Rubidoux Warehouse

TRAFFIC IMPACT ANALYSIS

CITY OF JURUPA VALLEY

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JANUARY 22, 2021

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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
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PeMS	Performance Measurement System
PCE	Passenger Car Equivalents
PHF	Peak Hour Factor
OPR	Office of Planning and Research
Project	Rubidoux Warehouse
RCTC	Riverside County Transportation Commission
RivTAM	Riverside Transportation Analysis Model
RTA	Riverside Transport Authority
RTP	Regional Transportation Plan
SBCTA	San Bernardino County Transportation Authority
SBTAM	San Bernardino Transportation Analysis Model
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SHS	State Highway System
SR	State Route
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
v/c	Volume to Capacity
vphgpl	Vehicles per Hour Green per Lane
VMT	Vehicle Miles Traveled
WRCOG	Western Riverside Council of Governments

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1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Rubidoux Warehouse ("Project"), which is located west of Avalon Street at 26th Street in the City of Jurupa Valley, as shown on Exhibit 1-1.

The purpose of this TIA is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, to recommend improvements to achieve acceptable circulation system operational conditions. As directed by City of Jurupa Valley staff at the time this traffic study was originally prepared in 2019, this traffic study has been prepared in accordance with the County of Riverside Traffic Impact Analysis Preparation Guidelines, the California Department of Transportation (Caltrans) Guide for the Preparation of Traffic Impact Studies, and consultation with City staff during the scoping process. (1) (2) (3) Since the time this traffic study was prepared, the City of Jurupa Valley approved traffic study guidelines in November 2020. It should be noted this traffic study is also consistent with the methodology outlined in the City's 2020 traffic study guidelines. Where applicable, the San Bernardino County Transportation Authority (SBCTA) Congestion Management Program (CMP) Guidelines for CMP Traffic Impact Analysis Reports (Appendix B, 2016 Update) has also been followed for the study area intersections located in the County of San Bernardino. (3) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

1.1 PROJECT OVERVIEW

Exhibit 1-1 illustrates the preliminary site plan. As indicated on Exhibit 1-1, the Project is proposed to consist of the following uses:

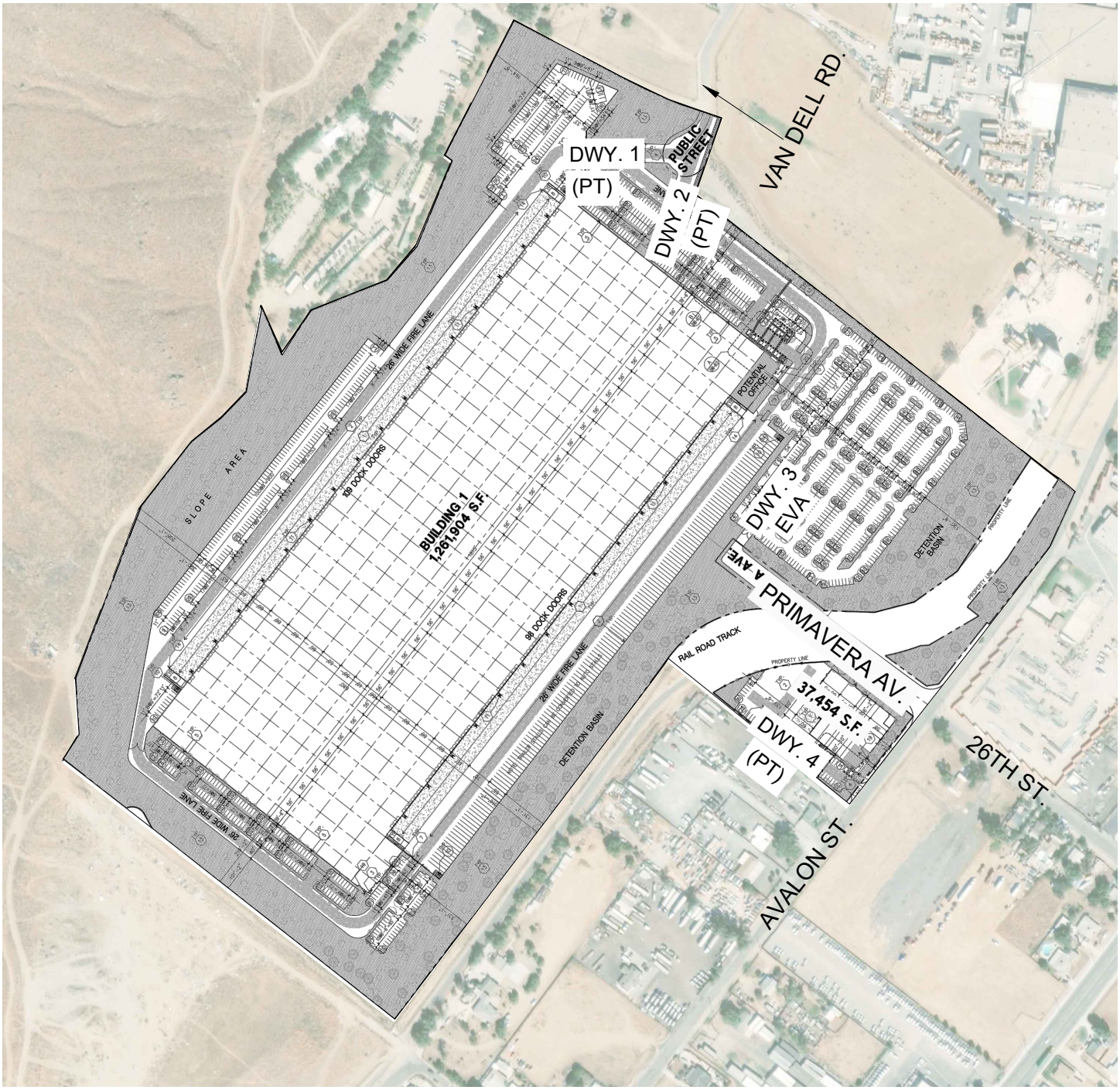
- 1,261,904 square feet of High-Cube Fulfillment Center use (Building 1)
- 37,454 square feet of General Light Industrial use (Building 2)

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 29, 2019). (4) (5) The proposed Project is anticipated to generate a total of 2,874 actual vehicle trip-ends per day with 180 AM peak hour trips and 232 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.

Regional access to the Project site is available from the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, SR-60 Freeway and Market Street interchanges. Vehicular and truck traffic access will be provided via the following driveways:

- Driveway 1 via Van Dell Road – Full access for both passenger cars and trucks for Building 1
- Driveway 2 via Van Dell Road – Full access for both passenger cars and trucks for Building 1
- Driveway 3 via Primavera Avenue – Emergency Vehicle Access Only
- Driveway 4 via Avalon Street – Full access for both passenger cars and trucks for Building 2

EXHIBIT 1-1: PRELIMINARY SITE PLAN



LEGEND:

RIRO = RIGHT-IN/RIGHT-OUT ONLY ACCESS
PT = PASSENGER CARS AND TRUCKS
EVA = EMERGENCY VEHICLE ACCESS ONLY

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NOTE: UNLESS NOTED, ALL DRIVEWAYS ARE ASSUMED TO BE FULL ACCESS.

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1.2 ANALYSIS SCENARIOS

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

- Existing (2020) Conditions
- Existing plus Project (E+P) Conditions
- Existing Plus Ambient Growth Plus Project (EAP) (2023)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2023)
- Horizon Year (2040) Without Project Conditions
- Horizon Year (2040) With Project Conditions

1.2.1 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 were conducted in May 2019 by vehicle classification and were converted to PCE due to the presence of heavy trucks within the study area. Pursuant to discussions with City staff, a 2% growth rate has been applied to the 2019 traffic counts to reflect 2020 conditions.

1.2.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

1.2.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2023) CONDITIONS

The EAP (2023) conditions analysis determines the traffic impacts based on a comparison of the EAP (2023) traffic conditions to Existing conditions. To account for background traffic growth, an ambient growth factor from Existing (2020) conditions of 6.12% (2 percent per year, compounded over 3 years) is included for EAP (2023) traffic conditions. Consistent with Riverside County traffic study guidelines, the EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area. Per the County of Riverside traffic study guidelines, the EAP scenario is the basis for determining project-specific traffic impacts associated solely with the development of the Project based on a comparison of the EAP traffic conditions to Existing (2020) conditions.

1.2.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2023) CONDITIONS

The EAPC (2023) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth factor of 6.12% from Existing conditions are included for EAPC (2023) traffic conditions (2 percent per year, compounded over 3 years).

1.2.5 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year Without Project conditions were derived from the Riverside Transportation Analysis Model (RivTAM) for study area intersections located in Riverside County and the San Bernardino Transportation Analysis Model (SBTAM) for study area intersections located in San Bernardino County. The Horizon Year conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments Transportation Uniform Mitigation Fee (TUMF), City of Jurupa Valley Development Impact Fee (DIF) program, or other approved funding mechanism can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the City of Jurupa Valley (lead agency) General Plan. (6) Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF) are identified as such. Each of these regional transportation fee programs are discussed in more detail in Section 9 *Local and Regional Funding Mechanisms*.

1.3 STUDY AREA

To ensure that this TIA satisfies the City of Jurupa Valley's traffic study requirements, Urban Crossroads, Inc. prepared a project traffic study scoping package for review by City staff prior to the preparation of this report. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology.

1.3.1 INTERSECTIONS

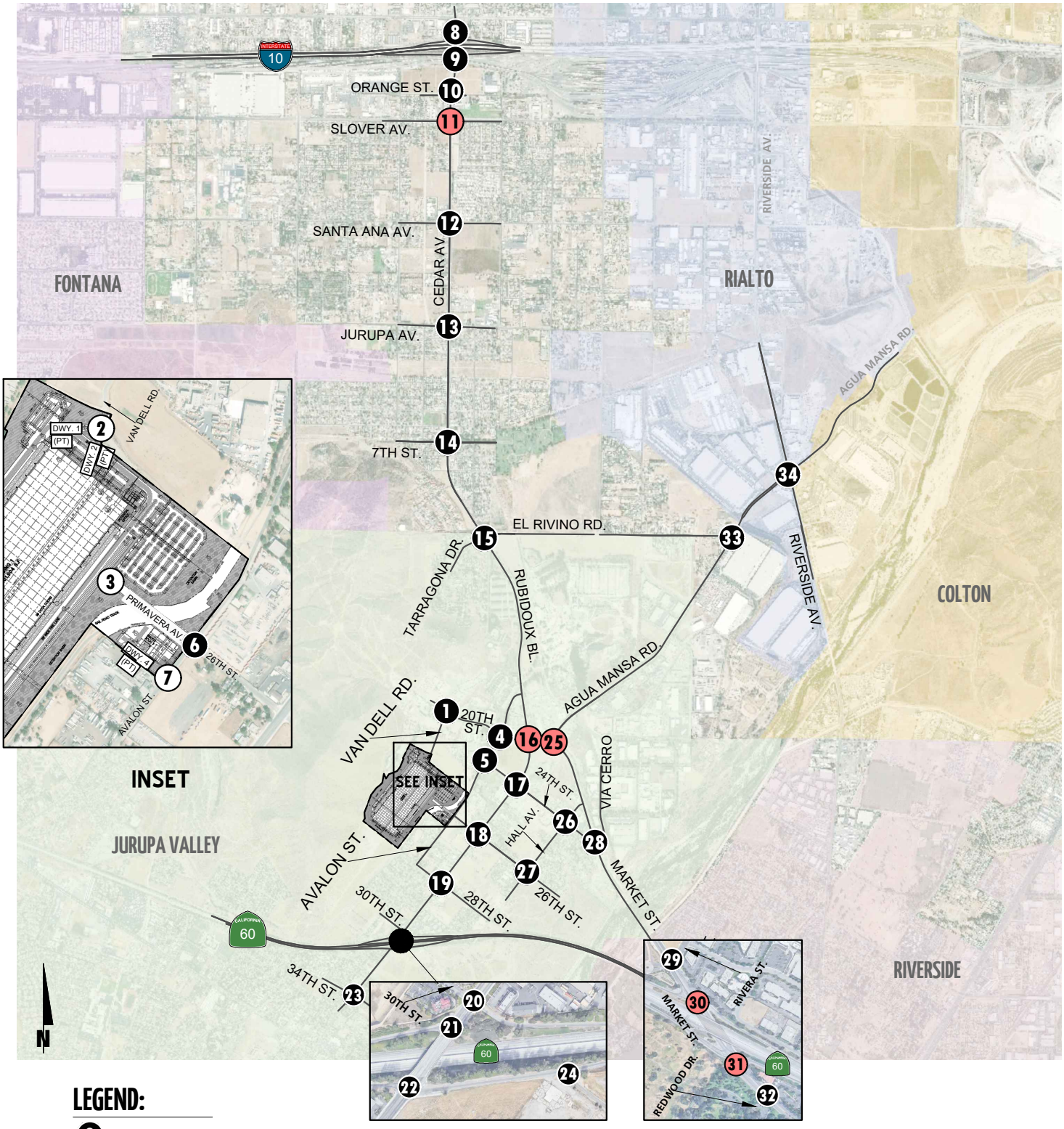
The following 34 study area intersections shown on Exhibit 1-2 and listed in Table 1-1 were selected for this TIA based on consultation with City of Jurupa Valley staff and have generally been selected based on the "50 peak hour trip" criterion. The "50 peak hour trip" criterion is consistent with the methodology employed by the County of Riverside, and generally represents a minimum number of trips at which a typical intersection would have the potential to be substantively impacted by a given development proposal. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area). The "50 peak hour trip" criterion is also utilized by the County of San Bernardino.

The intent of a 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 impacts, 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. (7) CMP intersections are identified in Table 1-1. The County of San Bernardino CMP became effective with the passage of Proposition 111 in 1990 and updated most recently in 2016. The SBCTA adopted the 2016 CMP for the County of San Bernardino in June 2016. (3) There are 4 study area intersections identified as a Riverside County CMP facility and 1 study area intersection identified as a San Bernardino County CMP facility.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Van Dell Rd. & 20th St.	Jurupa Valley	No
2	Van Dell Rd. & Driveway 1/Driveway 2 – Future Intersection	Jurupa Valley	No
3	Driveway 3 & Primavera St. – Future Intersection	Jurupa Valley	No
4	Avalon St. & 20th St.	Jurupa Valley	No
5	Avalon St. & 24th St.	Jurupa Valley	No
6	Avalon St. & Primavera Av./26th St.	Jurupa Valley	No
7	Avalon St. & Driveway 4 – Future Intersection	Jurupa Valley	No
8	Cedar Av. & I-10 WB Ramps	Caltrans, County of San Bernardino	No
9	Cedar Av. & I-10 EB Ramps	Caltrans, County of San Bernardino	No
10	Cedar Av. & Orange St.	County of San Bernardino	No
11	Cedar Av. & Slover Av.	County of San Bernardino	Yes
12	Cedar Av. & Santa Ana Av.	County of San Bernardino	No
13	Cedar Av. & Jurupa Av.	County of San Bernardino	No
14	Cedar Av. & 7th St.	County of San Bernardino	No
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	Jurupa Valley, County of San Bernardino	No
16	Rubidoux Bl. & 20th St./Market St.	Jurupa Valley	Yes
17	Rubidoux Bl. & 24th St.	Jurupa Valley	No
18	Rubidoux Bl. & 26th St.	Jurupa Valley	No
19	Rubidoux Bl. & 28th St.	Jurupa Valley	No
20	Rubidoux Bl. & SR-60 WB Off-Ramp	Caltrans, Jurupa Valley	No
21	Rubidoux Bl. & SR-60 WB On-Ramp	Caltrans, Jurupa Valley	No
22	Rubidoux Bl. & SR-60 EB Ramps	Caltrans, Jurupa Valley	No
23	Rubidoux Bl. & 34th St.	Jurupa Valley	No
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	Caltrans, Jurupa Valley	No
25	Agua Mansa Rd. & Market St.	Jurupa Valley	Yes
26	Hall Av. & 24th St.	Jurupa Valley	No
27	Hall Av. & 26th St.	Jurupa Valley	No
28	Via Cerro/24th St. & Market St.	Jurupa Valley	No
29	Market St. & Rivera St.	Jurupa Valley, Riverside	No
30	Market St. & SR-60 WB Ramps	Caltrans, Jurupa Valley, Riverside	Yes
31	Market St. & SR-60 EB Ramps	Caltrans, Jurupa Valley, Riverside	Yes
32	Market St. & Redwood Dr.	Riverside	No
33	Agua Mansa Rd. & El Rivino Rd.	San Bernardino	No
34	Riverside Dr. & Agua Mansa Rd.	Rialto, Colton	No

EXHIBIT 1-2: LOCATION MAP



LEGEND:

- 0 = EXISTING INTERSECTION ANALYSIS LOCATION
- 0 = FUTURE INTERSECTION ANALYSIS LOCATION
- 0 = CMP INTERSECTION

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1.3.2 FREEWAY MAINLINE AND RAMP JUNCTION ANALYSIS

Study area freeway mainline analysis locations were selected based on Caltrans traffic study guidelines, which may require the analysis of State highway facilities. (2) Consistent with recent Caltrans guidance, and because deficiencies to freeway segments tend to dissipate with distance from the point of State Highway System (SHS) entry, quantitative study of freeway segments beyond those immediately adjacent to the point of entry typically is not required. This study evaluates the following freeway facilities adjacent to the point of entry to the SHS at the I-10 Freeway and Cedar Avenue, SR-60 Freeway and Rubidoux Boulevard, and SR-60 Freeway and Market Street (see Table 1-3):

TABLE 1-2: FREEWAY FACILITY ANALYSIS LOCATIONS

ID	Freeway Facilities
1	I-10 Freeway Westbound, West of Cedar Av.
2	I-10 Freeway Westbound, On-Ramp at Cedar Av.
3	I-10 Freeway Westbound, Off-Ramp at Cedar Av.
4	I-10 Freeway Westbound, East of Cedar Av.
5	I-10 Freeway Eastbound, West of Cedar Av.
6	I-10 Freeway Eastbound, Off-Ramp at Cedar Av.
7	I-10 Freeway Eastbound, On-Ramp at Cedar Av.
8	I-10 Freeway Eastbound, East of Cedar Av.
9	SR-60 Freeway Westbound, West of Rubidoux Bl.
10	SR-60 Freeway Westbound, On-Ramp at Rubidoux Bl.
11	SR-60 Freeway Westbound, Off-Ramp at Rubidoux Bl.
12	SR-60 Freeway Westbound, Rubidoux Bl. to Market St.
13	SR-60 Freeway Westbound, On-Ramp at Market St.
14	SR-60 Freeway Westbound, Off-Ramp at Market St.
15	SR-60 Freeway Westbound, East of Market St.
16	SR-60 Freeway Eastbound, West of Rubidoux Bl.
17	SR-60 Freeway Eastbound, Off-Ramp at Rubidoux Bl.
18	SR-60 Freeway Eastbound, On-Ramp at Rubidoux Bl.
19	SR-60 Freeway Eastbound, Rubidoux Bl. to Market St.
20	SR-60 Freeway Eastbound, Off-Ramp at Market St.
21	SR-60 Freeway Eastbound, On-Ramp at Market St.
22	SR-60 Freeway Eastbound, East of Market St.

1.4 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 *E+P Traffic Conditions*, Section 6 *EAP (2023) Traffic Conditions*, Section 7 *EAPC (2023) Traffic Conditions*, and Section 8 *Horizon Year (2040) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Exhibit 1-3.

1.4.1 E+P CONDITIONS

Cedar Avenue & Slover Avenue (#13) – This intersection was found to operate at an unacceptable LOS (LOS E or worse) during the peak hours under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during one or more peak hours with the addition of Project traffic resulting in a cumulative deficiency.

Rubidoux Boulevard & 20th Street/Market Street (#16) – This intersection was found to operate at an unacceptable LOS (LOS E or worse) during the PM peak hour under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during one or more peak hours with the addition of Project traffic resulting in a cumulative deficiency.

Rubidoux Boulevard & 24th Street (#17) – This intersection was found to operate at an unacceptable LOS (LOS E or worse) during the peak hours under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during one or more peak hours with the addition of Project traffic resulting in a cumulative deficiency.

Rubidoux Boulevard & 26th Street (#18) – This intersection was found to operate at an unacceptable LOS (LOS E or worse) during the PM peak hour under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during one or more peak hours with the addition of Project traffic resulting in a cumulative deficiency.

Agua Mansa Road & El Rivino Road (#33) – This intersection was found to operate at an unacceptable LOS (LOS E or worse) during the PM peak hour under Existing traffic conditions and is anticipated to continue to operate at an unacceptable LOS during one or more peak hours with the addition of Project traffic resulting in a cumulative deficiency.

