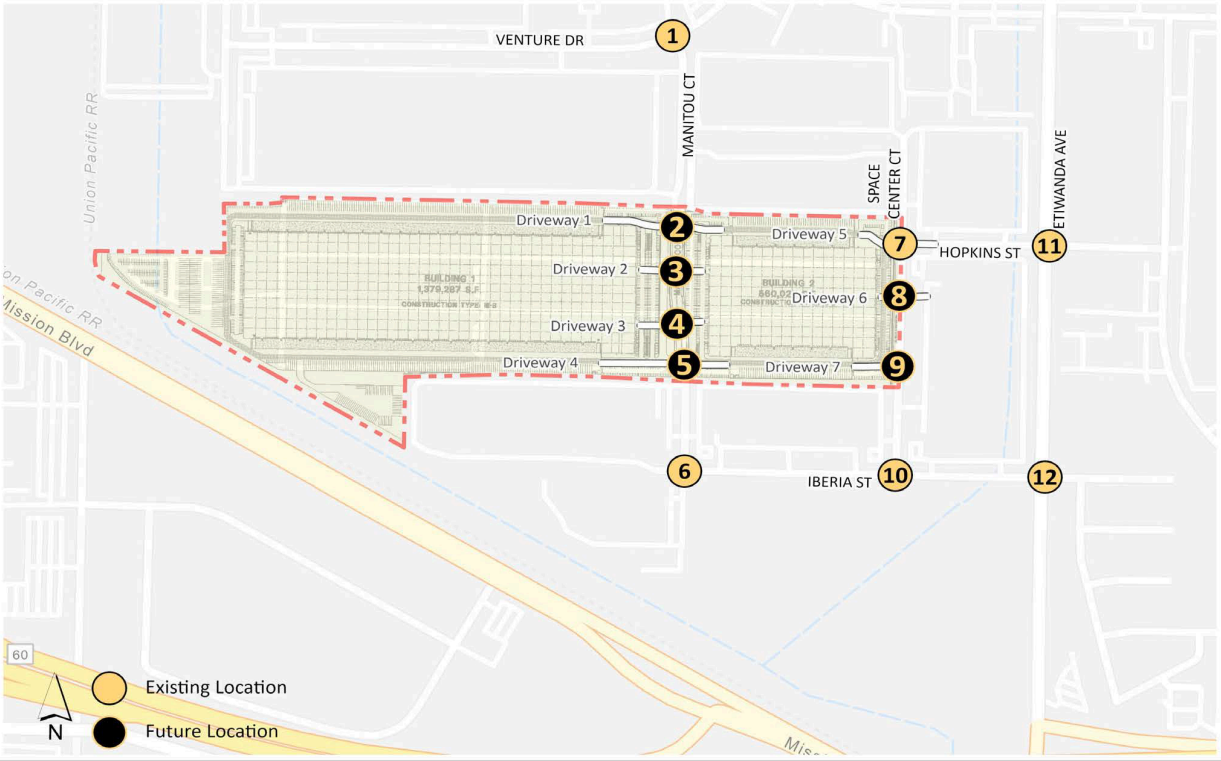


EXHIBIT 4-5: APPROVED CUMULATIVE DEVELOPMENT TRAFFIC VOLUMES



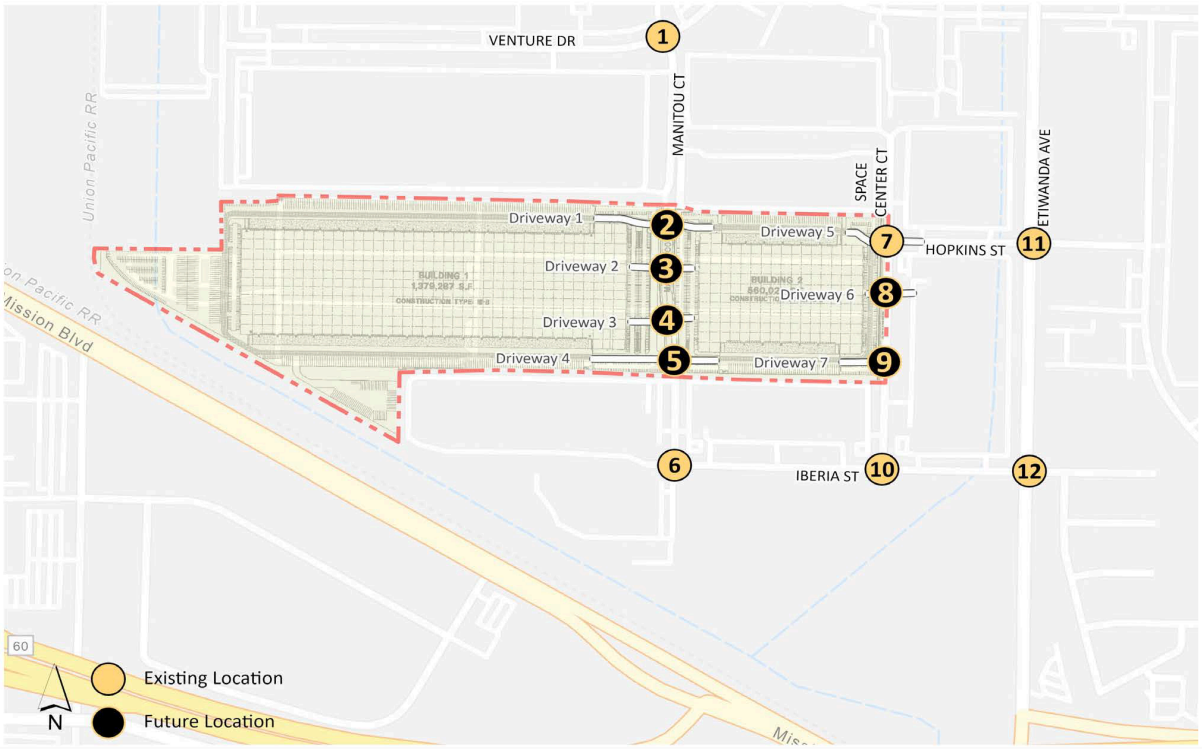
1 Manitou Ct. & Venture Dr.	2 Manitou Ct. & Driveway 1	3 Manitou Ct. & Driveway 2	4 Manitou Ct. & Driveway 3	5 Manitou Ct. & Driveway 4
	Future Intersection	Future Intersection	Future Intersection	Future Intersection

6 C St. & Iberia St.	7 Space Center Ct. & Driveway 5/Hopkins St.	8 Space Center Ct. & Driveway 6	9 Space Center Ct. & Driveway 7	10 Space Center Ct. & Iberia St.
200 ↰ 6(4) ↱ 3(8) 200	700 ↰ 24(14) ↱ 11(31) 700	Future Intersection	Future Intersection	700 ↰ 6(4) ↓ 18(11) 3(8) ↳ 1,050 ↰ 56(25) ↱ 25(57) 200 1,600

11 Etiwanda Av. & Hopkins St.	12 Etiwanda Av. & Iberia St.
1,000 ↰ 24(14) ↓ 11(10) ↳ 1(0) 11(31) ↳ 100 0(1) ↰ 2(5) ↑ 11(11) ↱ 5(3) 700 300	300 ↰ 9(4) ↓ 3(11) 4(9) ↳ 24(54) ↲ ↰ 53(24) ↑ 12(4) 1,150 1,100