1.4.2 EAP (2023) CONDITIONS

There are no additional intersections anticipated to operate at an unacceptable LOS during the peak hours under EAP (2023) traffic conditions.

EXHIBIT 1-3: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2020)	E+P	EAP (2023)	EAPC (2023)	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	Van Dell Rd. & 20th St.						
2	Van Dell Rd. & Dwy. 1 / Dwy. 2	NA				NA	
3	Dwy. 3 & Primavera Av.	NA				NA	
4	Avalon St. & 20th St.						
5	Avalon St. & 24th St.						
6	Avalon St. & Primavera Av. / 26th St.						
7	Avalon St. & Dwy. 4	NA				NA	
8	Cedar Av. & I-10 WB Ramps						
9	Cedar Av. & I-10 EB Ramps						
10	Cedar Av. & Orange St.						
11	Cedar Av. & Slover Av.						
12	Cedar Av. & Santa Ana Av.						
13	Cedar Av. & Jurupa Av.						
14	Cedar Av. & 7th St.						
15	Rubidoux Bl. & Tarragona Dr. / El Rivino Rd.						
16	Rubidoux Bl. & 20th St. / Market St.						
17	Rubidoux Bl. & 24th St.						
18	Rubidoux Bl. & 26th St.						
19	Rubidoux Bl. & 28th St.						
20	Rubidoux Bl. & SR-60 WB Off-Ramp						
21	Rubidoux Bl. & SR-60 WB On-Ramp						
22	Rubidoux Bl. & SR-60 EB Ramps						
23	Rubidoux Bl. & 34th St.						
24	30th St. & Frontage Rd. / SR-60 EB On-Ramp						
25	Agua Mansa Rd. & Market St.						
26	Hall Av. & 24th St.						
27	Hall Av. & 26th St.						
28	Via Cerro / 24th St. & Market St.						
29	Market St. & Rivera St.						
30	Market St. & SR-60 WB Ramps						
31	Market St. & SR-60 EB Ramps						
32	Market St. & Redwood Dr.						
33	Agua Mansa Dr. & El Rivino Rd.						
34	Riverside Dr. & Agua Mansa Rd.						

LEGEND:

= AM PEAK HOUR
= PM PEAK HOUR
= LOS A-D
= LOS E
= LOS F
NA = NOT AN ANALYSIS LOCATION FOR THIS SCENARIO

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1.4.3 EAPC (2023) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours for EAPC (2023) traffic conditions:

- Cedar Avenue & I-10 Westbound Ramps (#8) – LOS E AM peak hour; LOS F PM peak hour
- Cedar Avenue & I-10 Eastbound Ramps (#9) – LOS F AM and PM peak hours
- Cedar Avenue & Slover Avenue (#11) – LOS F PM peak hour only
- Cedar Avenue & Jurupa Avenue (#13) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 20th Street/Market Street (#16) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 24th Street (#17) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 26th Street (#18) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – LOS F AM peak hour; LOS E PM peak hour
- Agua Mansa Road & Market Street (#25) – LOS E AM peak hour; LOS F PM peak hour
- Via Cerro/24th Street & Market Street (#28) – LOS E PM peak hour only
- Agua Mansa Road & El Rivino Road (#33) – LOS F AM and PM peak hours
- Riverside Drive & Agua Mansa Road (#34) – LOS E AM peak hour; LOS F PM peak hour

1.4.4 HORIZON YEAR (2040) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours under Horizon Year (2040) Without Project traffic conditions:

- Cedar Avenue & I-10 Westbound Ramps (#8) – LOS E AM and PM peak hours
- Cedar Avenue & I-10 Eastbound Ramps (#9) – LOS E AM peak hour; LOS F PM peak hour
- Cedar Avenue & Slover Avenue (#11) – LOS E AM and PM peak hours
- Cedar Avenue & Jurupa Avenue (#13) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 20th Street/Market Street (#16) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 24th Street (#17) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 26th Street (#18) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – LOS E AM peak hour; LOS F PM peak hour
- Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – LOS F AM peak hour; LOS E PM peak hour
- Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – LOS F AM peak hour; LOS E PM peak hour
- Agua Mansa Road & Market Street (#25) – LOS E AM peak hour; LOS F PM peak hour
- Via Cerro/24th Street & Market Street (#28) – LOS E AM peak hour; LOS F PM peak hour
- Market Street & Redwood Drive (#32) – LOS E AM and PM peak hours
- Agua Mansa Road & El Rivino Road (#33) – LOS F AM and PM peak hours

- Riverside Drive & Agua Mansa Road (#34) – LOS F AM and PM peak hours

With the addition of Project traffic, there are no additional intersections anticipated to result in an unacceptable LOS in addition to the intersections previously identified under Horizon Year (2040) Without Project traffic conditions.

The Project is anticipated to increase the delay by less than 2.0 seconds at the intersection of Market Street and Redwood Drive, resulting in a less than significant impact.

1.5 SENATE BILL 743 – VEHICLE MILES TRAVELED (VMT)

Senate Bill 743 (SB 743), approved in 2013, endeavors to change the way transportation impacts will be determined according to the California Environmental Quality Act (CEQA). The Office of Planning and Research (OPR) has recommended the use of vehicle miles traveled (VMT) as the replacement for automobile delay-based LOS. In December 2018, the Natural Resources Agency finalized updates to CEQA Guidelines to incorporate SB 743 (i.e., VMT). While a lead agency has the option to immediately apply the new VMT based analysis methodology and thresholds for the purposes of evaluating transportation impacts, statewide application of the new guidelines is required July 1, 2020.

Caltrans acknowledges automobile delay will no longer be considered a CEQA impact for development projects and will use VMT as the metric for determining impacts on the SHS. VMT analysis for the Project has been prepared under separate cover. As such, the LOS operations included in this TIA for study area intersections are informational and are not anticipated to support the environmental document.

1.6 RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access. Exhibit 1-4 shows the site adjacent recommendations.

Recommendation 1.1 – Van Dell Road & Driveway 1/Driveway 2 (#2) – The following improvements are necessary to accommodate site access:

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

Recommendation 2.1 – Avalon Street & Driveway 4 (#7) – The following improvement is necessary to accommodate site access:

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

Recommendation 3.1 – Rubidoux Boulevard & 26th Street (#18) – The following improvement is necessary to accommodate site access:

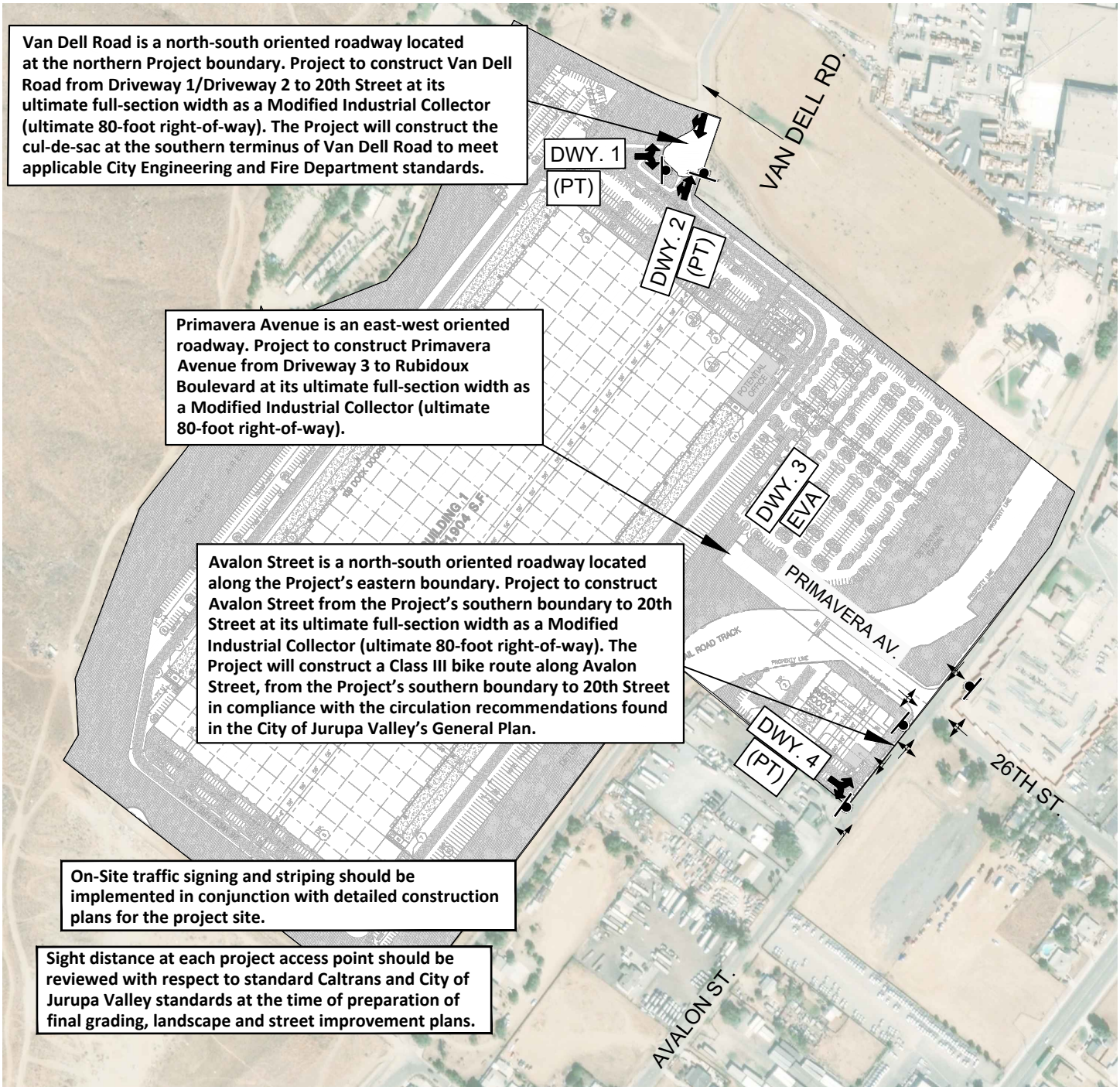
- Project to install a traffic signal.
- Project to construct a northbound left turn lane.
- Project to construct a southbound left turn lane.

Recommendation 4.1 – Van Dell Road – Van Dell Road is a north-south oriented roadway located at the northern Project boundary. Project to construct Van Dell Road from Driveway 1/Driveway 2 to 20th Street at its ultimate full-section width as a Modified Industrial Collector (ultimate 80-foot right-of-way). The Project will construct the cul-de-sac at the southern terminus of Van Dell Road to meet applicable City Engineering and Fire Department standards.

Recommendation 5.1 – Primavera Avenue – Primavera Avenue is an east-west oriented roadway. Project to construct Primavera Avenue from Driveway 3 to Rubidoux Boulevard at its ultimate full-section width as a Modified Industrial Collector (ultimate 80-foot right-of-way). It should be noted the Project is only required to improve the full-section of Primavera Avenue, from Driveway 3 to Avalon Street; however, the Project will improve Avalon Street above-and-beyond the minimum requirements.

Recommendation 6.1 – Avalon Street – Avalon Street is a north-south oriented roadway located along the Project's eastern boundary. Project to construct Avalon Street from the Project's southern boundary to 20th Street at its ultimate full-section width as a Modified Industrial Collector (ultimate 80-foot right-of-way). It should be noted the Project is only required to improve the half-section of Avalon Street, from the Project's southern boundary to Primavera Avenue; however, the Project will improve Avalon Street above-and-beyond the minimum requirements. The Project will construct a Class III bike route along Avalon Street, from the Project's southern boundary to 20th Street.

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



LEGEND:

= STOP SIGN

= EXISTING LANE

= LANE IMPROVEMENT

N

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Wherever necessary, roadways adjacent to the Project, site access points and site-adjacent intersections will be constructed to be consistent with the identified roadway classifications and respective cross-sections in the City of Jurupa Valley General Plan Circulation Element.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Per the County of Riverside, the recommended traffic index for an Industrial Collector Street is 8.0.

The Project Applicant and the City will work together on an appropriate mitigation measure to ensure Project truck traffic adheres to the routes as shown on the Project (Truck) trip distribution exhibit. The final improvements for restricting truck access will occur as part of the final site design and will not be discussed in the traffic study.

The recommended improvements needed to address the cumulative deficiencies identified under Existing (2020), E+P, EAP (2023), EAPC (2023), and Horizon Year (2040) traffic conditions are shown in Table 1-3. For those improvements listed in Table 1-3 and not constructed as part of the Project, the Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share and/or TUMF fees (if applicable) that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay TUMF and/or fair share fees consistent with the City's requirements (see Section 9 *Local and Regional Funding Mechanisms*).

Recommendation 7.1 – Prior to the issuance of building permits, the Project Applicant shall participate in the County TUMF and City DIF fee programs by paying the requisite fees. TUMF and DIF fees may be reduced or off-set based on the cost of TUMF/DIF eligible facilities constructed by the Project Applicant, or as agreed to with City staff.

1.7 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 each applicable Project driveway anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers (see Exhibit 1-5).

A WB-50 truck (42.5-foot trailer) has been utilized for the Driveway 4 while a WB-67 (53-foot trailer) has been utilized at Driveway 1 and Driveway 2. This is based on the types of trucks that would likely be attributable to the proposed buildings based on their size. As shown on Exhibit 1-5, Driveway 1 and Driveway 2 on Van Dell Road are anticipated to accommodate the wide turning radius of the heavy trucks as currently designed and no additional modifications are necessary. Driveway 2 should be modified to provide a 35-foot curb radius on the northeast corner in order to accommodate the wide turning radius of trucks and prevent trucks from traveling in the opposing traffic lane.

Table 1-3

Summary of Improvements

#	Intersection	Jurisdiction	Existing (2020)	E+P	EAP (2023)	EAPC (2023)	Horizon Year (2040) Without Project	Horizon Year (2040) With Project	Improvements in City DIF or County TUMF?[1]	Project Responsibility[2]	Fair Share % (Near-Term)[3]	Fair Share % (Long-Range)[3]
8	Cedar Av. & I-10 WB Ramps	Caltrans, County of San Bernardino	None	None	None	Add 2nd NB left turn lane	Same	Same	No	Fair Share	4.14%	--
9	Cedar Av. & I-10 EB Ramps	Caltrans, County of San Bernardino	None	None	None	Add 2nd SB left turn lane	Same	Same	No	Fair Share	4.87%	--
						Add EB right turn lane	Same	Same	No	Fair Share		
11	Cedar Av. & Slover Av.	County of San Bernardino	None	None	None	Restripe the EB approach to provide two left turn lanes, one through lane, and one shared through-right turn lane	Same	Same	No	Fair Share	4.62%	--
						Add SB right turn lane	Same	Same	No	Fair Share		
13	Cedar Av. & Jurupa Av.	County of San Bernardino	Restripe the EB approach to provide one left turn lane and one shared through-right turn lane	Same	Same	Same	Same	Same	No	Fair Share	5.85%	--
			Restripe the WB approach to provide one left turn lane and one shared through-right turn lane	Same	Same	Same	Same	Same	No	Fair Share		
16	Rubidoux Bl. & 20th St./Market St.	Jurupa Valley	Add WB left turn lane	Same	Same	Same	Same	Same	No	Fair Share	13.43%	--
					Add 2nd SB left turn lane	Same	Same	Same	No	Fair Share		
						Add 2nd EB through lane	Same	Same	No	Fair Share		
						Add EB right turn lane	Same	Same	No	Fair Share		
						Add 2nd WB left turn lane	Same	Same	No	Fair Share		
						Modify the traffic signal to protect the eastbound and westbound left turns and implement overlap phasing for the EB right turn lane	Same	Same	No	Fair Share		
17	Rubidoux Bl. & 24th St.	Jurupa Valley	Install a traffic signal	Same	Same	Same	Same	Same	No	Fair Share	6.99%	--
			Add NB left turn lane	Same	Same	Same	Same	Same	No	Fair Share		
			Add SB left turn lane	Same	Same	Same	Same	Same	No	Fair Share		
18	Rubidoux Bl. & 26th St.	Jurupa Valley	Install a traffic signal	Same	Same	Same	Same	Same	No	Construct	--	--
			Add NB left turn lane	Same	Same	Same	Same	Same	No	Construct		
			Add SB left turn lane	Same	Same	Same	Same	Same	No	Construct		

Table 1-3
Page 2 of 2

Summary of Improvements

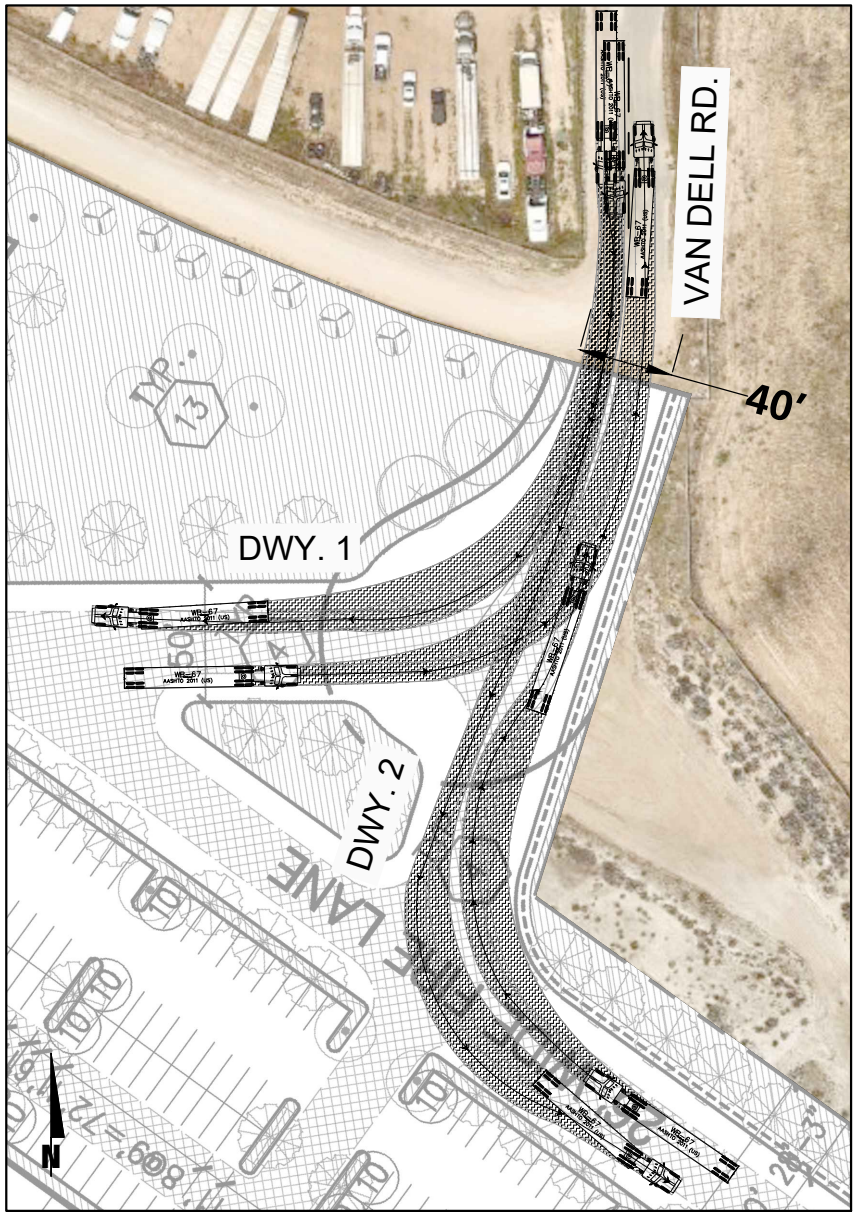
#	Intersection	Jurisdiction	Existing (2020)	E+P	EAP (2023)	EAPC (2023)	Horizon Year (2040) Without Project	Horizon Year (2040) With Project	Improvements in City DIF or County TUMF?[1]	Project Responsibility[2]	Fair Share % (Near-Term)[3]	Fair Share % (Long-Range)[3]
20	Rubidoux Bl. & SR-60 WB Off-Ramp	Caltrans, Jurupa Valley	None	None	None	Add WB left turn lane	Same	Same	No	Fair Share	5.61%	--
21	Rubidoux Bl. & SR-60 WB On-Ramp	Caltrans, Jurupa Valley	None	None	None	Install a traffic signal	Same	Same	No	Fair Share	5.99%	--
22	Rubidoux Bl. & SR-60 EB Ramps	Caltrans, Jurupa Valley	None	None	None	Add NB right turn lane Add EB left turn lane	Same Same	Same Same	No No	Fair Share Fair Share	5.29%	--
25	Agua Mansa Rd. & Market St.	Jurupa Valley	None	None	None	Restripe the EB approach to provide two left turn lanes, one through lane, and one shared through-right turn lane	Same	Same	No	Fair Share	7.33%	--
28	Via Cerro/24th St. & Market St.	Jurupa Valley	None	None	None	Add 2nd EB through lane Add 2nd WB through lane	Same Same	Same Same	Yes (TUMF) Yes (TUMF)	Fee Payment Fee Payment	--	--
33	Agua Mansa Rd. & El Rivino Rd.	County of San Bernardino	Install a traffic signal	Same	Same	Same	Same	Same	No	Fair Share	4.54%	--
34	Riverside Av. & Agua Mansa Rd.	Rialto, Colton	None	None	None	Add 2nd EB left turn lane Add 3rd NB through lane Add 3rd SB through lane Add 2nd EB through lane Add 2nd WB through lane	Same Same Same Same Same	Same Same Same Same Same	No No No No No	Fair Share Fair Share Fair Share Fair Share Fair Share	3.51%	1.43%

[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 9-1 for Fair Share Calculations. Fair share for near-term improvements is based on EAPC total traffic volumes. Fair share for long-range improvements is based on Horizon Year (2040) With Project traffic volumes.