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 4-6: APPROVED/PENDING CUMULATIVE DEVELOPMENT TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.	2 Manitou Ct. & Driveway 1	3 Manitou Ct. & Driveway 2	4 Manitou Ct. & Driveway 3	5 Manitou Ct. & Driveway 4
	Future Intersection	Future Intersection	Future Intersection	Future Intersection

6 C St. & Iberia St.	7 Space Center Ct. & Driveway 5/Hopkins St.	8 Space Center Ct. & Driveway 6	9 Space Center Ct. & Driveway 7	10 Space Center Ct. & Iberia St.
200 ↰ 6(4) ↱ 3(8) 200	700 ↰ 24(14) ↱ 11(31) 700	Future Intersection	Future Intersection	700 1,050 ↰ 6(4) ↓ 18(11) ↰ 56(25) 3(8) ↳ ↱ 25(57) 200 1,600

11 Etiwanda Av. & Hopkins St.	12 Etiwanda Av. & Iberia St.
2,400 ↳ 24(14) ↓ 88(65) ↰ 1(0) 11(31) ↳ 100 0(1) ↰ 2(5) → 30(117) ↱ 5(3) 700 1,700	1,700 ↰ 9(4) ↓ 81(66) 4(9) ↳ 24(54) ↳ ↱ 53(24) → 31(110) 1,150 2,550

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

TABLE 4-5: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

ID	Project Name/Location	Land Use	Quantity	Units[1]
Approved/Under Construction:				
1	Cantu Galleano Gas Station	Gas Station	2.276	TSF
		Fast-Food Restaurant w/ Drive-Through	2.532	TSF
2	Horizon Business Park	High-Cube Warehouse	310.760	TSF
3	Van Buren Commercial Development	Gas Station with Car Wash	5.044	TSF
		Fast-Food Restaurant w/ Drive-Through	7.944	TSF
		High Turnover (Sit Down) Restaurant	12.000	TSF
		Anchor Retail Building	40.940	TSF
		Retail Area Adjacent to Anchor	20.940	TSF
4	Space Center	High-Cube Warehouse	1124.860	TSF
5	Articom Refrigeration	High-Cube Cold Storage Warehouse	33.733	TSF
6	Pingo Solar	Manufacturing	9.095	TSF
7	TTM 37214, CZ17002	Single Family Detached Residential	44	DU
8	Barrington Place	Single Family Detached Residential	18	DU
9	Vernola Park	Community Center	42.132	TSF
10	Crest Global (MA 18163)	General Light Industrial	20.950	TSF
Approved & Pending/Pending:				
11	Mondragon Auto Repair	Auto Repair Facility	0.14	AC
12	Car Auto Auction House	Auto Sales - Used	16.000	TSF
13	Thoroughbred Farms (SP No. 376)	General Light Industrial	917.580	TSF
		Business Park	598.510	TSF
		Shopping Center	229.640	TSF
14	Country Village Shopping Center	Shopping Center	145.000	TSF
15	The Vine (formerly Tuscana Village)	General Light Industrial	557.720	TSF
		Manufacturing	139.430	TSF
		Shopping Center	26.700	TSF
16	Edenglen	Shopping Center	217.520	TSF
		Business Park	550.000	TSF

[2] DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

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5 BACKGROUND (2022) PLUS PROJECT TRAFFIC CONDITIONS

This section discusses the methods used to develop Background (2022) and Background (2022) plus 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 Background (2022) plus Project 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 (e.g., improvements at the Project's driveways and frontage).

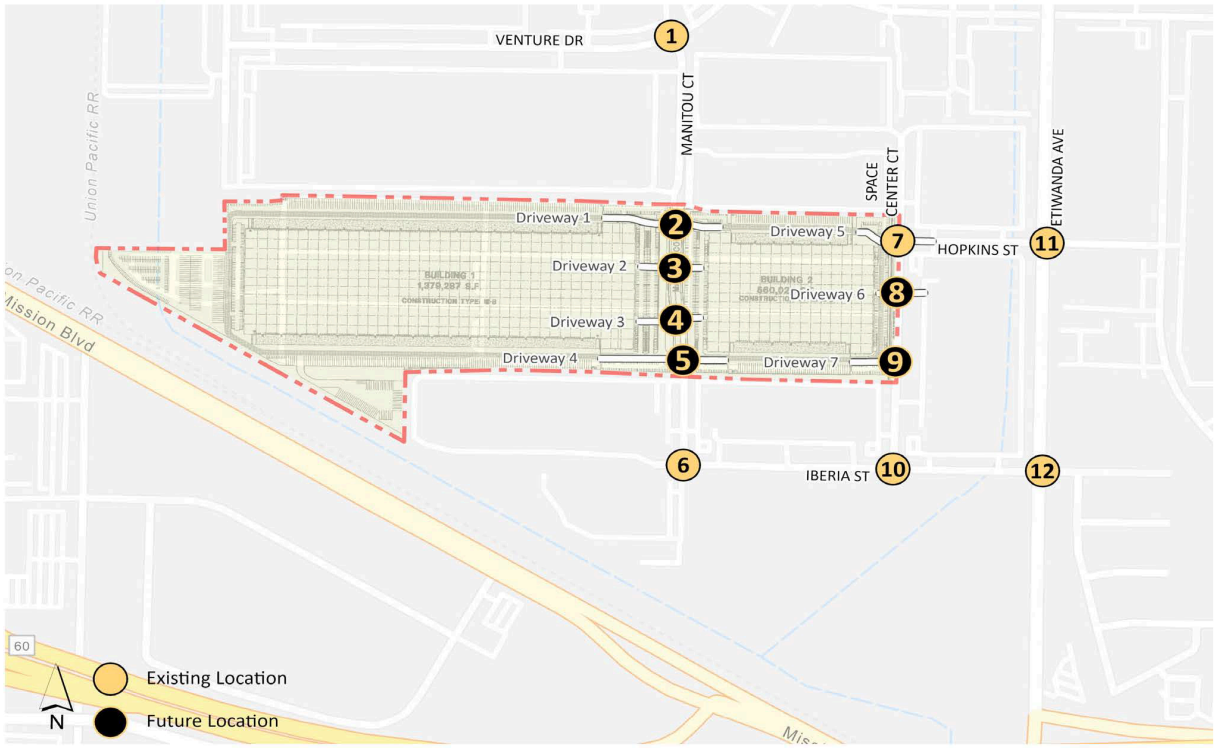
5.2 BACKGROUND (2022) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2020) traffic volumes plus an ambient growth factor of 4.04% and the addition of approved cumulative development project traffic that would likely be open by the Project's opening year. The weekday ADT volumes and peak hour volumes which can be expected for Background (2022) traffic conditions are shown on Exhibit 5-1.