EXHIBIT 1-5: TRUCK ACCESS



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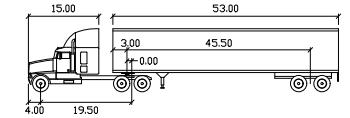
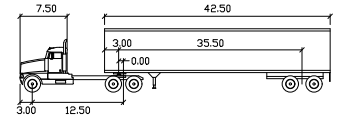


WB-67

feet

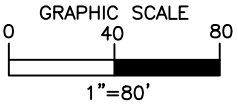
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

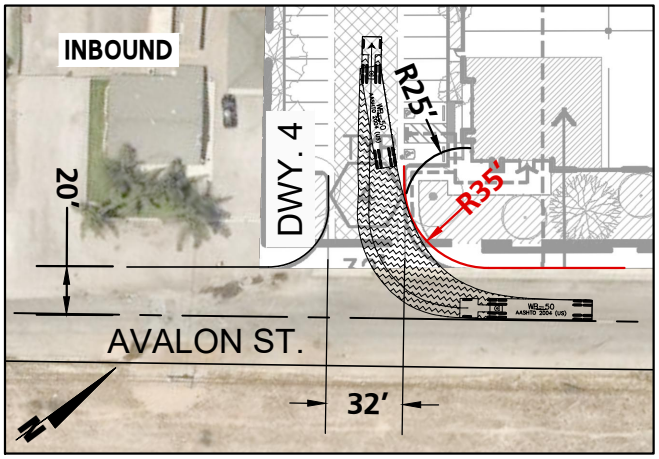


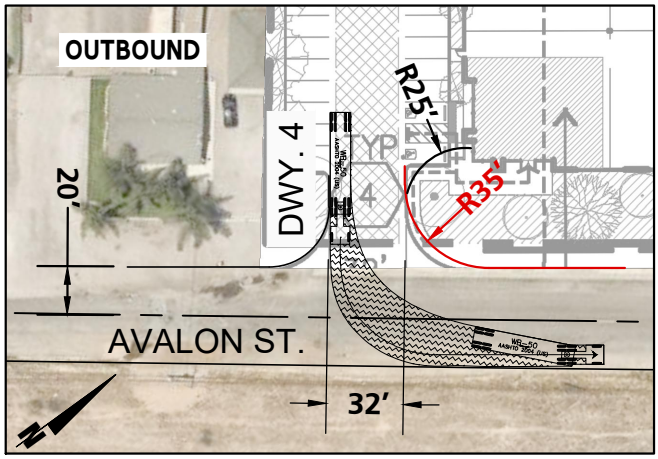
WB-50

feet

Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	17.7
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.50		







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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 City of Jurupa Valley traffic study guidelines.

2.1 LEVEL OF SERVICE

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

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM), 6th Edition, methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (8) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

City of Jurupa Valley, City of Riverside, County of San Bernardino, City of Rialto, and City of Colton

The City of Jurupa Valley, City of Riverside, County of San Bernardino, City of Rialto, and City of Colton require signalized intersection operations analysis based on the methodology described in the HCM. (8) 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.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM (6th Edition)

A saturation flow rate of 1900 has been utilized for all study area intersections located within the County of Riverside and City of Rialto (consistent with the recommended values in the City of Rialto's traffic study guidelines). Consistent with Appendix B of the San Bernardino County CMP, the following saturation flow rates, in vehicles per hour green per lane (vphgpl), will be utilized in the traffic analysis for signalized intersections in the County of San Bernardino and City of Colton:

Existing (2020), E+P, EAP (2023), and EAPC (2023) Traffic Conditions:

- Exclusive through: 1800 vphgpl
- Exclusive left: 1700 vphgpl
- Exclusive right: 1800 vphgpl
- Exclusive dual left: 1600 vphgpl
- Exclusive triple left: 1500 vphgpl

Horizon Year (2040) Traffic Conditions:

- Exclusive through: 1900 vphgpl
- Exclusive left: 1800 vphgpl
- Exclusive dual left: 1700 vphgpl
- Exclusive right: 1900 vphgpl
- Exclusive dual right: 1800 vphgpl
- Exclusive triple left: 1600 vphgpl or less

The traffic modeling and signal timing optimization software package Synchro (Version 10) has been utilized to analyze signalized intersections within the City of Jurupa Valley, City of Riverside, County of San Bernardino, City of Rialto, and City of Colton.

The peak hour traffic volumes have been 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 near-term 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. (8)

California Department of Transportation (Caltrans)

Per the Caltrans Guide for the Preparation of Traffic Impact Studies, the traffic modeling and signal timing optimization software package Synchro (Version 10) has also been utilized to analyze signalized intersections under Caltrans' jurisdiction, which consists of the I-10 Freeway & Cedar Avenue, SR-60 Freeway & Rubidoux Boulevard, and SR-60 Freeway & Market Street freeway-to-arterial ramp intersections. (2) Signal timing for these study area intersections have been obtained from Caltrans District 8 and were utilized for the purposes of this analysis.

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Jurupa Valley, City of Riverside, County of San Bernardino, City of Rialto, and City of Colton require the operations of unsignalized intersections be evaluated using the methodology described in the HCM. (8) 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. 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 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 TIA update uses the signal warrant criteria presented in the latest edition of the Caltrans' California Manual on Uniform Traffic Control Devices (CA MUTCD), for all study area intersections. (9)

The signal warrant criteria for Existing study area intersections are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (9) Specifically, this TIA update utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Warrant 3 is appropriate to use for this TIA update 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.

As shown in Table 2-3, traffic signal warrant analyses were performed for the following unsignalized study area intersections during the peak weekday conditions wherein the Project is anticipated to contribute the highest trips:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	Van Dell Rd. & 20th St. – Future Intersection	Jurupa Valley
2	Van Dell Rd. & Driveway 1/Driveway 2 – Future Intersection	Jurupa Valley
3	Driveway 3 & Primavera St. – Future Intersection	Jurupa Valley
4	Avalon St. & 20th St.	Jurupa Valley
5	Avalon St. & 24th St.	Jurupa Valley
6	Avalon St. & 26th St.	Jurupa Valley
7	Avalon St. & Driveway 4	Jurupa Valley
17	Rubidoux Bl. & 24th St.	Jurupa Valley
18	Rubidoux Bl. & 26th St.	Jurupa Valley
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	Jurupa Valley, Caltrans
26	Hall Av. & 24th St.	Jurupa Valley
27	Hall Av. & 26th St.	Jurupa Valley
32	Market St. & Redwood Dr.	Riverside
33	Agua Mansa Rd. & El Rivino Rd.	County of San Bernardino

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 *E+P Traffic Conditions,* Section 6 *EAP (2023) Traffic Conditions,* Section

7 *EAPC (2023) Traffic Conditions*, and Section 8 *Horizon Year (2040) 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 FREEWAY OFF-RAMP QUEUING ANALYSIS

Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing deficiencies at the freeway ramp intersections at the I-10 Freeway at Cedar Avenue and the SR-60 Freeway at Rubidoux Boulevard and Market Street interchanges. Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" onto the I-10 Freeway or SR-60 Freeway mainline from the off-ramps.

The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential deficiencies/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The footnote from the Synchro output sheets indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The queue length reported is for the lane with the highest queue in the lane group. The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed it is simply based on statistical calculations.

2.5 FREEWAY MAINLINE SEGMENT ANALYSIS METHODOLOGY

Consistent with recent Caltrans guidance, the traffic study has evaluated all freeway segments where the Project is anticipated to contribute 50 or more peak hour one-way trips, in an effort to conduct a conservative analysis and overstate as opposed to understand potential deficiencies.

The freeway system in the study area has been broken into segments defined by the freeway-to-arterial interchange locations. The freeway segments have been evaluated in this TIA based upon peak hour directional volumes. The freeway segment analysis is based on the methodology described in the HCM and performed using HCS7 software. The performance measure preferred by Caltrans to calculate LOS is density. Density is expressed in terms of passenger cars per mile per lane. Table 2-4 illustrates the freeway segment LOS descriptions for each density range utilized for this analysis.

TABLE 2-4: DESCRIPTION OF FREEWAY MAINLINE LOS

Level of Service	Description	Density Range (pc/mi/ln)[1]
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows, and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

[1] pc/mi/ln = passenger cars per mile per lane. Source: HCM (6th Edition)

The number of lanes for existing baseline conditions has been obtained from field observations conducted by Urban Crossroads in May 2019. These existing freeway geometrics have been utilized for Existing (2020), E+P, EAP (2023), EAPC (2023), and Horizon Year (2040) traffic conditions.

The I-10 Freeway and SR-60 Freeway mainline volume data was obtained from the Caltrans Performance Measurement System (PeMS) website for the segments of the I-10 Freeway west of Cedar Avenue and the SR-60 Freeway west of Rubidoux Boulevard. The data was obtained from May 2019. A 2% growth rate has been applied to the 2019 PeMS data to reflect 2020 conditions. In an effort to conduct a conservative analysis, the maximum value observed within the 3-day period was utilized for the weekday morning (AM) and weekday evening (PM) peak hours. In addition, truck traffic, represented as a percentage of total traffic and actual vehicles (as opposed to passenger car equivalent (PCE) volumes) have been utilized for the purposes of the basic freeway segment analysis. (10)

2.6 FREEWAY MERGE/DIVERGE RAMP JUNCTION ANALYSIS

The freeway system in the study area has been broken into segments defined by freeway-to-arterial interchange locations where the Project is anticipated to contribute 50 or more peak hour trips (see Table 1-3). Although the HCM indicates the influence area for a merge/diverge junction is 1,500 feet, the analysis presented in this traffic study has been performed at all ramp locations with respect to the nearest on or off-ramp at each interchange in an effort to be consistent with Caltrans guidance/comments on other projects Urban Crossroads has worked on in the region.

The freeway facility analysis is performed using the HCS7 software and analyzes the freeway facility as a whole, including both freeway segments and ramp junctions. The measure of effectiveness (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off-ramps both at the analysis junction and at upstream and downstream locations (if applicable) and acceleration/deceleration lengths at each merge/diverge point. Table 2-5 presents the merge/diverge area level of service descriptions for each density range utilized for this analysis.

TABLE 2-5: DESCRIPTION OF FREEWAY MERGE AND DIVERGE LOS

Level of Service	Density Range (pc/mi/ln)[1]
A	≤10.0
B	10.0 – 20.0
C	20.0 – 28.0
D	28.0 – 35.0
E	>35.0
F	Demand Exceeds Capacity

[1] pc/mi/ln = passenger cars per mile per lane. Source: HCM (6th Edition)

Similar to the basic freeway segment analysis, the I-10 Freeway and SR-60 Freeway volume data was obtained from the Caltrans maintained PeMS website for the segments of the I-10 Freeway west of Cedar Avenue and the SR-60 Freeway west of Rubidoux Boulevard. A 2% growth rate has been applied to the 2019 PeMS data to reflect 2020 conditions. The ramp data (per the count data presented in Appendix 3.1) was then utilized to flow conserve the mainline volumes to determine the remaining I-10 and SR-60 Freeway mainline segment volumes. Flow conservation checks ensure that traffic flows from north to south (and vice versa) of the interchange area with no unexplained loss of vehicles. The data was obtained from May 2019. In an effort to conduct a conservative analysis, the maximum value observed within the 3-day period was utilized for the weekday morning (AM) and weekday evening (PM) peak hours. In addition, truck traffic, represented as a percentage of total traffic and actual vehicles (as opposed to PCE volumes) have been utilized for the purposes of the freeway ramp junction (merge/diverge) analysis. (10)

2.7 MINIMUM ACCEPTABLE LEVELS OF SERVICE (LOS) AND INTERSECTION DEFICIENCY CRITERIA

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

2.7.1 CITY OF JURUPA VALLEY

Consistent with City's traffic study guidelines, the City of Jurupa Valley will endeavor to maintain the following target level of service (LOS): LOS D for all City intersections.

2.7.2 CITY OF RIVERSIDE

Consistent with City's General Plan Circulation Element, the City of Riverside will endeavor to maintain LOS D or better on Arterial Streets wherever possible. At key locations, such as City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS E at peak hours as the acceptable standard on a case-by-case basis. Locations that may warrant the LOS E standard include portions of Arlington Avenue/Alessandro Boulevard, Van Buren Boulevard throughout the City, portions of La Sierra Avenue and selected freeway interchanges. A higher standard such as LOS C or better, may be adopted for Local and Collector streets in residential areas. The City also recognizes that LOS F may be expected along key freeway-feeder segments during peak commute hours due to regional travel patterns. As such, all study area intersections located within the City of Riverside utilize the minimum LOS threshold of LOS D for the purposes of this analysis.

2.7.3 COUNTY OF SAN BERNARDINO

The definition of an intersection deficiency in the County of San Bernardino is based on the County's General Plan Circulation Element. The County of San Bernardino's General Plan states that target LOS D be maintained at County intersections and roadway segments wherever possible within the Valley region.

2.7.4 CITY OF RIALTO

The City of Rialto 2010 General Plan Update has established minimum LOS standards. Specifically, General Plan Policies 4-1.20 and 4-1.21 establish the minimum standards to be applied to any TIA, as follows:

- Policy 4-1.20: Design City streets so that signalized intersections operate at Level of Service (LOS) D or better during the morning and evening peak hours and require new development to mitigate traffic impacts that degrade LOS below that level.
- Policy 4-1.21: Design City streets so that unsignalized intersections operate with no vehicular movement having an average delay greater than 120 seconds during the morning and evening peak hours and require new development to mitigate traffic impacts that increase delay above that level.

2.7.5 CITY OF COLTON

The City of Colton has established LOS D as the minimum level of service for its intersections. Therefore, any intersection operating at LOS E or F will be considered deficient for the purposes of this analysis.

2.7.6 CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better, except where an existing LOS F condition is identified in the CMP document. However, in an effort to overstate as opposed to understate potential impacts, LOS D has been utilized for the CMP intersections for the purposes of this analysis.

2.7.7 CALTRANS

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on SHS facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than this target LOS, the existing LOS should be maintained. In general, the region-wide goal for an acceptable LOS on all freeways, roadway segments, and intersections is LOS D. As such, LOS D will be used as the target LOS for freeway ramps, freeway segments, and freeway merge/diverge ramp junctions.

2.8 THRESHOLDS OF SIGNIFICANCE

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies.

2.8.1 INTERSECTIONS

City of Jurupa Valley

For purposes of analyzing project-specific traffic deficiencies, the City of Jurupa Valley identifies project-related traffic deficiencies and required contributions towards traffic deficiencies based on the following criteria.

Signalized Intersections

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.

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

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.

City of Riverside:

For the intersections that lie within the City of Riverside, determination of project-specific traffic deficiencies will be based on a comparison of without and with project levels of service for each analysis year. A traffic deficiency occurs if project traffic increases the average delay at an intersection by more than the thresholds identified on the table below (see Table 2-6). The thresholds for LOS A, B, and C do not apply to projects consistent with the General Plan.

TABLE 2-6: THRESHOLDS OF TRAFFIC DEFICIENCIES

Pre-Project LOS	Significant Impact Threshold[1]
A/B	10.0 Seconds
C	8.0 Seconds
D	5.0 Seconds
E	2.0 Seconds
F	1.0 Second

[1] Increase in delay

County of San Bernardino:

To determine whether the addition of project traffic at a signalized study intersection results in a project-related traffic deficiency, the following thresholds of significance will be utilized:

- Any study intersection that is operating at a LOS A, B, C or D for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall mitigate the deficiency to bring the intersection back to at least LOS D.
- Any study intersection that is operating at a LOS E or F for any study scenario without project traffic shall mitigate any deficiencies so as to bring the intersection back to the overall level of delay established prior to project traffic being added.
- For scenarios which include the addition of Cumulative Project Traffic (i.e. shared deficiencies), study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS C or better in the Desert regions of the County.

To determine whether the addition of project traffic at an unsignalized study intersection results in a project-related traffic deficiency, the following thresholds of significance will be utilized:

- The addition of project related traffic causes the intersection to move from a LOS D or better to a LOS E or worse

  OR

- The project contributes additional traffic to an intersection that is already projected to operate at an LOS E or F with background traffic (per Section 10.5.2 b))

  AND

- One or both of the following conditions are met:
  - The project adds ten (10) or more trips to any approach
  - The intersection meets the peak hour traffic signal warrant after the addition of project traffic (per Section 10.5.2 c)).

The proposed significance thresholds will be applied at study area intersections for the purposes of determining project-related traffic deficiencies.

City of Rialto, City of Colton:

To determine whether the addition of project traffic at a study intersection results in a significant project-related traffic deficiency, the following thresholds of significance will be utilized:

- A significant project-related traffic deficiency occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable level of service (LOS A, B, C, or D) to an unacceptable level of service (LOS E or F);
- A significant project-related traffic deficiency occurs at a study intersection if the project-generated 50 or more peak hour trips worsen the pre-project level of service grade at a deficiently operating (LOS E or F) intersection.

The proposed significance thresholds will be applied at study area intersections for the purposes of determining project-related traffic deficiencies.

2.8.2 CALTRANS FACILITIES

To determine whether the addition of project traffic to the SHS freeway segments would result in a traffic deficiency, the following will be utilized:

- The traffic study finds that the LOS of a segment will degrade from D or better to E or F.
- The traffic study finds that the project will exacerbate an already deficient condition by contributing 50 or more one-way peak hour trips. A segment that is operating at or near capacity is deemed to be deficient.

2.8.3 VMT THRESHOLDS

As previously discussed in Section 1.5 *Senate Bill 743 – Vehicle Miles Traveled (VMT)*, statewide application of the new CEQA VMT guidelines is required July 1, 2020. VMT analysis has been prepared under separate cover, however the City of Jurupa Valley thresholds are discussed below for informational purposes.

Project VMT Impacts

A project would result in a significant project-generated VMT impact if:

a) For residential projects, in the Baseline Plus Project scenario its net VMT per capita exceeds the City's average VMT per capita.

b) For office and industrial projects its net VMT per employee exceeds the Cityâ€™s average VMT per employee.

c) For all other uses, a net increase in total VMT within the city would be considered a significant impact.

Cumulative VMT Impacts

If a project is consistent with the regional RTP/SCS, then the cumulative impacts shall be considered less than significant subject to consideration of other substantial evidence. If it is not consistent with the RTP/SCS, a project would result in a significant VMT impact if:

a) For residential projects its cumulative project-generated VMT per capita exceeds the average VMT per capita for Jurupa Valley in the RTP/SCS horizon-year.

b) For office and industrial projects its cumulative project-generated VMT per employee exceeds the average VMT per employee for Jurupa Valley in the RTP/SCS horizon year.

c) For all other land development project types, a net increase in total VMT in the Cumulative Plus Project scenario versus the RTP/SCS Without Project horizon-year would be considered a significant impact.

2.9 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TIA identifies that the Project would contribute additional traffic volumes to cumulative traffic deficiencies, Project fair share costs of improvements necessary to address deficiencies have been identified. The Project's fair share is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future (EAPC) traffic less existing baseline traffic:

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

The detailed Project fair share contribution calculations are presented in Section 9 *Local and Regional Funding Mechanisms* of this TIA (see Table 9-1).