5.3 BACKGROUND (2022) PLUS PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2020) traffic volumes plus an ambient growth factor of 4.04%, the addition of approved cumulative development project traffic that would likely be open by the Project's opening year in conjunction with the addition of Project traffic. The weekday ADT volumes and peak hour volumes which can be expected for Background (2022) plus Project traffic conditions are shown on Exhibit 5-2.

EXHIBIT 5-1: BACKGROUND (2022) TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.

950 | 3,700
1(4) 8(12) 11(17)
1(0) 29(60) 22(31)
32(19) 8(39) 15(23)
15(25) 4(14) 32(101)
2,250 | 2,950

2 Manitou Ct. & Driveway 1

Future Intersection

3 Manitou Ct. & Driveway 2

Future Intersection

4 Manitou Ct. & Driveway 3

Future Intersection

5 Manitou Ct. & Driveway 4

Future Intersection

6 C St. & Iberia St.

1,200 | 1,650
0(1) 29(67)
0(1) 8(5)
61(15) 12(6) 20(10)
1(0) 9(11)
200 | 350

7 Space Center Ct. & Driveway 5/Hopkins St.

800 | 2,250
2(14) 9(22)
33(16) 50(51)
2(2) 24(63)
1,950

8 Space Center Ct. & Driveway 6

Future Intersection

9 Space Center Ct. & Driveway 7

Future Intersection

10 Space Center Ct. & Iberia St.

2,100 | 3,550
17(13) 18(11) 11(59)
8(22) 40(69)
45(15) 84(32) 56(25)
25(57)
1,950 | 1,600

11 Etiwanda Av. & Hopkins St.

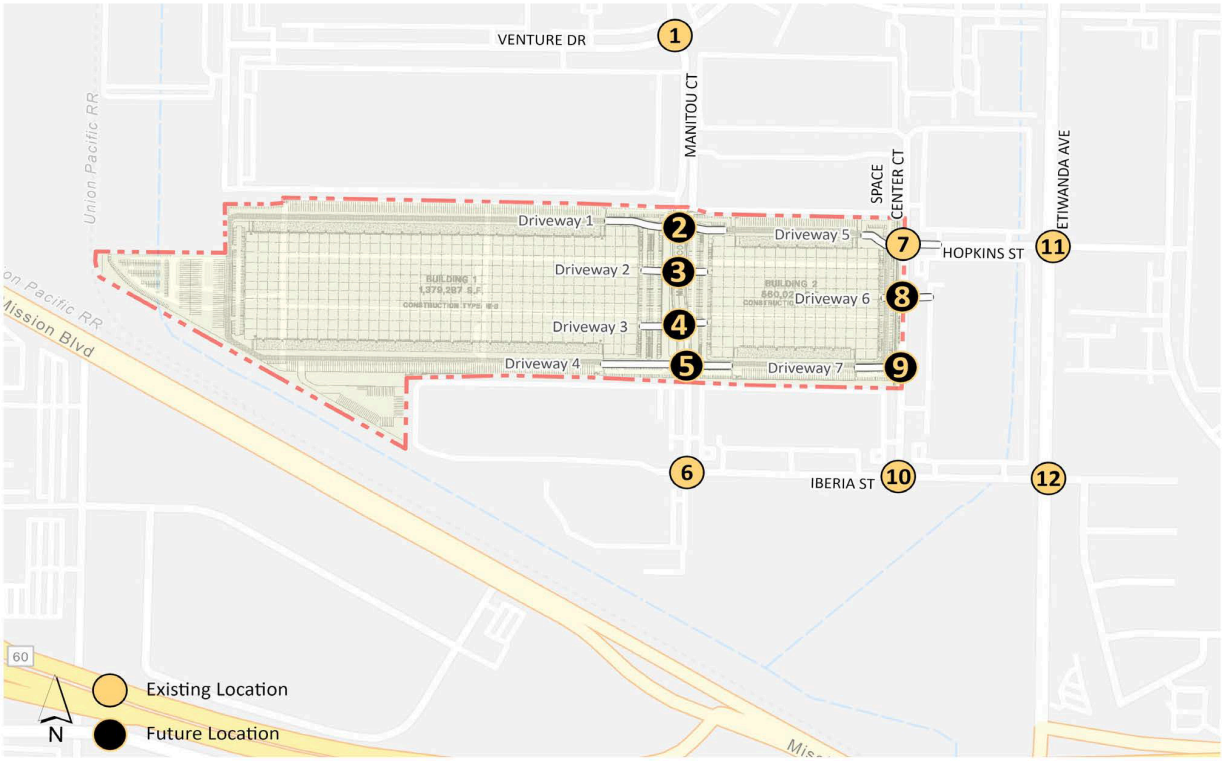
34,700 | 4,300
86(44) 467(1084) 64(30)
20(93) 0(3) 21(23)
31(78) 2(2) 93(143)
47(33) 1075(1073) 181(45)
2,900 | 33,900

12 Etiwanda Av. & Iberia St.

55,250 | 1,550
37(22) 536(1213) 7(15)
20(36) 1(1) 76(148)
15(8) 2(0) 44(36)
191(89) 1268(1089) 28(49)
4,100 | 37,300

##(##) AM(PM) Peak Hour Intersection Volumes
Average Daily Trips

EXHIBIT 5-2: BACKGROUND (2022) PLUS PROJECT TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.

950		5,100
1(4) ↲	8(12) ↓	11(17) ↳
		↰ 32(19)
		← 8(39)
		↖ 57(41)
1(0) ↳		↰ ↑ ↱
29(60) →		15(25) 4(14) 43(158)
22(31) ↲		
2,250		4,300

2 Manitou Ct. & Driveway 1

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

3 Manitou Ct. & Driveway 2

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

4 Manitou Ct. & Driveway 3

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

5 Manitou Ct. & Driveway 4

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

6 C St. & Iberia St.

2,100		2,550
0(1) ↲		42(101) ↳
		↰ 87(36)
		← 12(6)
		↖ 20(8)
0(1) ↳		↰ ↱
8(5) →		1(0) 9(16)
200		350

7 Space Center Ct. & Driveway 5/Hopkins St.

800		2,800
2(14) ↲	9(22) ↳	
		↰ 33(16)
		← 8(4)
		↖ 58(54)
2(9) →		↑ ↱
		2(2) 26(72)
250		2,200

8 Space Center Ct. & Driveway 6

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

9 Space Center Ct. & Driveway 7

2,950		200
25(10) ↲	65(29) ↓	4(1) ↳
		↰ 1(4)
8(28) ↳		↰ ↑ ↱
1(5) ↲		4(2) 19(77) 2(1)
1,000		1,950

10 Space Center Ct. & Iberia St.

2,200		4,500
17(13) ↲	18(11) ↓	12(62) ↳
		↰ 48(17)
		← 110(53)
		↖ 56(25)
8(22) ↳		↱
53(103) →		25(57)
2,850		1,600

11 Etiwanda Av. & Hopkins St.

35,100		4,300
93(47) ↲	471(1087) ↓	64(30) ↳
		31(78)
		← 2(2)
		↖ 93(143)
22(103) ↳		↰ ↑ ↱
0(3) →		47(33) 1077(1079) 181(45)
21(23) ↲		
3,150		34,050

12 Etiwanda Av. & Iberia St.

55,400		1,550
37(22) ↲	536(1213) ↓	11(18) ↳
		↰ 17(14)
		← 2(0)
		↖ 56(68)
20(36) ↳		↰ ↑ ↱
1(1) →		191(89) 1268(1089) 52(69)
76(148) ↲		
5,050		38,150

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

Average Daily Trips

5.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Background (2022) conditions with roadway and intersection geometrics consistent with Section 5.1 *Roadway Improvements*. As shown in Table 5-1, all study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours for Background (2022) traffic conditions, with the exception of the following intersection:

- Etiwanda Av. & Hopkins St. (#11) – LOS E PM peak hour

The addition of Project traffic is not anticipated to result in any new deficiencies and the addition of Project traffic to the intersection of Etiwanda Avenue and Hopkins Street is anticipated to result in an increase to the delay of less than 3.0 seconds. As such, no intersection improvements have been recommended. The intersection operations analysis worksheets for Background (2022) and Background (2022) plus Project traffic conditions are included in Appendix 5.1 and Appendix 5.2, respectively.