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, traffic signal warrant, and freeway facility operations analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Jurupa Valley staff (Appendix 1.1), the study area includes a total of 34 existing and future intersections as shown previously on Exhibit 1-2. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENT

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 the 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 4-lane Major Highways are identified as having two lanes of travel in each direction. The following study area roadways within the City of Jurupa Valley are classified as 4-lane Major Highways:

- Rubidoux Boulevard
- Market Street

Study area roadways that are classified as Collectors are identified as having two lanes of travel in each direction. The following study area roadway within the City of Jurupa Valley is classified as a 2-lane Collector:

- Agua Mansa Road

Study area roadways that are classified as Local Streets are identified as having one lane of travel in each direction. The following study area roadways within the City of Jurupa Valley are classified as a 2-lane Local Street:

- 20th Street
- 24th Street
- 28th Street
- 34th Street
- Hall Avenue

EXHIBIT 3-1 (1OF2): EXISTING NUMBER OF LANES AND INTERSECTION CONTROLS

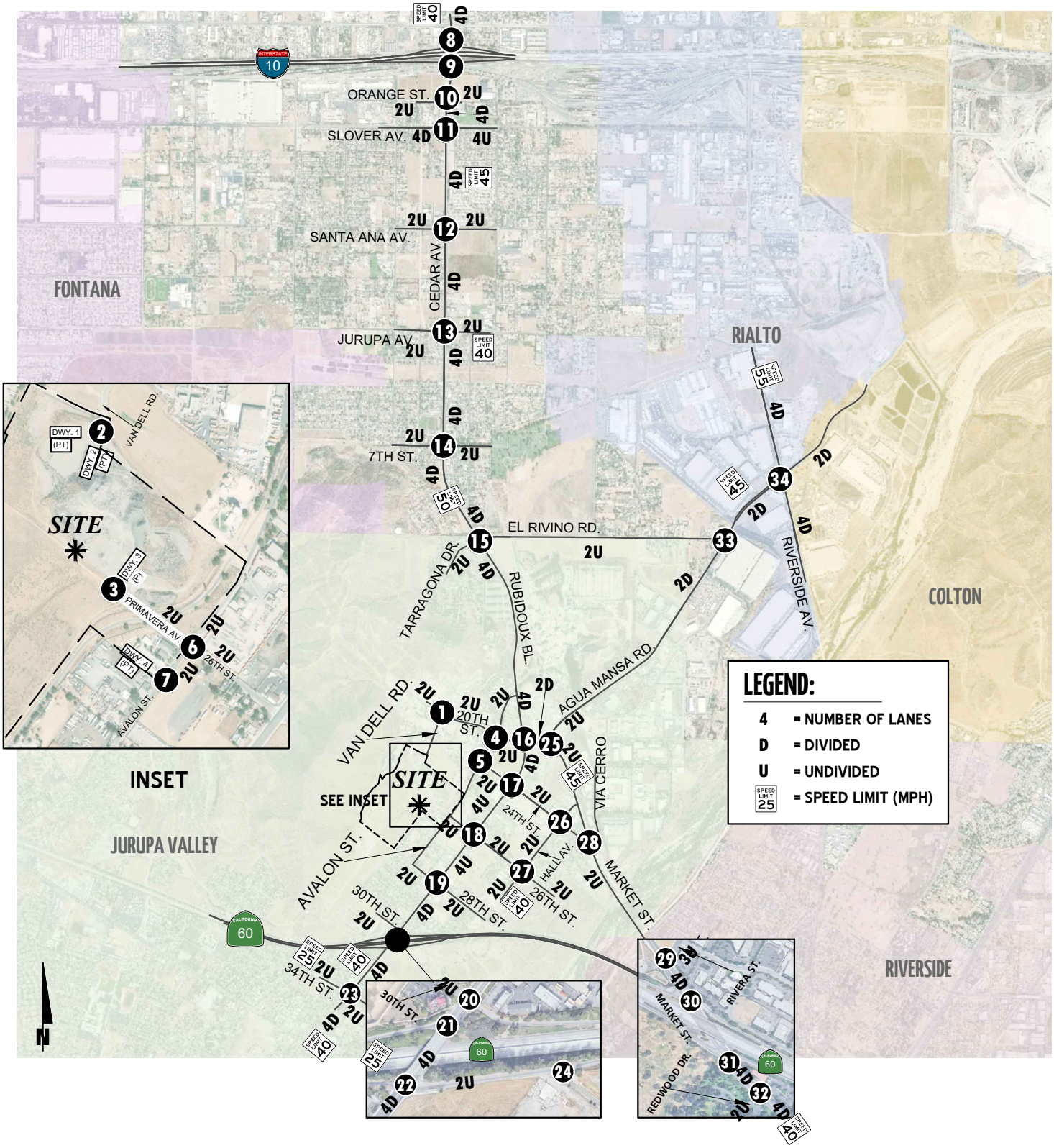
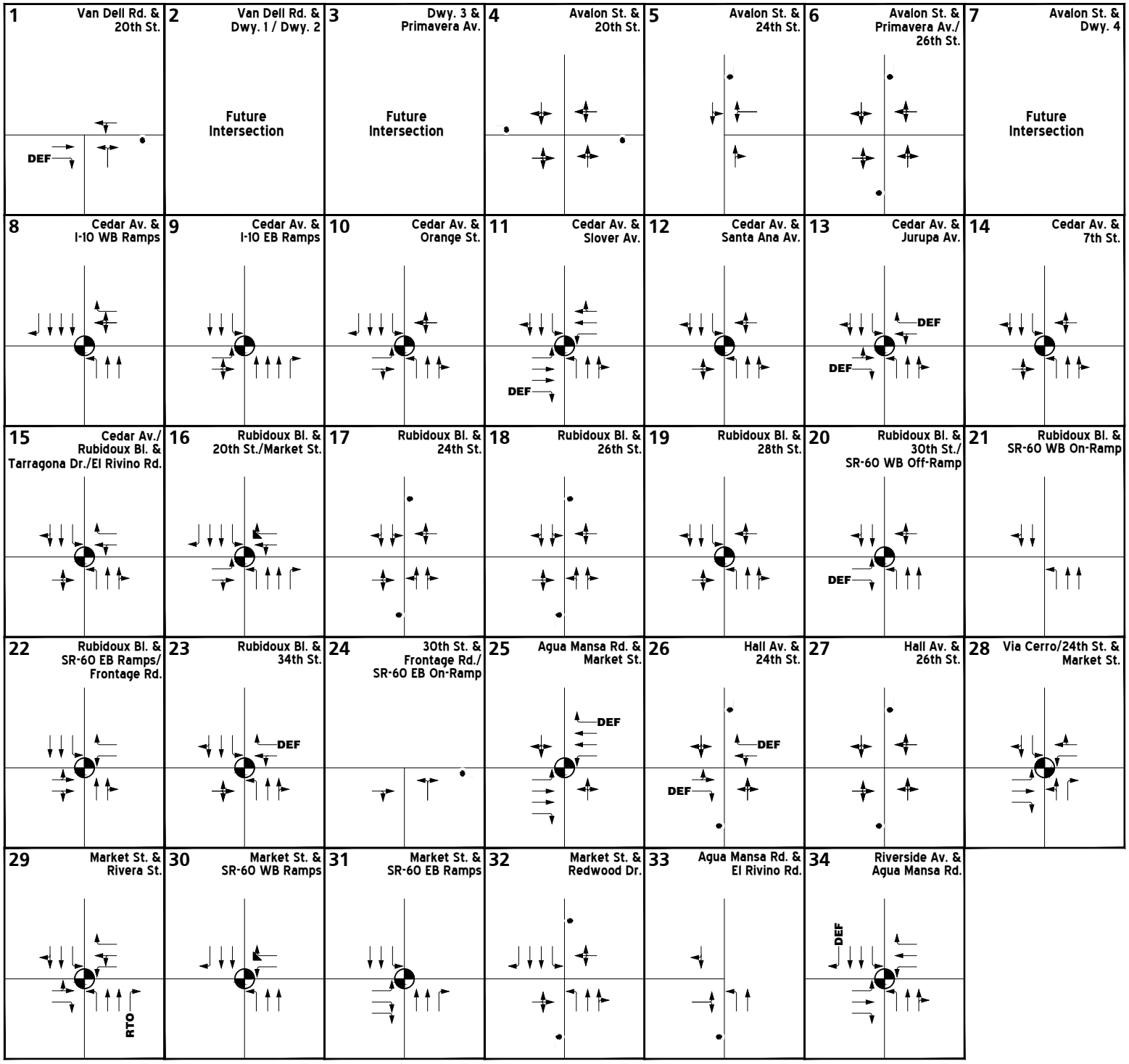


EXHIBIT 3-1 (2OF2): EXISTING NUMBER OF LANES AND INTERSECTION CONTROLS



LEGEND:

= TRAFFIC SIGNAL
= STOP SIGN
= FREE RIGHT TURN
RTO = RIGHT TURN OVERLAP
DEF = DEFACTO RIGHT TURN

N

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URBAN CROSSROADS

EXHIBIT 3-2: CITY OF JURUPA VALLEY CIRCULATION ELEMENT

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

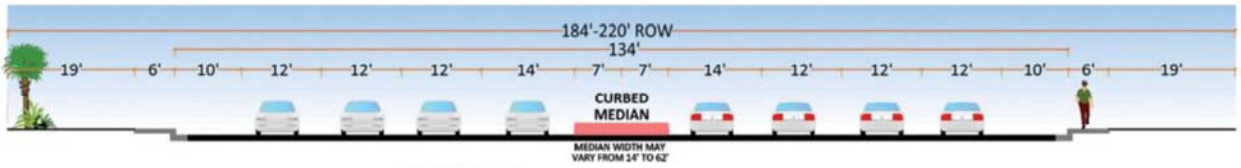


EXHIBIT 1: EXPRESSWAY- 6 TO 8 LANES

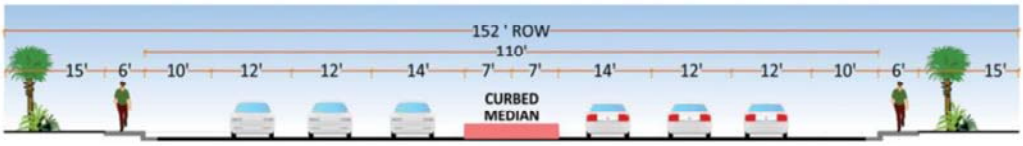


EXHIBIT 2: URBAN ARTERIAL

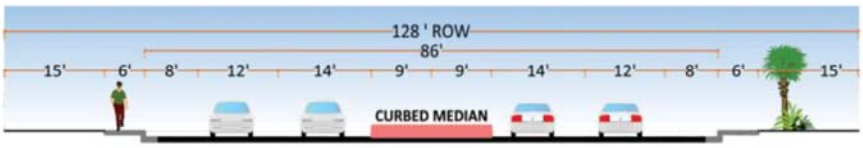


EXHIBIT 3: ARTERIAL

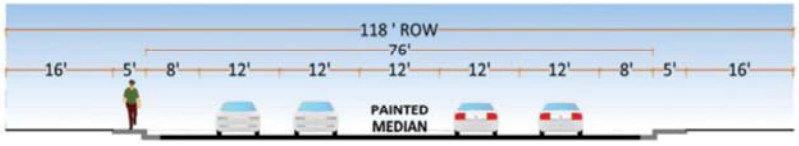


EXHIBIT 4: MAJOR - 4 LANES

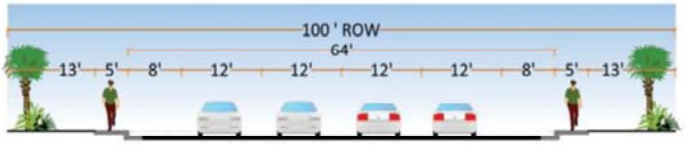


EXHIBIT 5: SECONDARY

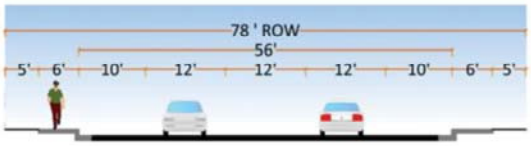


EXHIBIT 6: INDUSTRIAL COLLECTOR

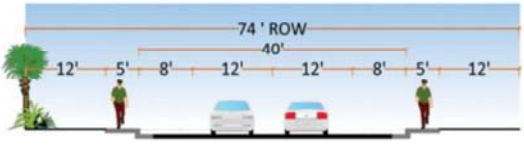


EXHIBIT 7: COLLECTOR

3.3 CITY OF RIVERSIDE, COUNTY OF SAN BERNARDINO, CITY OF RIALTO, AND CITY OF COLTON GENERAL PLAN CIRCULATION ELEMENT

Exhibits 3-4 and 3-5 show the City of Riverside's General Plan Circulation Element and roadway cross-sections, respectively. Exhibits 3-6 and 3-7 show the County of San Bernardino's General Plan Circulation Element and roadway cross-sections, respectively, while Exhibits 3-8 and 3-9 show the City of Rialto's General Plan Circulation Element and roadway cross-sections, respectively. Exhibits 3-10 and 3-11 show the City of Colton's General Plan Circulation Element and roadway cross-sections, respectively.

3.4 BICYCLE & PEDESTRIAN FACILITIES

The City of Jurupa Valley General Plan currently does not include an existing and future trails and bikeway system. While the City's master plan on pedestrian, bicycle, and trails facilities are not provided within the City's General Plan, they are provided within other documents, such as the City of Jurupa Valley Circulation Master Plan for Bicyclists and Pedestrians. Exhibit 3-12 shows the City of Jurupa Valley Bicycle and Pedestrian Plan, Exhibit 3-13 shows the City of Riverside trails and bikeways, Exhibit 3-14 shows the City of Rialto bicycle routes, and Exhibit 3-15 shows the City of Colton General Plan bicycle plan. Existing pedestrian facilities within the study area are shown on Exhibit 3-16. Field observations conducted in May 2019 indicate nominal pedestrian and bicycle activity within the study area.

3.5 TRANSIT SERVICE

The Riverside Transit Agency (RTA) serves the City of Jurupa Valley. Transit service is reviewed and updated by RTA periodically to address ridership, budget and community demand needs. The study area within the County of San Bernardino, City of Rialto, and City of Colton is currently served by Omnitrans, a public transit agency serving various jurisdictions within San Bernardino County. The City of Jurupa Valley Transit Routes is shown on Exhibit 3-17 and the City of Colton Transit Plan is shown on Exhibit 3-18. Based on a review of the existing transit routes within the vicinity of the proposed Project, RTA Route 29 currently operates on Rubidoux Boulevard and would likely serve the Project site. RTA Route 29 also runs along Market Street and 24th Street. RTA Route 204 runs along the SR-60 Freeway and RTA Route 49 runs along Mission Boulevard to the south. The northern portion of the study area is served by Omnitrans within the County of San Bernardino. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-19. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the applicant work in conjunction with RTA to potentially provide additional bus service to the site.

3.6 TRUCK ROUTES

The City of Jurupa Valley's General Plan does not provide designated truck routes. The City of Rialto truck routes are shown on Exhibit 3-20. Truck routes for the proposed Project have been determined based on discussions with City staff. These truck routes have been utilized in terms of routing proposed Project traffic throughout the study area.

EXHIBIT 3-4: CITY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT

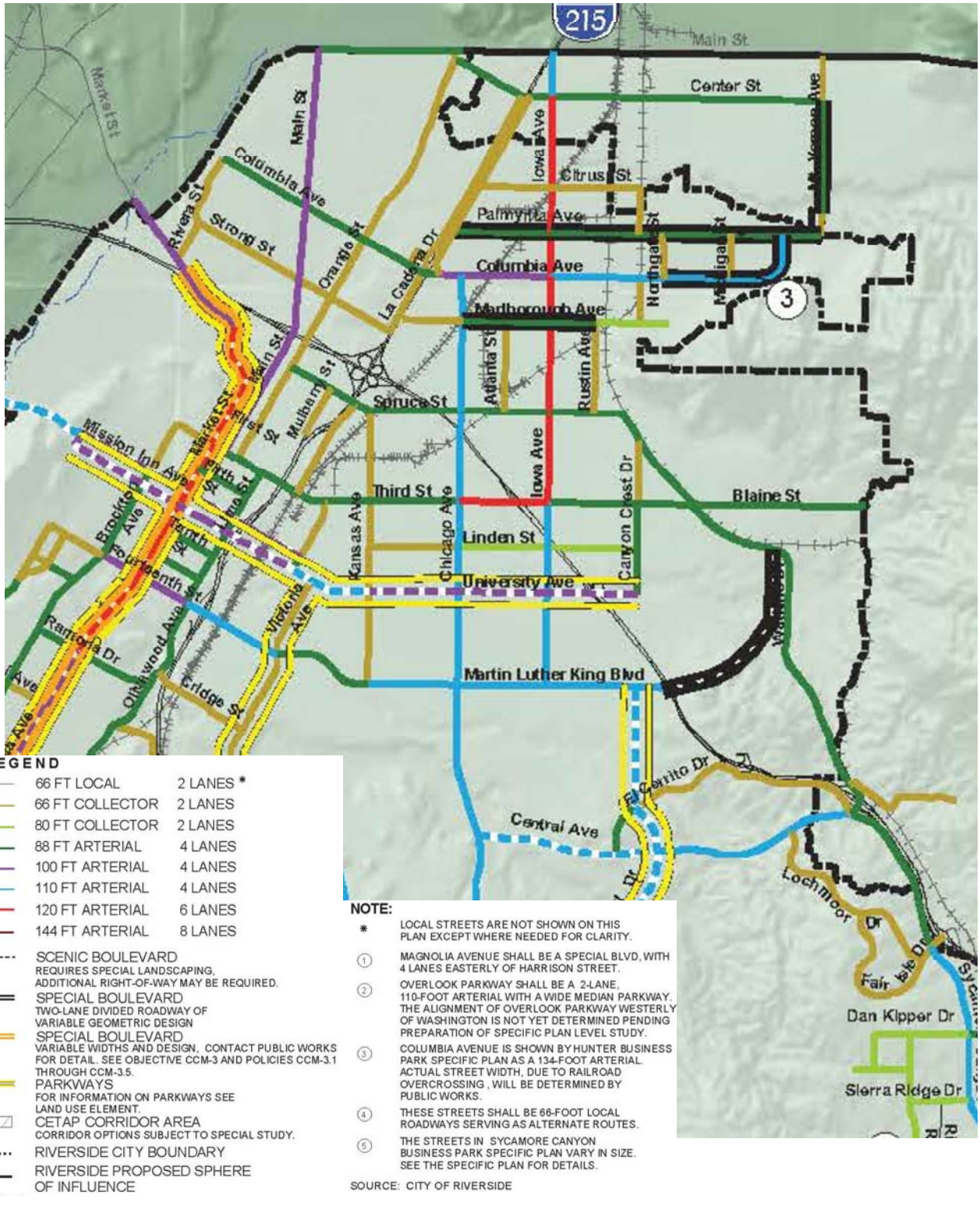
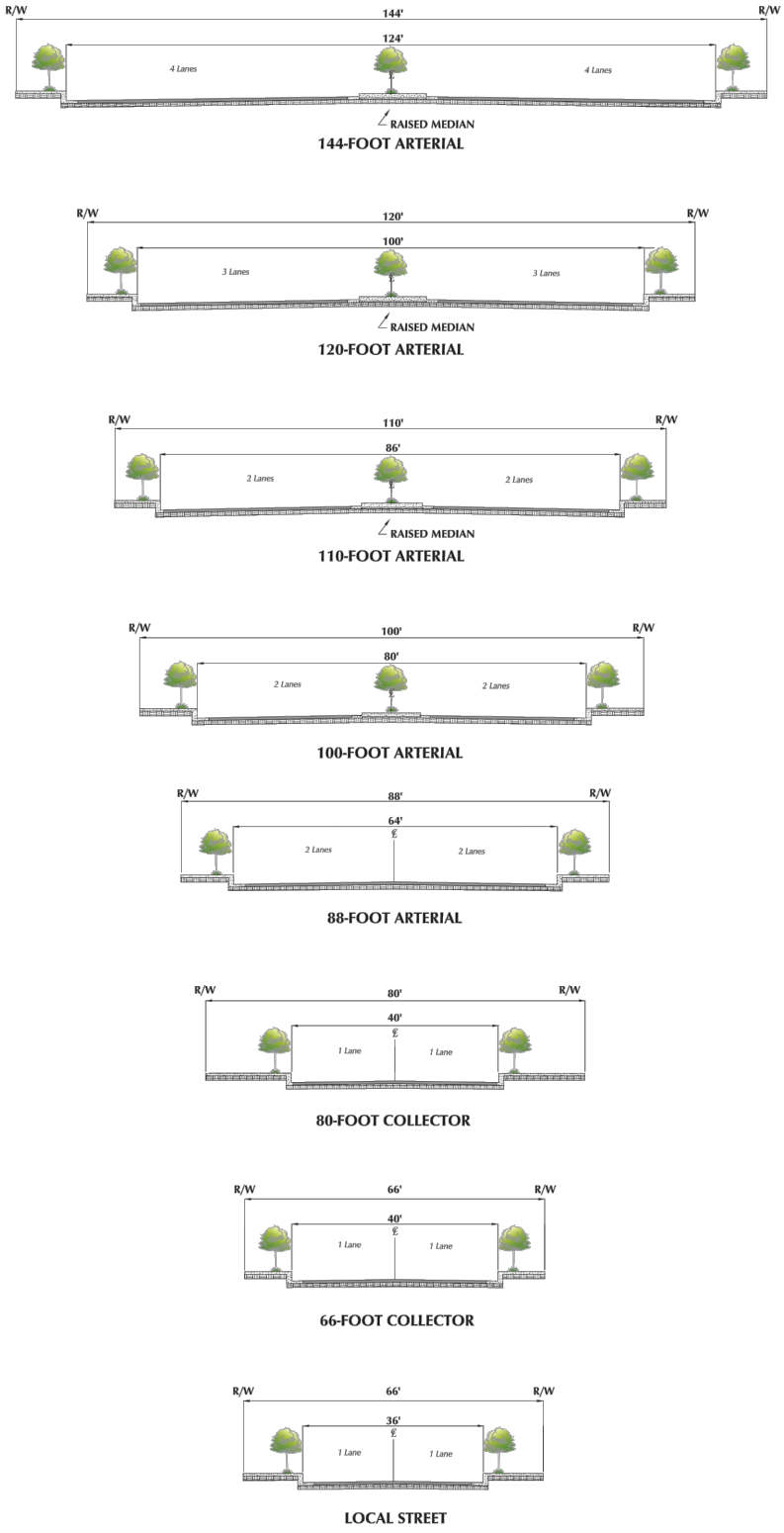
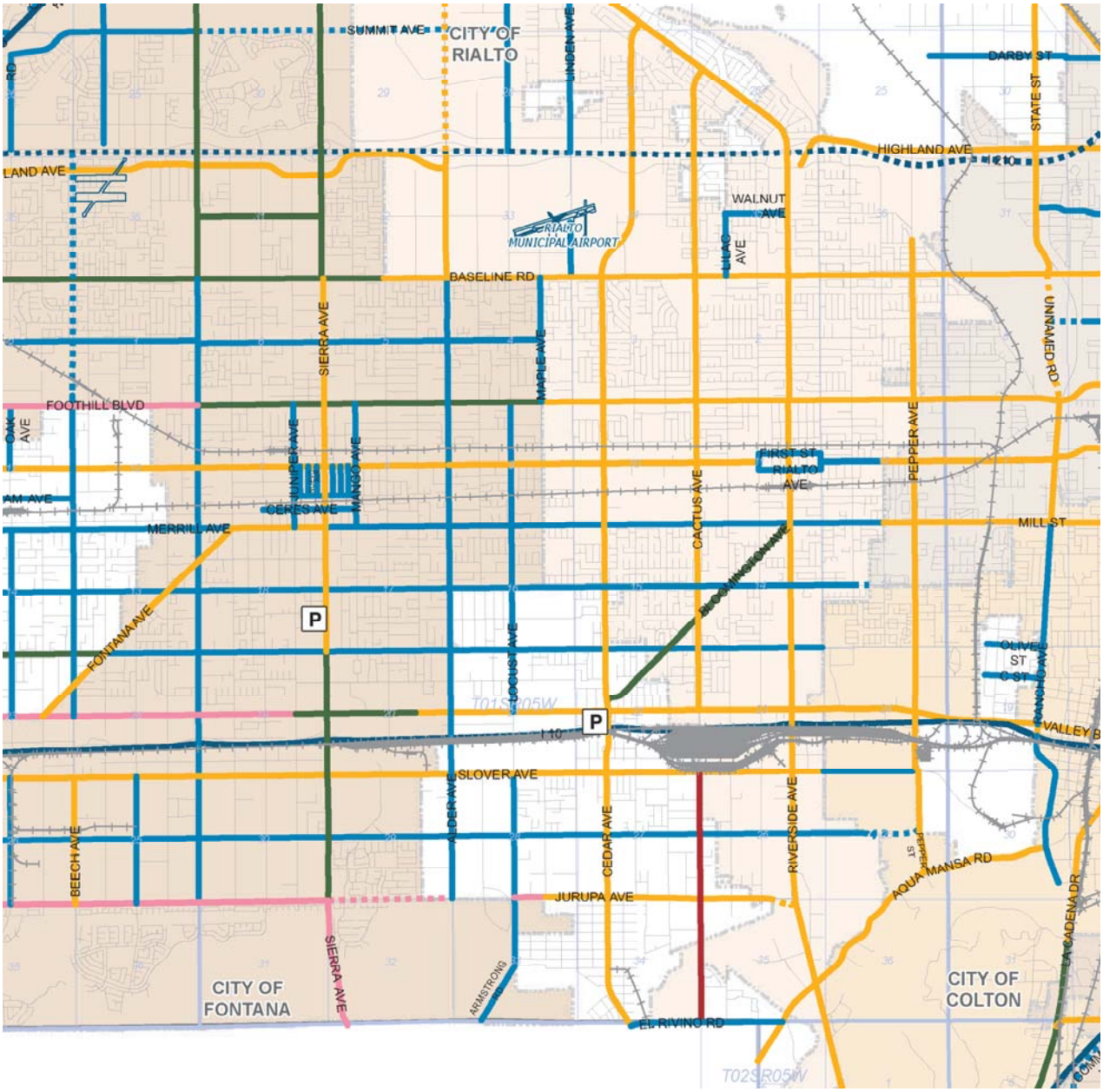


EXHIBIT 3-5: CITY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS



SOURCE: CITY OF RIVERSIDE, 2007

EXHIBIT 3-6: COUNTY OF SAN BERNARDINO GENERAL PLAN CIRCULATION ELEMENT



Legend

Existing	Proposed	
		Freeway
		Major Divided Highway
		Major Arterial Highway
		Major Highway
		Secondary Highway
		Controlled/Limited Access Collector
		Mountain Major Highway
		Mountain Secondary Highway
		State Highway (Special Standards or Conditions)

P Park & Ride ····· Railroad × Airport / Airfield

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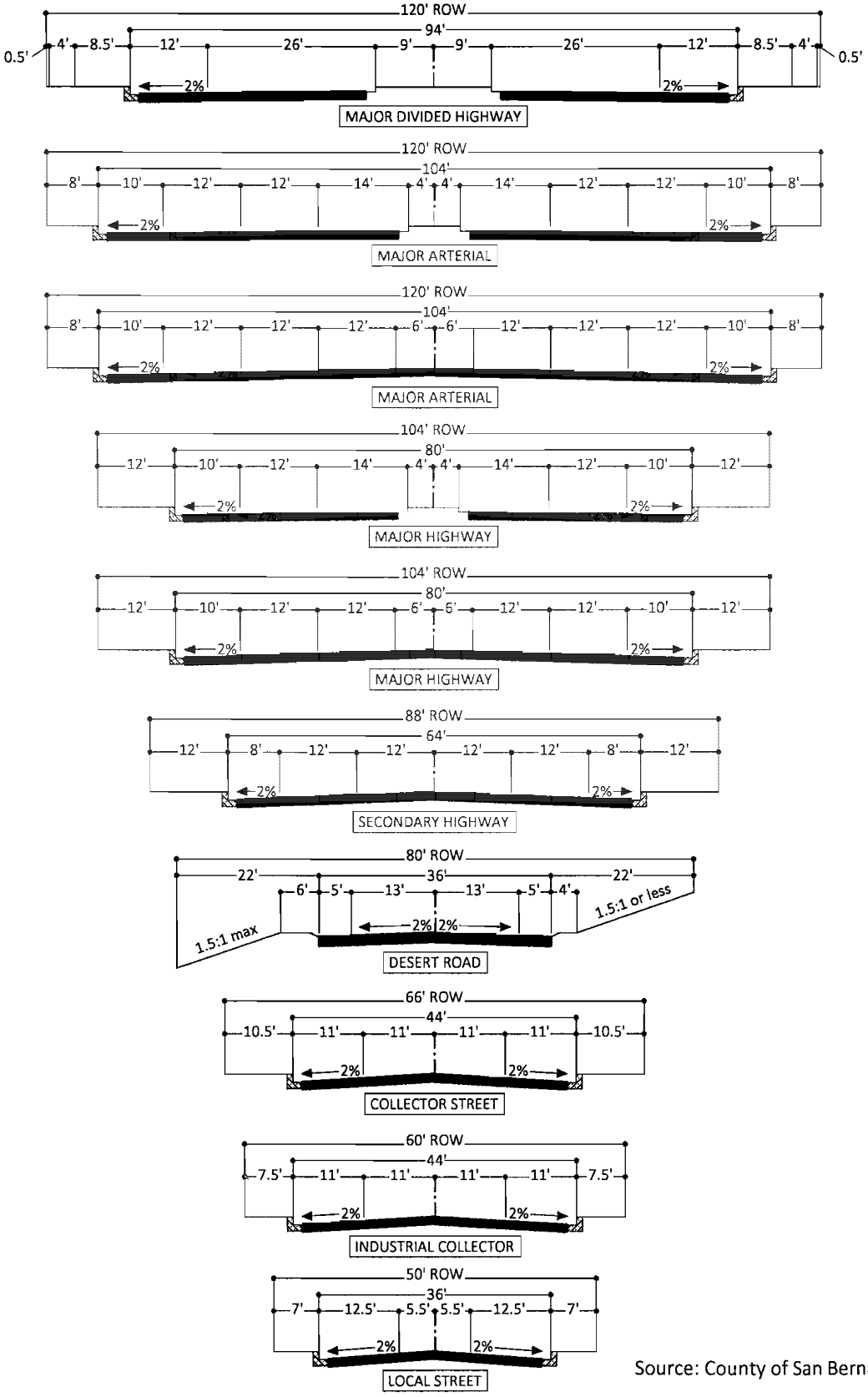
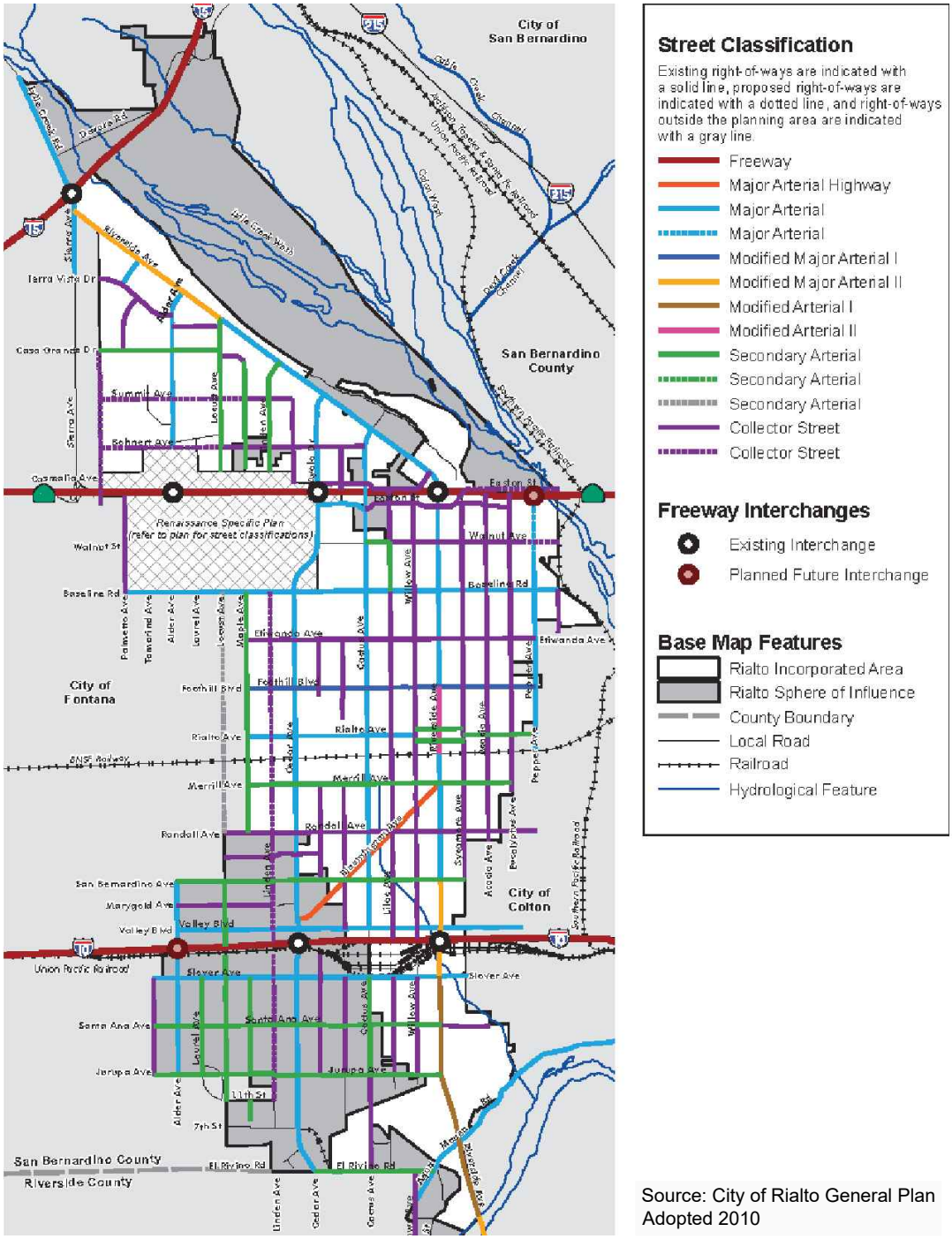
EXHIBIT 3-7: COUNTY OF SAN BERNARDINO GENERAL PLAN ROADWAY CROSS-SECTIONS



Source: County of San Bernardino

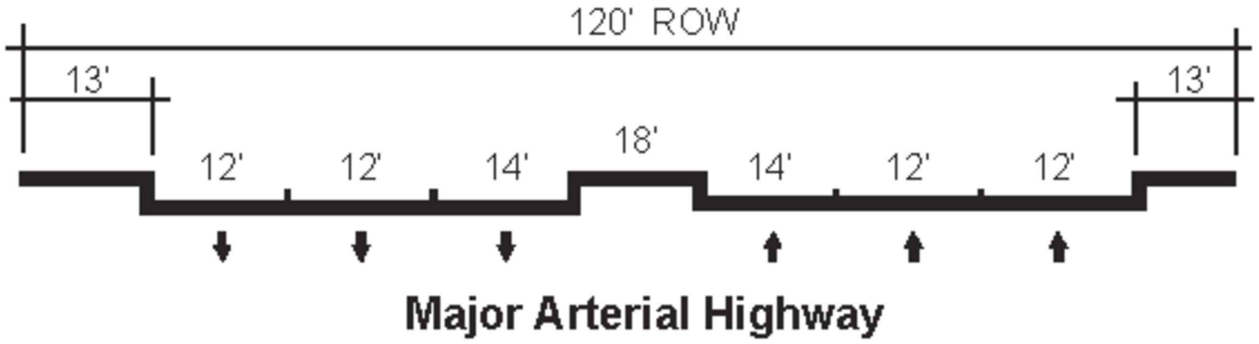
EXHIBIT 3-8: CITY OF RIALTO GENERAL PLAN CIRCULATION ELEMENT



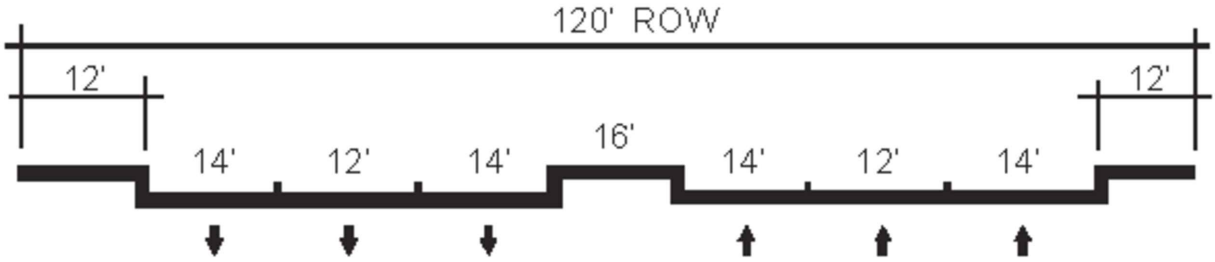
Source: City of Rialto General Plan Adopted 2010