TABLE 5-1: INTERSECTION ANALYSIS FOR BACKGROUND (2022) PLUS PROJECT CONDITIONS

			Background				Background + Project					
			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service		Change in Delay[3]	
#	Intersection	Traffic Control[1]	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Manitou Ct. & Venture Dr.	CSS	10.2	11.6	B	B	11.3	13.0	B	B	--	--
2	Manitou Ct. & Driveway 1	**CSS**	Does Not Exist				9.8	9.8	A	A	--	--
3	Manitou Ct. & Driveway 2	**CSS**	Does Not Exist				9.0	9.1	A	A	--	--
4	Manitou Ct. & Driveway 3	**CSS**	Does Not Exist				8.9	9.0	A	A	--	--
5	Manitou Ct. & Driveway 4	**CSS**	Does Not Exist				9.5	9.4	A	A	--	--
6	C St. & Iberia St.	AWS	9	8.2	A	A	9.3	8.4	A	A	--	--
7	Space Center Ct. & Driveway 5/Hopkins St.	AWS	8.6	8.3	A	A	8.6	8.4	A	A	--	--
8	Space Center Ct. & Driveway 6	**CSS**	Does Not Exist				9.2	9.4	A	A	--	--
9	Space Center Ct. & Driveway 7	**CSS**	Does Not Exist				8.8	9.0	A	A	--	--
10	Space Center Ct. & Iberia St.	CSS	9.1	9.4	A	A	9.5	9.9	A	A	--	--
11	Etiwanda Av. & Hopkins St.	TS	38.8	**65.8**	D	**E**	38.8	**67.9**	D	**E**	--	2.1
12	Etiwanda Av. & Iberia St.	TS	36.8	12.8	D	B	36.9	12.9	D	B	--	--

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

[1] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = 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) are shown.

[3] The change in delay is calculated between Without Project and With Project scenarios for City of Jurupa Valley intersections that operate at an unacceptable LOS for Without Project conditions only.

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Background (2022) and Background (2022) plus Project traffic conditions based on peak hour and daily volumes (where applicable). There are no study area intersections anticipated to meet peak hour or planning-level ADT traffic signal warrants. Traffic signal warrant analysis worksheets are included in Appendix 5.3 and Appendix 5.4 of this TA.

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6 BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT TRAFFIC CONDITIONS

This section discusses the methods used to develop Background (2022) plus Project plus Cumulative Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

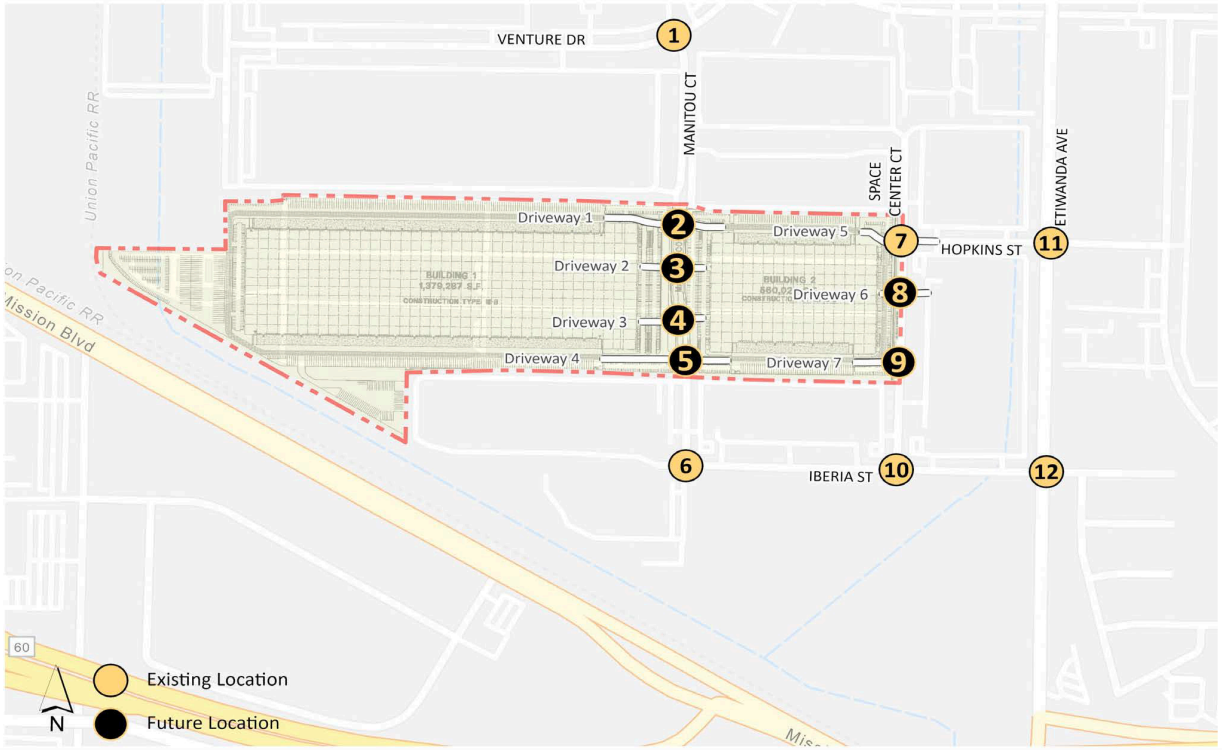
The lane configurations and traffic controls assumed to be in place for Background (2022) plus Project plus Cumulative Project conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