N

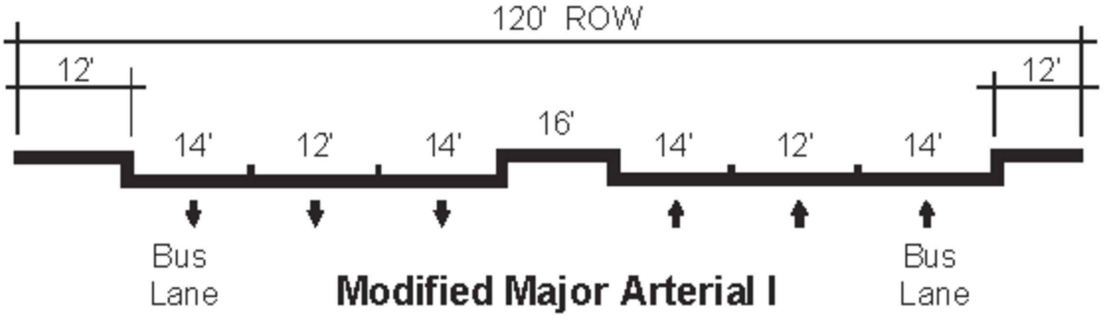
EXHIBIT 3-9 (1OF2): CITY OF RIALTO GENERAL PLAN ROADWAY CROSS-SECTIONS



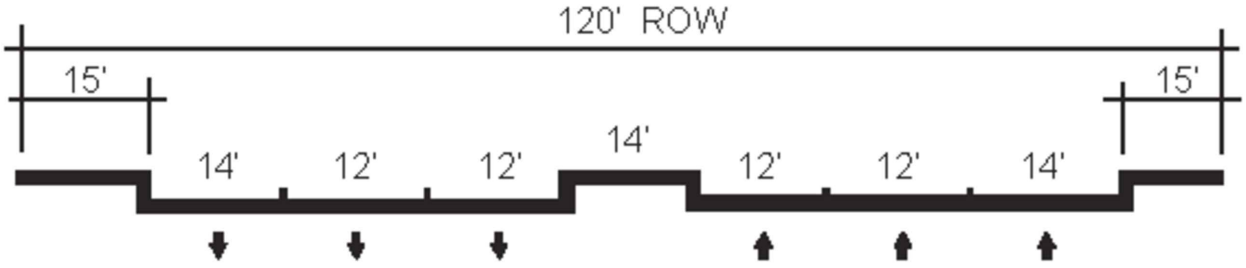
Major Arterial Highway



Major Arterial

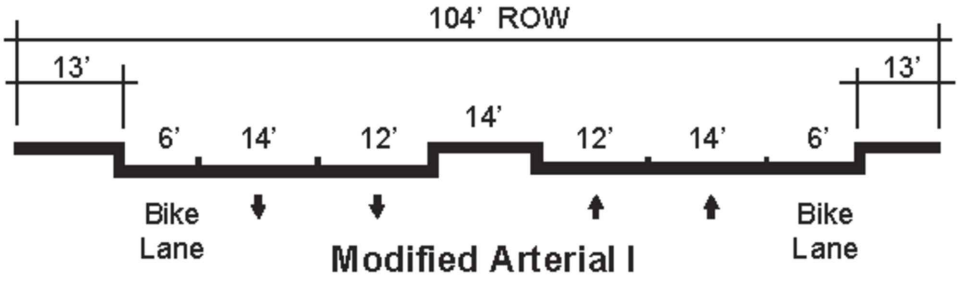


Modified Major Arterial I

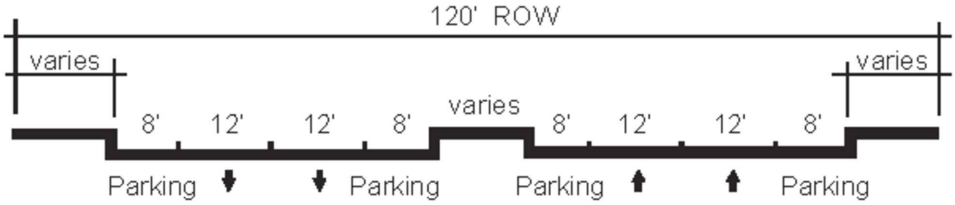


Modified Major Arterial II

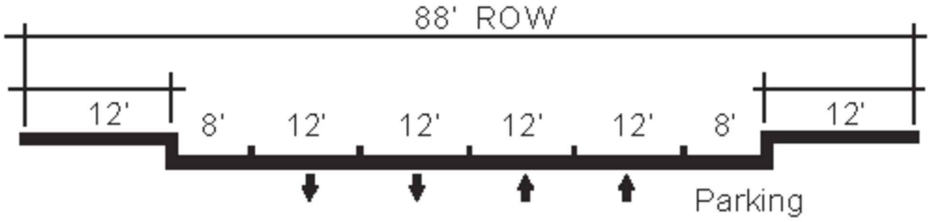
EXHIBIT 3-9 (2OF2): CITY OF RIALTO GENERAL PLAN ROADWAY CROSS-SECTIONS



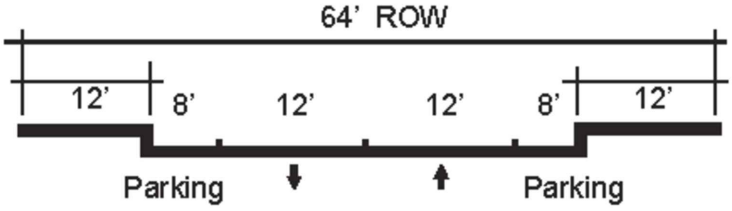
Modified Arterial I



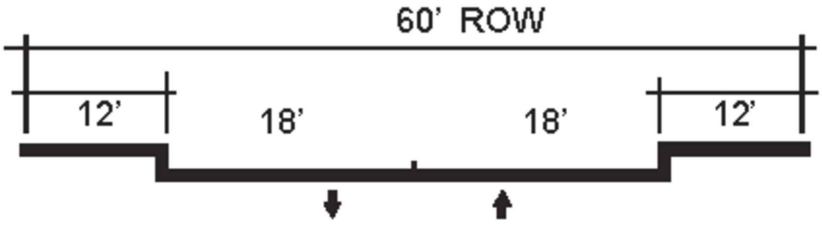
Modified Arterial II



Secondary Arterial

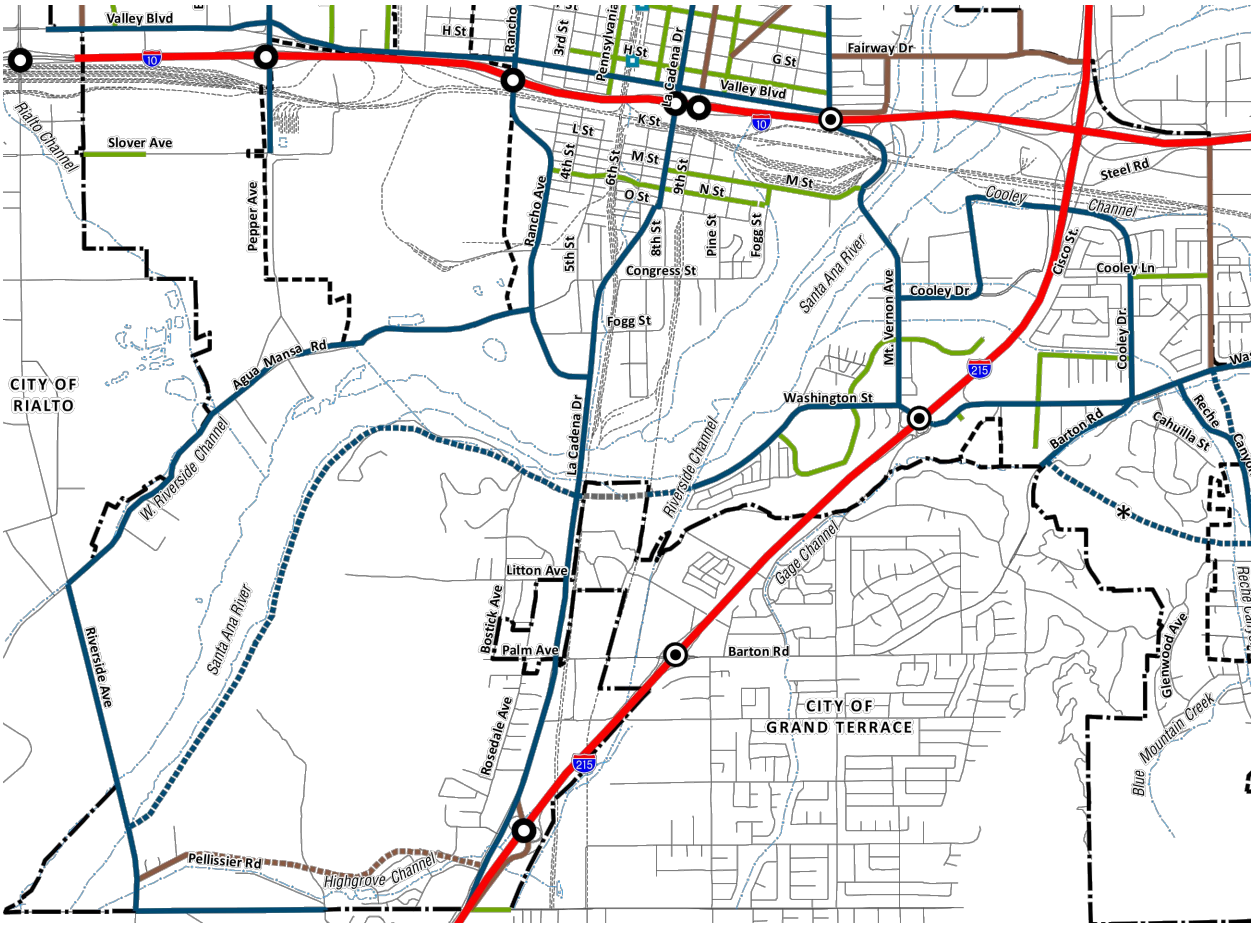


Collector



Local

EXHIBIT 3-10: CITY OF COLTON GENERAL PLAN CIRCULATION ELEMENT



Circulation Plan

- Freeway
- Major Arterial
- Planned Arterial
- Secondary Arterial
- Planned Secondary
- Collector Street
- Planned Collector
- Planned Roadway Located in Another City

* Conceptual roadway location. Final roadway location to be determined on proposed subdivision design.

Freeway Interchanges

- Interchanges
- Interchanges with Planned Improvements

Street Closure

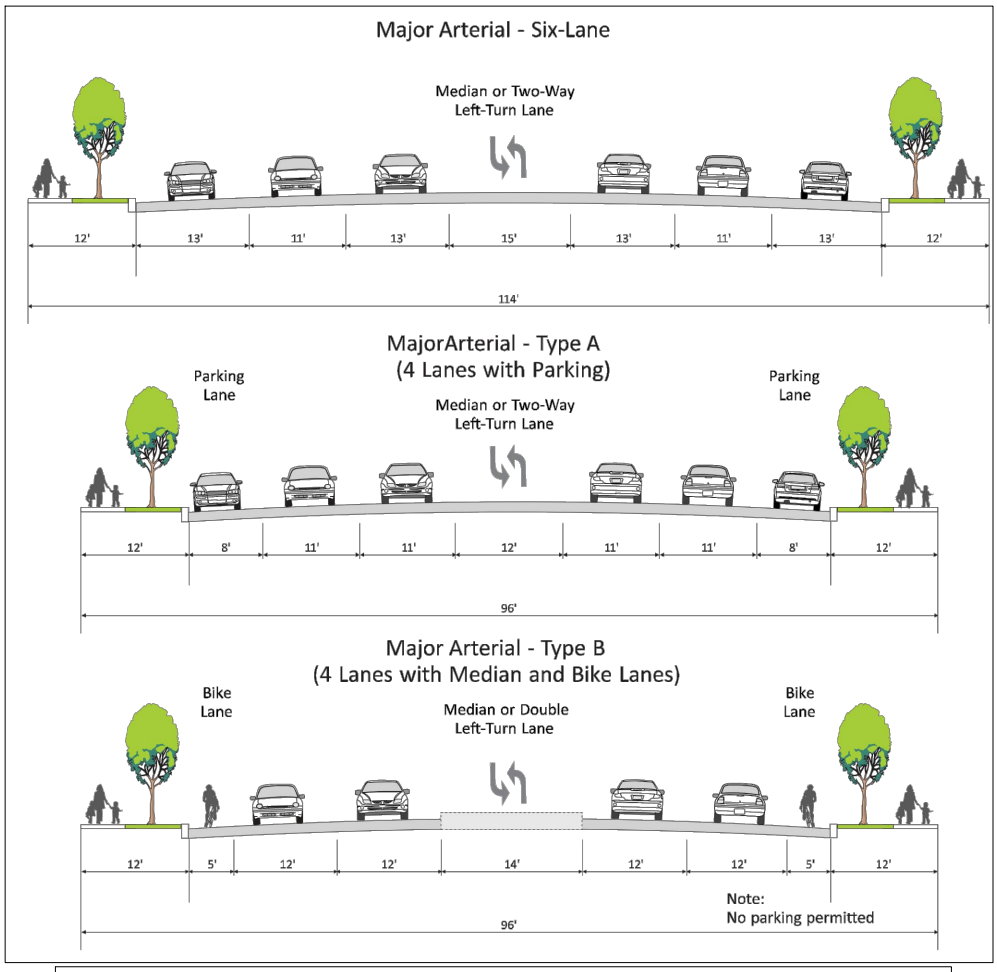
- Street Closure (BSNF Quiet Zone Project)

Boundaries

- City Boundary
- Sphere of Influence
- Railroad Tracks
- Watercourse

N

EXHIBIT 3-11 (1OF2): CITY OF COLTON GENERAL PLAN CROSS-SECTIONS



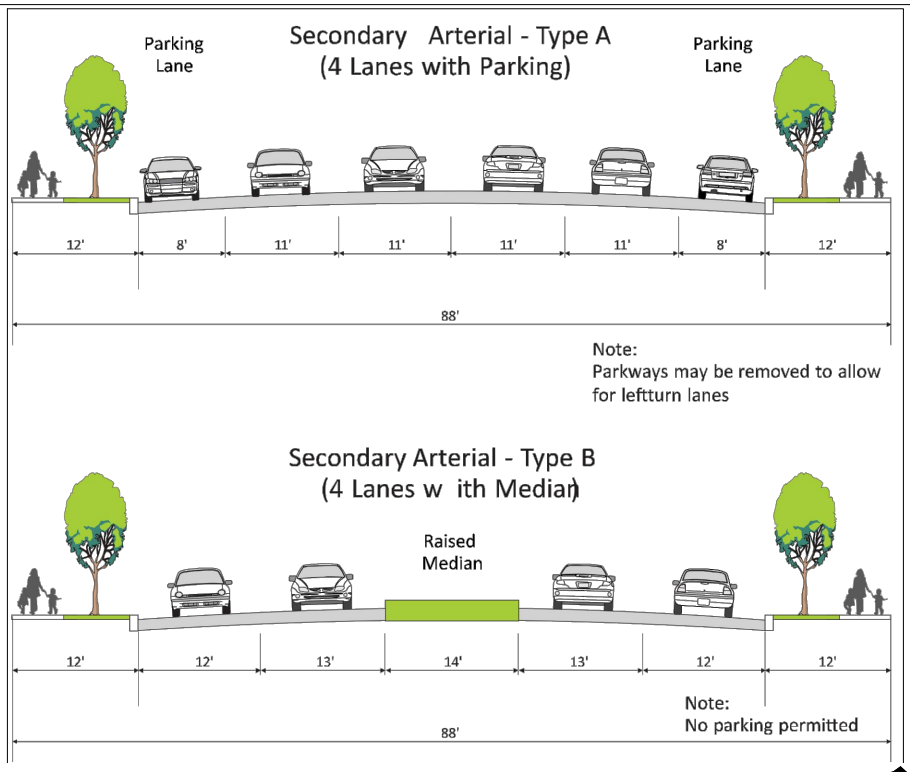


EXHIBIT 3-11 (2OF2): CITY OF COLTON GENERAL PLAN CROSS-SECTIONS

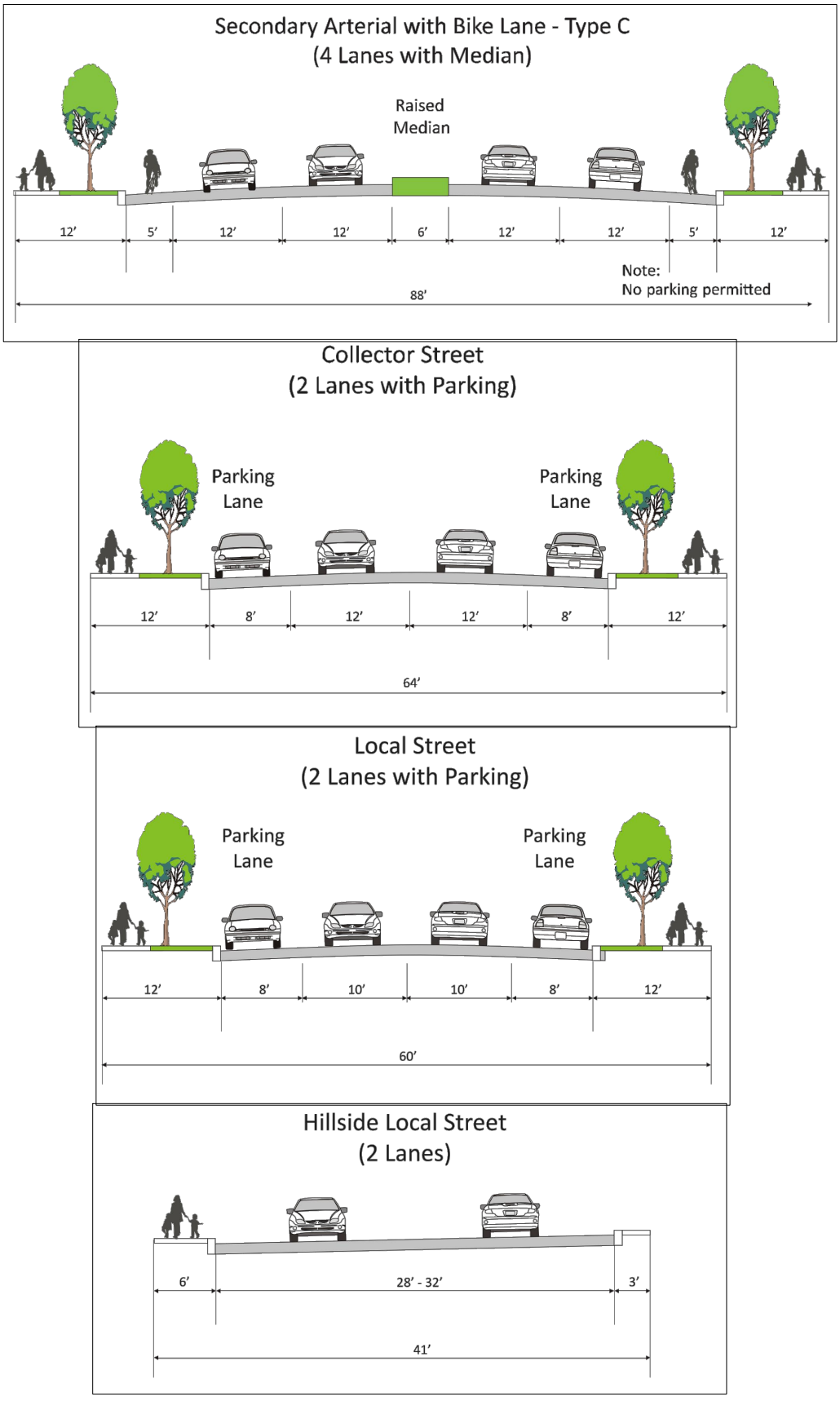
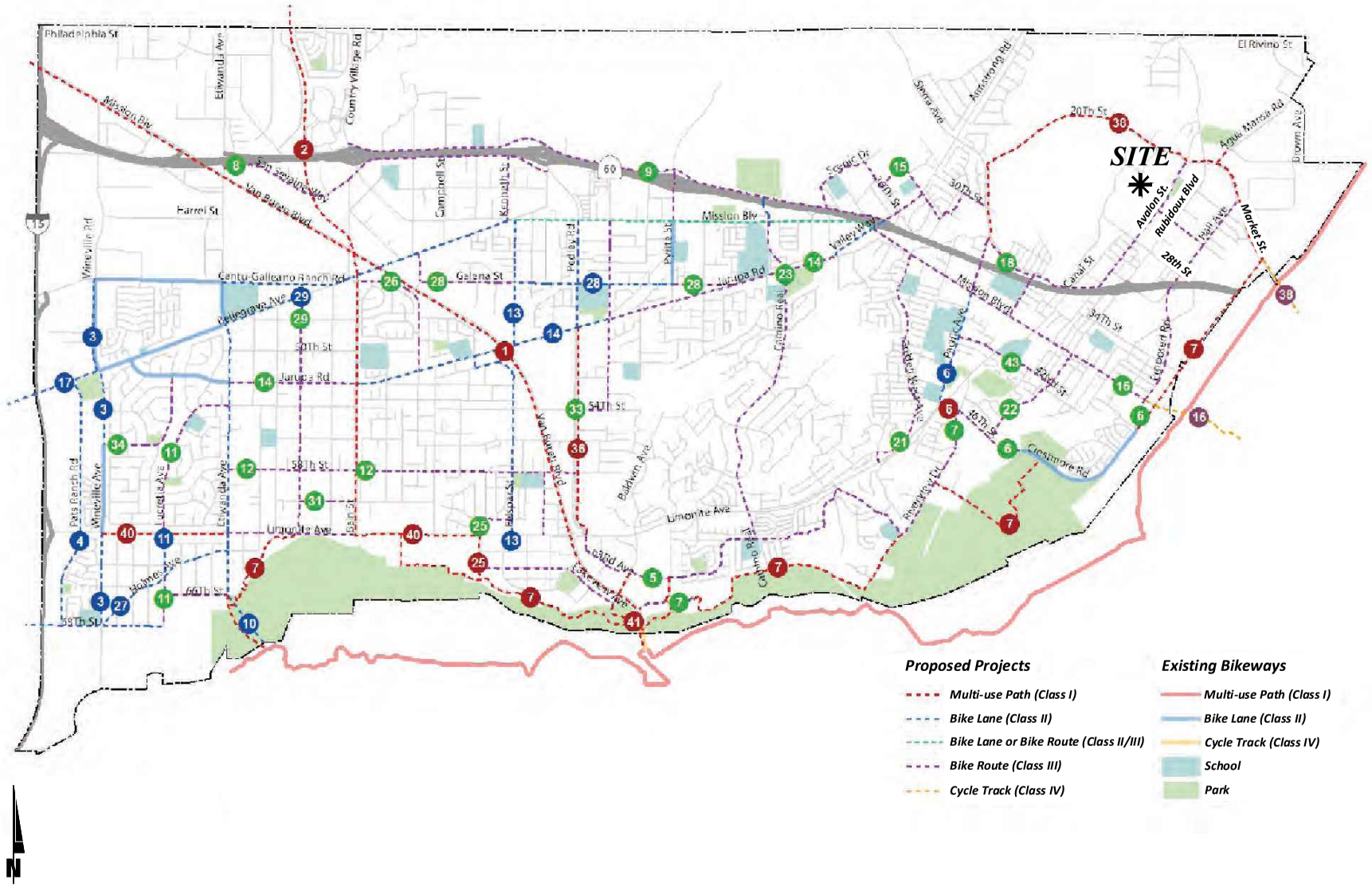
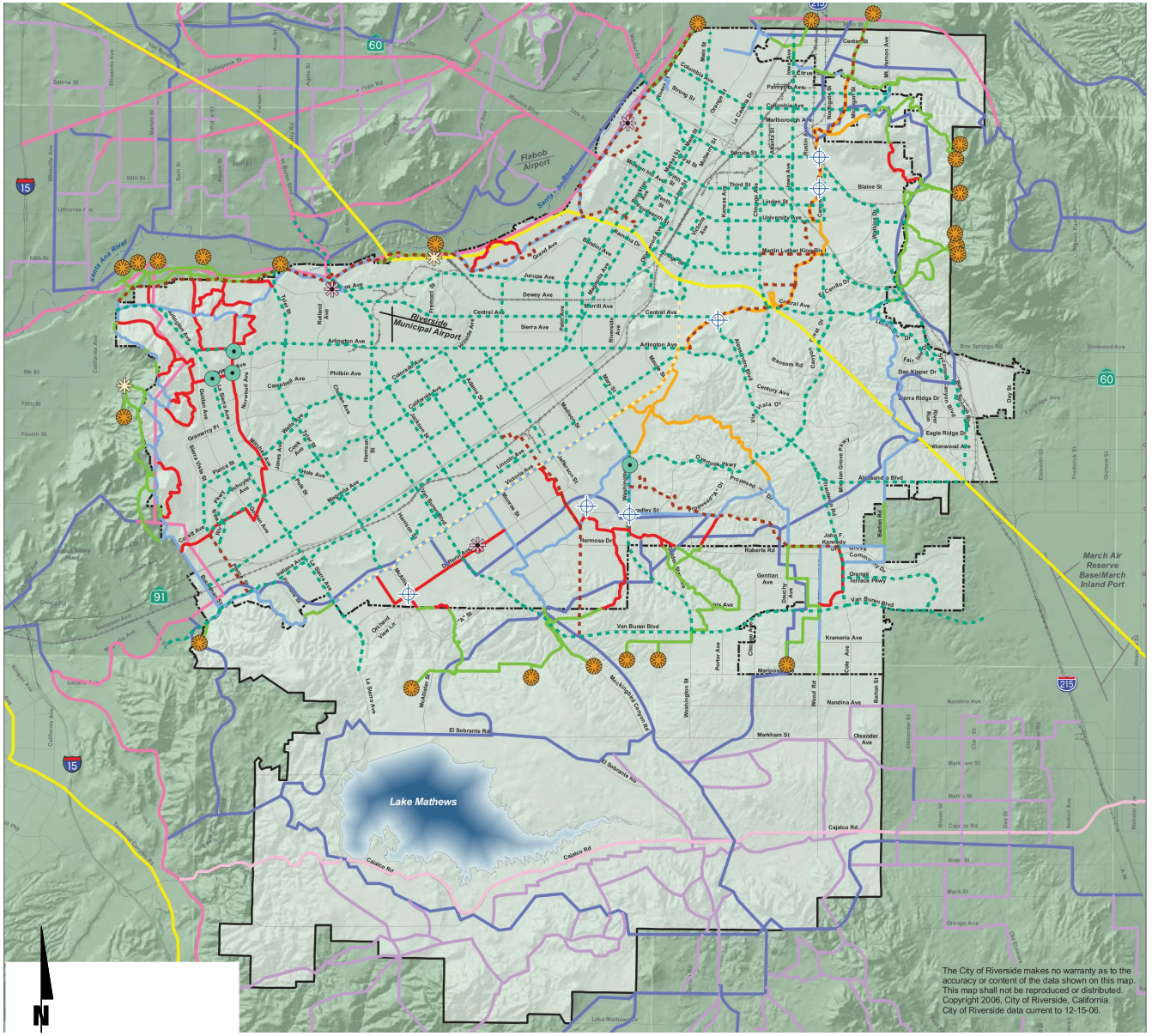


EXHIBIT 3-12: CITY OF JURUPA VALLEY BICYCLE AND PEDESTRIAN PLAN



URBAN CROSSROADS

EXHIBIT 3-13: CITY OF RIVERSIDE TRAILS AND BIKEWAYS



CITY OF RIVERSIDE
GENERAL PLAN 2025

LEGEND

CITY TRAIL POINTS
- STAGING AREAS EXISTING FACILITIES
- STAGING AREAS PROPOSED FACILITIES
- CONNECTION TO COUNTY DESIGNATED TRAILS
- TRAIL CROSSING PROPOSED STOP SIGN
- TRAIL CROSSING PROPOSED TRAFFIC SIGNAL

CITY TRAILS
- PRIMARY - EQUESTRIAN, BIKE & PEDESTRIAN TRAIL
- SECONDARY - EQUESTRIAN, BIKE & PEDESTRIAN TRAIL
- SECONDARY - NO EQUESTRIAN
- IN ADJACENT JURISDICTION

CITY BIKEWAYS
- CLASS 1
- CLASS 1&2
- CLASS 2

RIVERSIDE COUNTY TRAILS
- CLASS 1 BIKE PATH
- CLASS 1 BIKE PATH/REGIONAL TRAIL
- COMMUNITY TRAIL
- REGIONAL TRAIL
- HISTORIC TRAIL

- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

SOURCE: CITY OF RIVERSIDE AND RIVERSIDE COUNTY GIS DATA

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NOTE: Currently the City and County trails are not completely coordinated. The County Trails Plan is a conceptual plan at this time and many of the City's trails have not yet been built. An implementation tool of this General Plan is to work with the County to coordinate the RCIP and the City's General Plan (Tool #10).

EXHIBIT 3-14: CITY OF RIALTO BICYCLE ROUTES

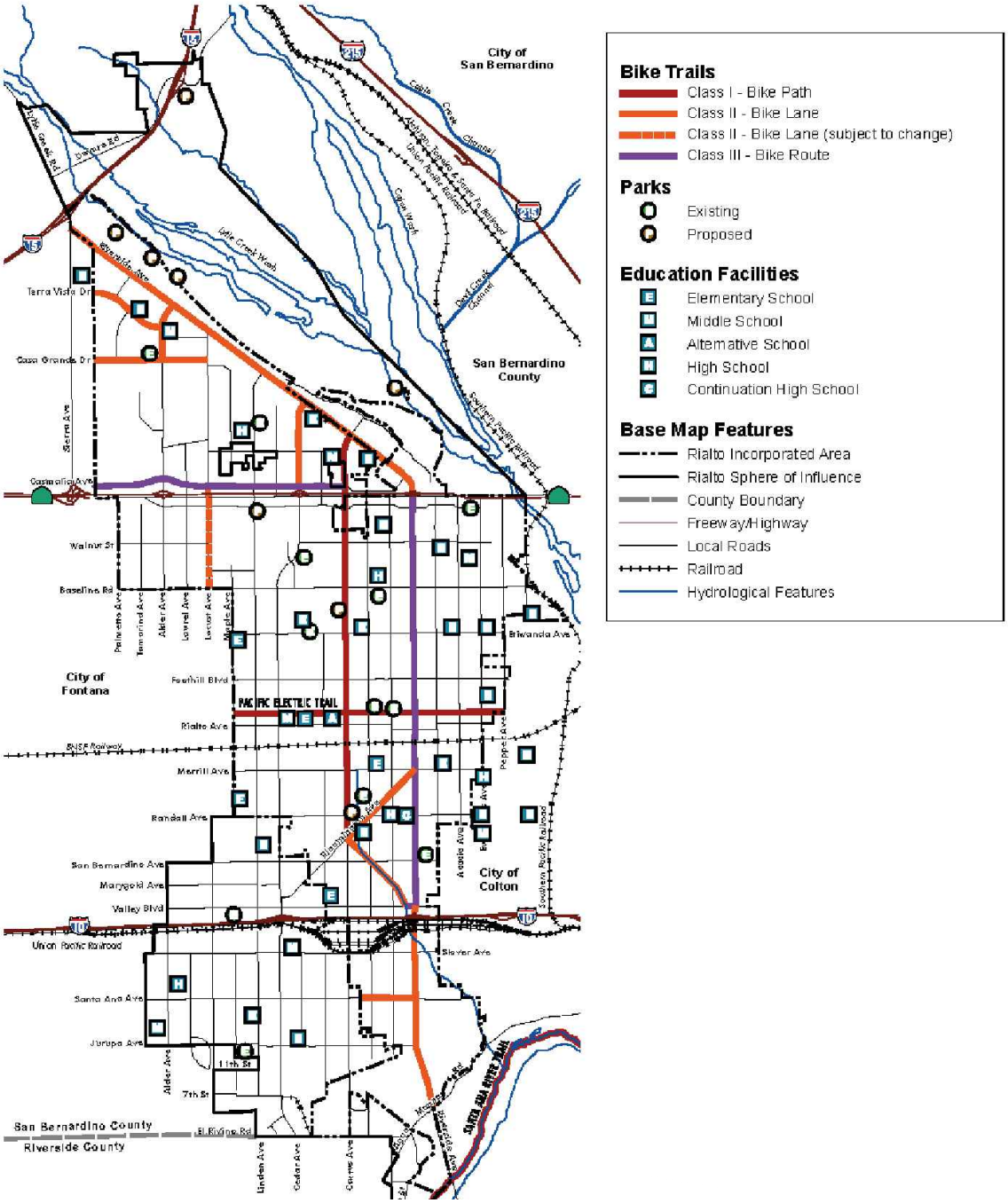
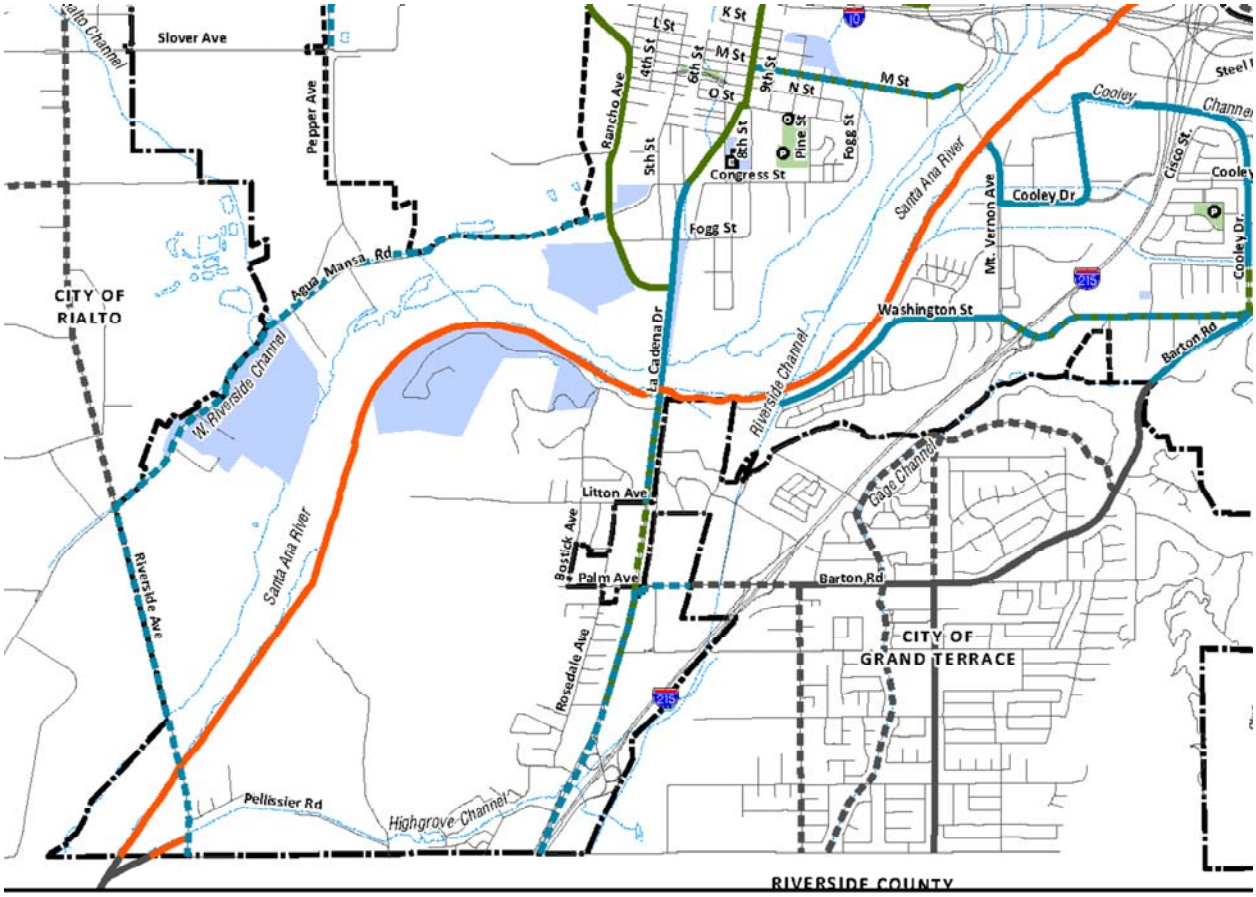


EXHIBIT 3-15: CITY OF COLTON GENERAL PLAN BICYCLE PLAN



Bicycle Classifications

- Class I
- Planned Class I
- Class II
- Planned Class II
- Class III
- Planned Class III
- Outside City of Colton
- Planned Outside City of Colton

N

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EXHIBIT 3-16: EXISTING PEDESTRIAN FACILITIES

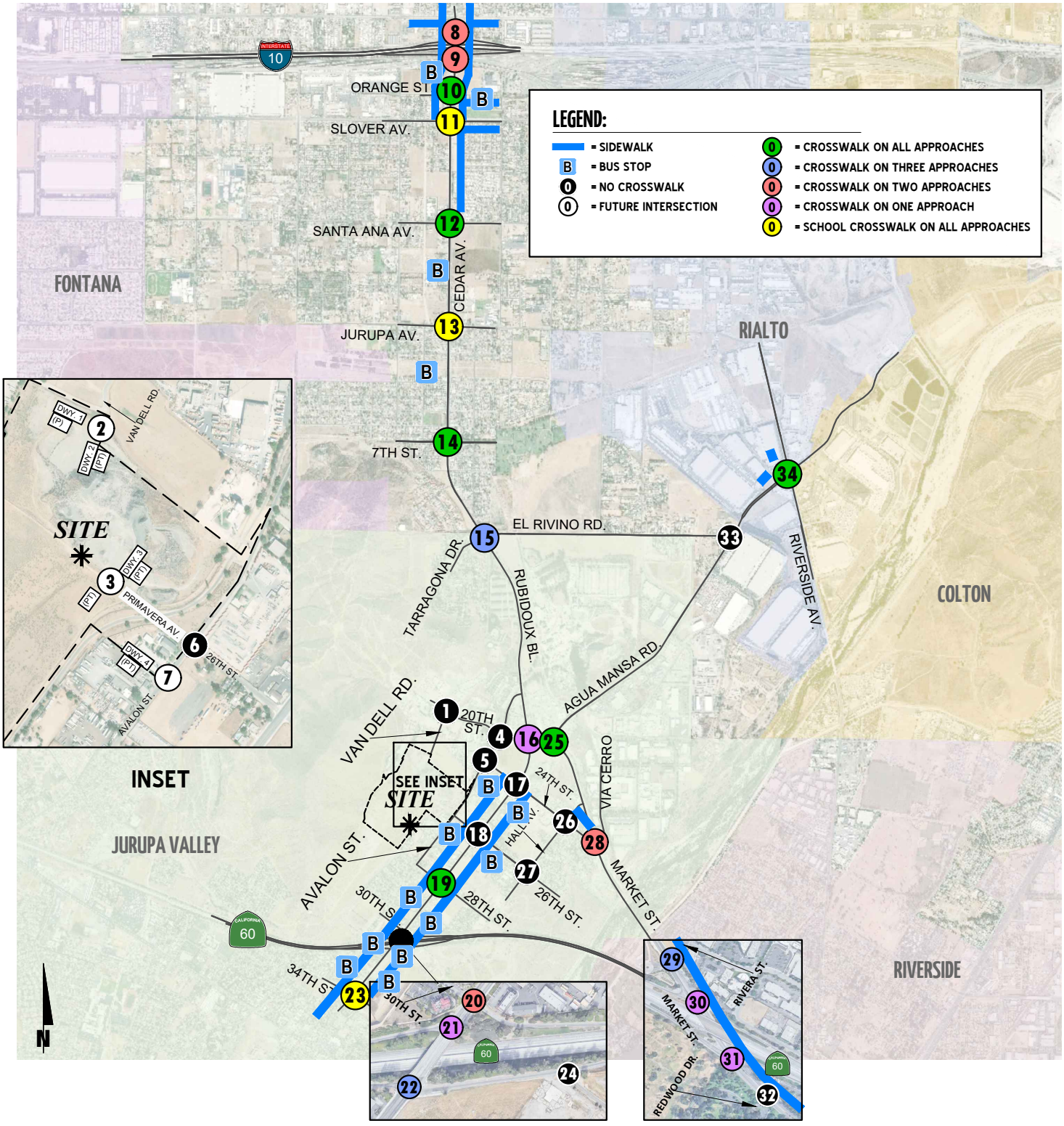


EXHIBIT 3-17: CITY OF JURUPA VALLEY TRANSIT ROUTES

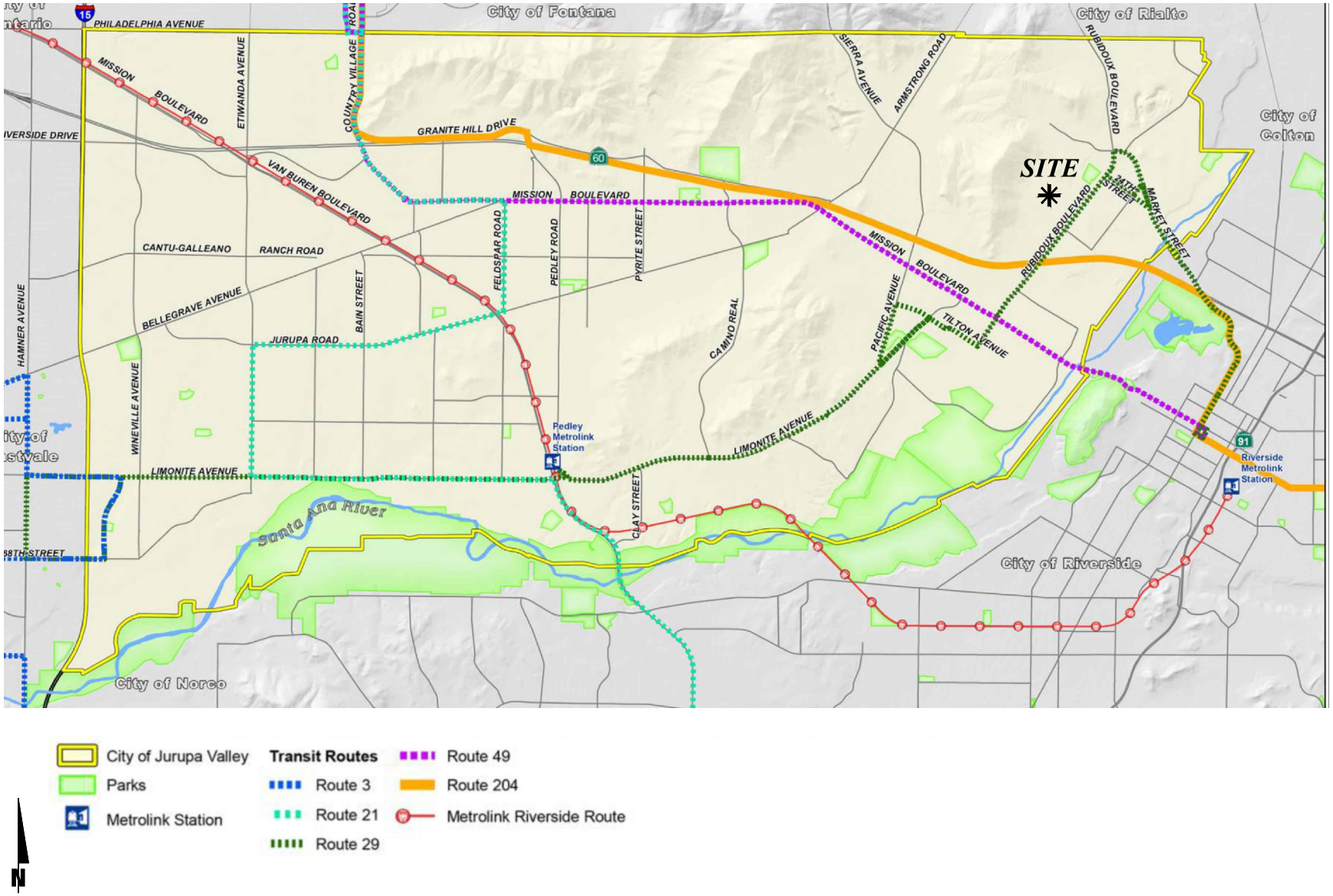
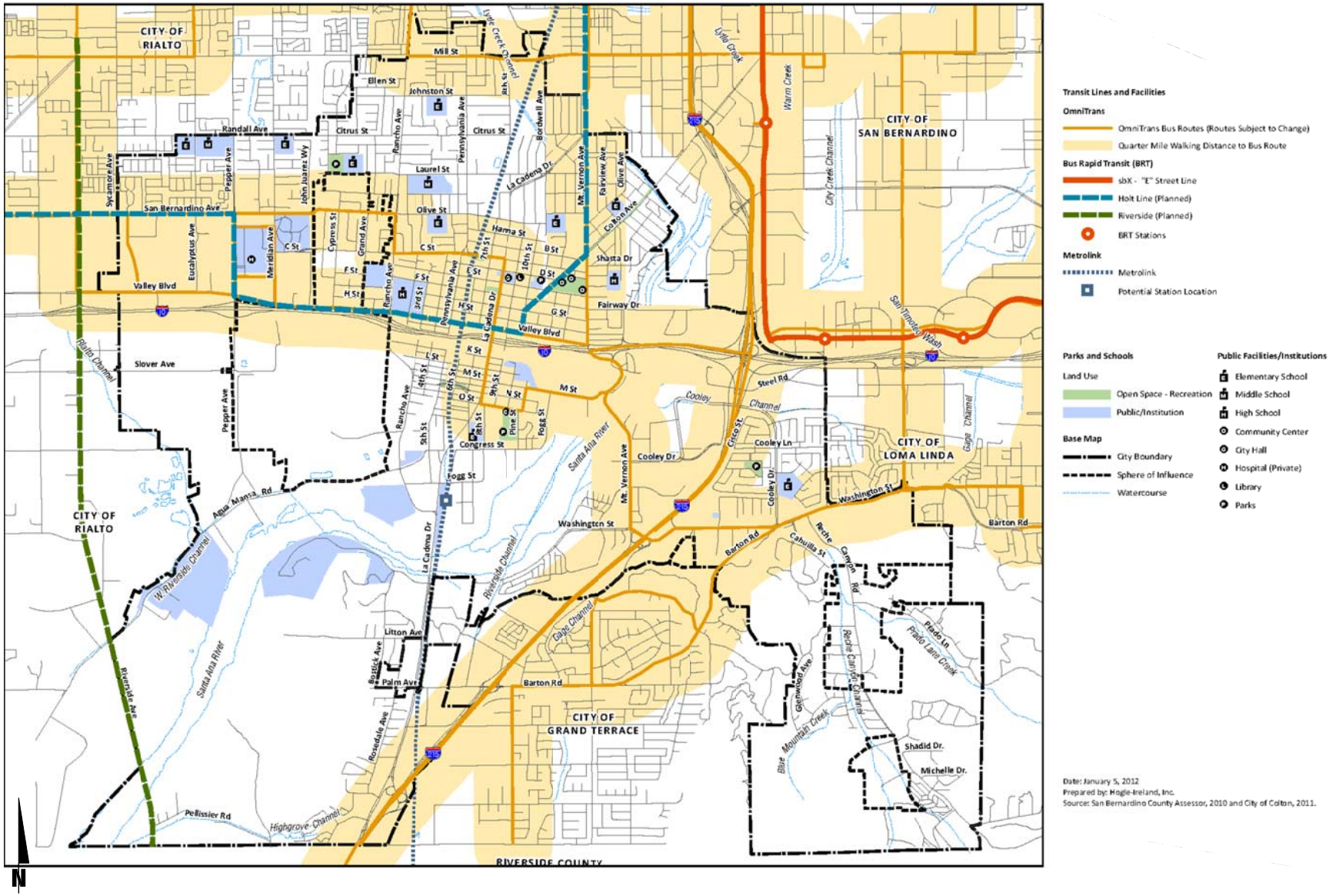