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

6.2 TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2020) traffic volumes plus an ambient growth factor of 4.04%, the addition of traffic generated by cumulative development projects (both approved and pending projects), and the addition of Project traffic. The weekday ADT volumes and peak hour volumes which can be expected for Background (2022) plus Project plus Cumulative Project traffic conditions are shown on Exhibit 6-1.

EXHIBIT 6-1: BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT TRAFFIC VOLUMES



1 Manitou Ct. & Venture Dr.

950		5,100
	↰ 1(4) ↓ 8(12) ↳ 11(17)	↱ 32(19) ↑ 8(39) ↰ 57(41)
	1(0) →	↰ ↑ ↱
	29(60) →	15(25) 4(14) 43(158)
	22(31) ↲	
2,250		4,300

2 Manitou Ct. & Driveway 1

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

3 Manitou Ct. & Driveway 2

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

4 Manitou Ct. & Driveway 3

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

5 Manitou Ct. & Driveway 4

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

6 C St. & Iberia St.

2,100		2,550
	↲ 0(1) ↳ 42(101)	↱ 87(36) ↑ 12(6) ↰ 20(8)
	0(1) →	↰ ↱
	8(5) →	1(0) 9(16)
200		350

7 Space Center Ct. & Driveway 5/Hopkins St.

800		2,800
	↓ 2(14) ↳ 9(22)	↱ 33(16) ↑ 8(4) ↰ 58(54)
	2(9) →	↑ ↱
		2(2) 26(72)
250		2,200

8 Space Center Ct. & Driveway 6

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

9 Space Center Ct. & Driveway 7

2,950		200
	↲ 25(10) ↓ 65(29) ↳ 4(1)	↱ 1(4)
	8(28) →	↰ ↑ ↱
	1(5) ↲	4(2) 19(77) 2(1)
1,000		1,950

10 Space Center Ct. & Iberia St.

2,200		4,500
	↲ 17(13) ↓ 18(11) ↳ 12(62)	↱ 48(17) ↑ 110(53) ↰ 56(25)
	8(22) →	↱
	53(103) →	25(57)
2,850		1,600

11 Etiwanda Av. & Hopkins St.

36,500		4,300
	↲ 93(47) ↓ 548(1142) ↳ 64(30)	31(78) ↑ 2(2) ↰ 93(143)
	22(103) →	↰ ↑ ↱
	0(3) →	47(33) 1096(1185) 181(45)
	21(23) ↲	
3,150		35,500

12 Etiwanda Av. & Iberia St.

56,850		1,550
	↲ 37(22) ↓ 614(1268) ↳ 11(18)	↱ 17(14) ↑ 2(0) ↰ 56(68)
	20(36) →	↰ ↑ ↱
	1(1) →	191(89) 1287(1195) 52(69)
	76(148) ↲	
5,050		39,550

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

Average Daily Trips

6.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under Background (2022) plus Project plus Cumulative Project conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, all study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours, with the exception of the following intersection:

- Etiwanda Av. & Hopkins St. (#11) – LOS E PM peak hour only

The intersection operations analysis worksheets for Background (2022) plus Project plus Cumulative Project traffic conditions are included in Appendix 6.1 of this TA.

TABLE 6-1: INTERSECTION ANALYSIS FOR BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.) AM	Delay[2] (secs.) PM	Level of Service AM	Level of Service PM
1	Manitou Ct. & Venture Dr.	CSS	11.3	12.9	B	B
2	Manitou Ct. & Driveway 1	**CSS**	9.8	9.8	A	A
3	Manitou Ct. & Driveway 2	**CSS**	9.0	9.1	A	A
4	Manitou Ct. & Driveway 3	**CSS**	8.9	9.0	A	A
5	Manitou Ct. & Driveway 4	**CSS**	9.5	9.4	A	A
6	C St. & Iberia St.	AWS	9.3	8.4	A	A
7	Space Center Ct. & Driveway 5/Hopkins St.	AWS	8.6	8.4	A	A
8	Space Center Ct. & Driveway 6	**CSS**	9.2	9.4	A	A
9	Space Center Ct. & Driveway 7	**CSS**	8.8	9.0	A	A
10	Space Center Ct. & Iberia St.	CSS	9.5	9.8	A	A
11	Etiwanda Av. & Hopkins St.	TS	39.9	**68.1**	D	**E**
12	Etiwanda Av. & Iberia St.	TS	42.0	13.5	D	B

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

[1] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; **CSS** = 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) are shown.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Background (2022) plus Project plus Cumulative Project traffic conditions based on peak hour and daily volumes (where applicable). There are no unsignalized study area intersections anticipated to meet peak hour or planning-level ADT traffic signal warrants under Background (2022) plus Project plus Cumulative Project traffic conditions (see Appendix 6.2).

6.5 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections and freeway facilities that have been identified as deficient under Background (2022) plus Project plus Cumulative Project traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS D or better).

The effectiveness of the recommended improvement strategies to address Background (2022) plus Project plus Cumulative Project traffic deficiencies are presented in Table 6-2. If not constructed by the Project, the Project Applicant shall contribute to these improvements through payment of City DIF/TUMF fees or fair share contribution as identified in Table 1-3. Worksheets for Background (2022) plus Project plus Cumulative Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 6.3.

TABLE 6-2: INTERSECTION ANALYSIS FOR BACKGROUND (2022) PLUS PROJECT PLUS CUMULATIVE PROJECT CONDITIONS WITH IMPROVEMENTS

			Intersection Approach Lanes[2]												Delay[3] (secs.)		Level of Service	
		Traffic	Northbound			Southbound			Eastbound			Westbound						
#	Intersection	Control[1]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
11	Etiwanda Av. & Hopkins St.																	
	-Without Improvements	TS	1	3	0	1	3	0	0	1	d	0	1	d	39.9	**68.1**	D	**E**
	- With Improvements[4]	TS	**1**	3	0	1	3	0	**1**	1	**0**	**1**	1	**0**	9.7	34.5	A	C

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

[1] TS = Traffic Signal

[2] 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; d = Defacto Right Turn Lane; **1** = Improvement

[3] 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.

[4] Improvement is to restripe the eastbound and westbound approaches.

7 LOCAL AND REGIONAL FUNDING MECHANISMS

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

7.1 CITY OF JURUPA VALLEY DEVELOPMENT IMPACT FEE PROGRAM

Upon incorporation, the City of Jurupa Valley has adopted the County of Riverside's Development Impact Fee (DIF) program. The DIF program consists of two separate transportation components: Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the DIF program are identified on the Public Needs List.

Similar to the TUMF Program, after the City's DIF fees are collected, they are placed in a separate interest-bearing account pursuant to the requirements of Government Code § 66000 et seq. The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department.

The cost of signalizing DIF network intersections is identified under the Traffic Signals component of the DIF program. Generally, DIF eligible intersections as those consisting of two intersecting General Plan roadways. Fee credits and reimbursements will be available as part of the Fee Program and will only be given to projects that are identified as a Fee Program facility. The Project's Conditions of Approval will establish and clarify eligibility

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. The Project applicant will be subject to the City's DIF fee program and will pay the requisite City DIF fees at the rates then in effect. The Project Applicant's payment of the requisite DIF fees at the rates then in effect pursuant to the DIF Program will mitigate its impacts to DIF-funded facilities.

7.2 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (12) This regional program was put into place to ensure that development pays its fair share, and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

TUMF guidelines empower a local zone committee to prioritize and arbitrate certain projects. The Project is located in the Northwest Zone. The zone has developed a 5-year capital improvement program to prioritize public construction of certain roads. TUMF is focused on improvements necessitated by regional growth.

7.3 FAIR SHARE CONTRIBUTION

Project improvements 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, have been provided in Table 7-1 for the applicable deficient study area intersection. 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 7-1: PROJECT FAIR SHARE CALCULATIONS

#	Intersection		Existing	Project	B+P+C (2022) Volume	Net New Traffic	Project % of New Traffic
11	Etiwanda Av. & Hopkins St.						
		AM:	1,905	15	2,197	292	5.14%
		PM:	2,428	22	2,835	407	**5.41%**

BOLD = Denotes highest fair share percentage.

8 REFERENCES

1. **City of Jurupa Valley.** *Traffic Impact Analysis Guidelines.* City of Jurupa Valley : s.n., August 2020.
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5. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.
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14. **Institute of Transportation Engineers.** *Trip Generation Manual Supplement.* s.l. : ITE, February 2020.

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