EXHIBIT 3-18: CITY OF COLTON TRANSIT PLAN



URBAN CROSSROADS

EXHIBIT 3-19: EXISTING TRANSIT ROUTES

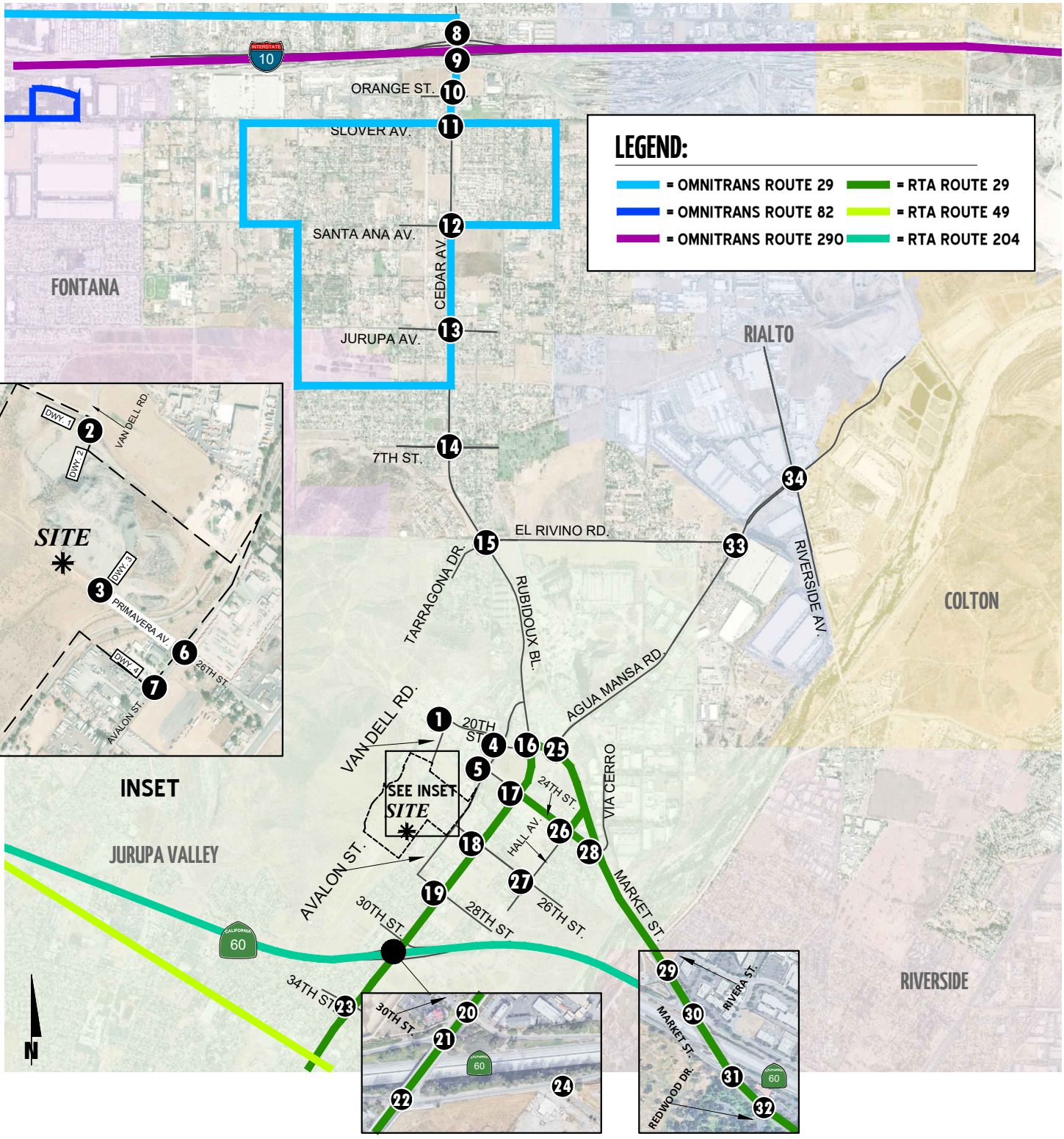
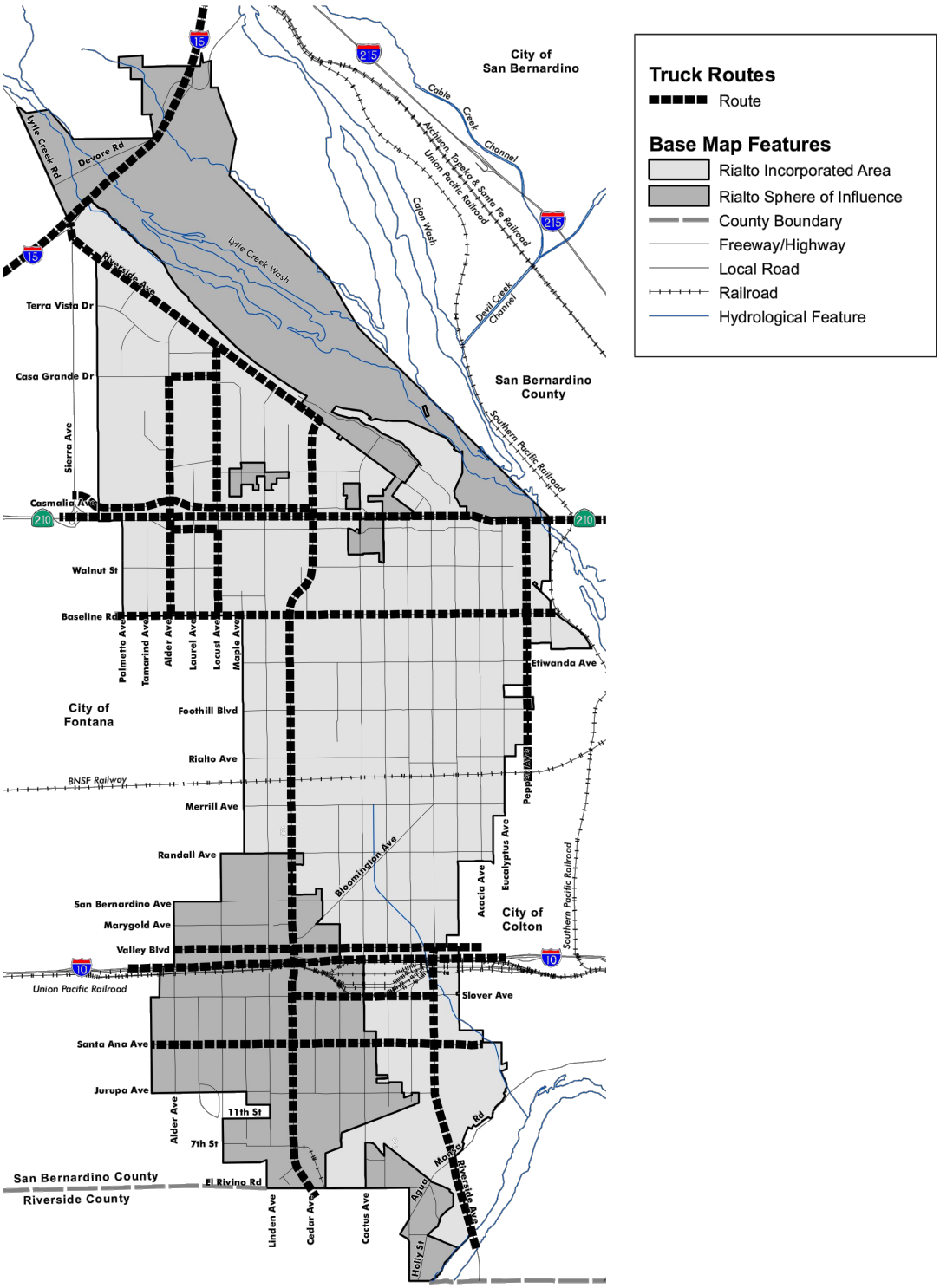


EXHIBIT 3-20: CITY OF RIALTO EXISTING TRUCK ROUTES



3.7 EXISTING (2020) TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in May 2019. The following peak hours were selected for analysis:

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

The weekday AM and weekday PM peak hour count data are representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. Pursuant to discussions with City staff, a 2% growth rate has been applied to the 2019 traffic data to reflect 2020 conditions. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

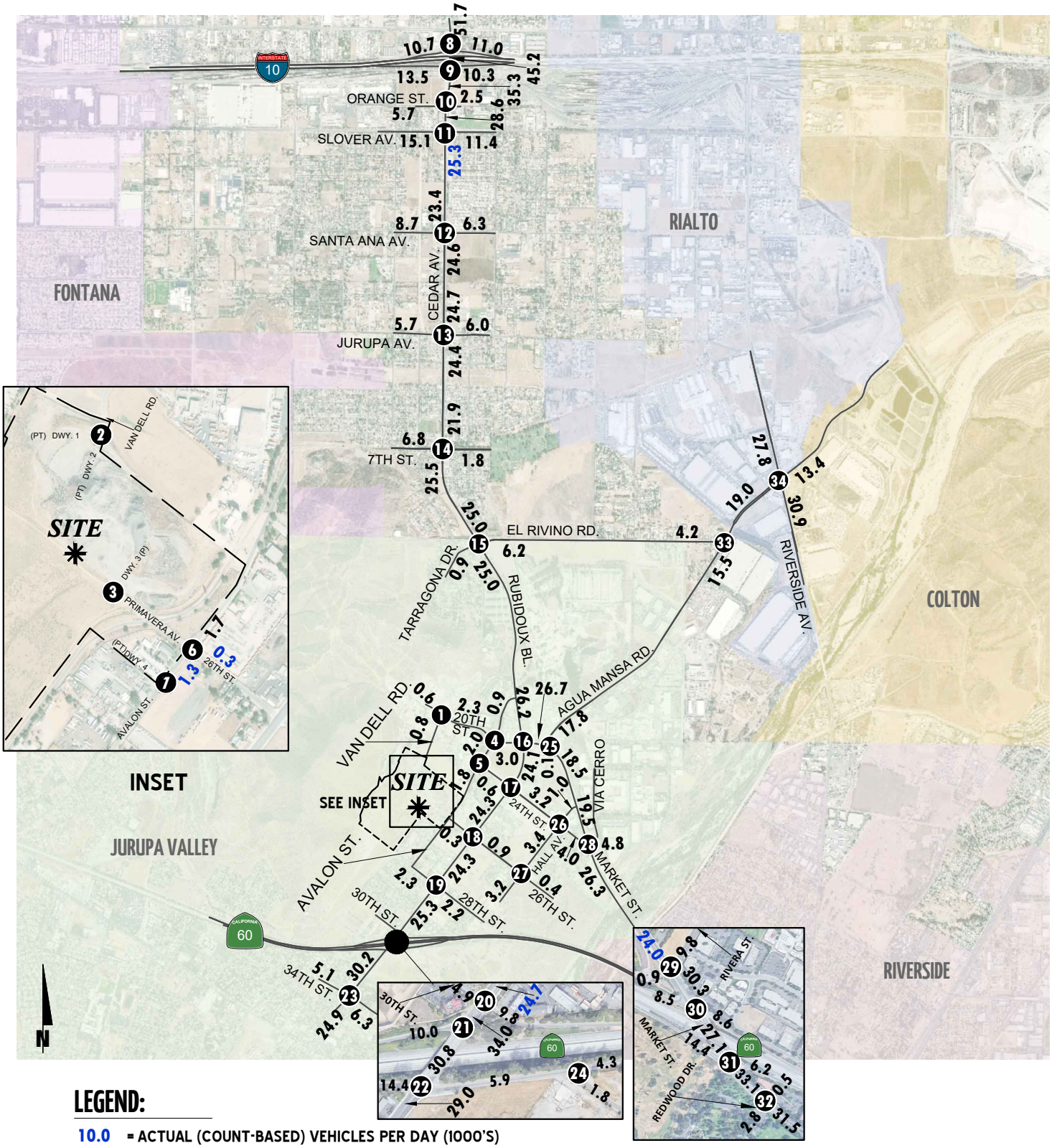
The traffic counts collected in May 2019 include the following vehicle classifications: Passenger Cars, 2-Axle Trucks, 3-Axle Trucks, and 4 or more Axle Trucks. To represent the impact large trucks, buses and recreational vehicles have on traffic flow, all trucks were converted into PCE. By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and slow-down is much longer than for passenger cars and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for 4+-axle trucks to estimate each turning movement. Although the County of Riverside has a recommended PCE factor of 2.0, the San Bernardino County CMP PCE factors have been utilized in an effort to conduct a more conservative analysis.

Existing weekday Average Daily Traffic (ADT) volumes are shown on Exhibit 3-21. 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 14.30 = 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 7.00 percent. As such, the above equation utilizing a factor of 14.30 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.00 percent (i.e., 1/0.0700 = 14.30) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are shown on Exhibit 3-22.

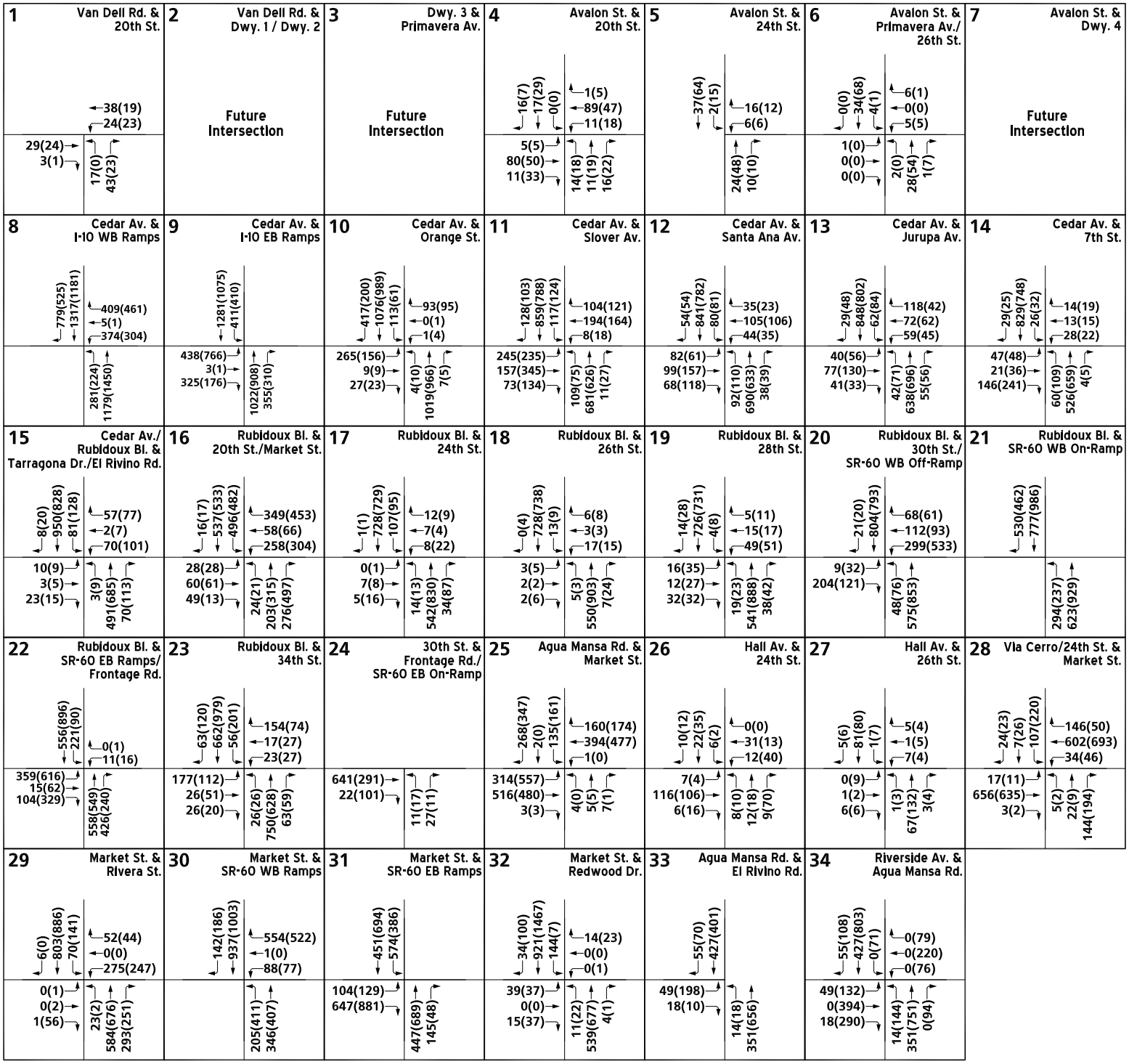
EXHIBIT 3-21: EXISTING (2020) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = ACTUAL (COUNT-BASED) VEHICLES PER DAY (1000'S)
10.0 = ESTIMATED VEHICLES PER DAY (1000'S)
10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

EXHIBIT 3-22: EXISTING (2020) TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

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URBAN CROSSROADS

3.8 INTERSECTION OPERATIONS ANALYSIS

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

- Cedar Avenue & Jurupa Avenue (#13) – LOS E AM and PM peak hours
- Rubidoux Boulevard & 20th Street/Market Street (#16) – LOS E PM peak hour only
- Rubidoux Boulevard & 24th Street (#17) – LOS E AM peak hour; LOS F PM peak hour
- Rubidoux Boulevard & 26th Street (#18) – LOS E PM peak hour only
- Agua Mansa Road & El Rivino Road (#33) – LOS F PM peak hour only

Signal timing for the freeway arterial-to-ramp intersections and the signalized intersections along the Cedar Avenue corridor have been obtained from the County and reflect the SBCTA coordinated signal timing that has recently been implemented in 2020. It should be noted that for the purposes of this analysis, no optimization of signal timing has been performed for the LOS analysis unless noted otherwise.

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-23. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

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

Table 3-1

Intersection Analysis for Existing (2020) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Van Dell Rd. & 20th St.	CSS	0	1	0	0	0	0	0	1	d	0	1	0	9.0	8.5	A	A
2	Van Dell Rd. & Driveway 1/Driveway 2		Future Intersection															
3	Driveway 3 & Primavera St.		Future Intersection															
4	Avalon St. & 20th St.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.3	10.4	B	B
5	Avalon St. & 24th St.	CSS	0	1	0	0	1	0	0	0	0	1	0	1	9.0	9.4	A	A
6	Avalon St. & Primavera Av./26th St.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.1	9.2	A	A
7	Avalon St. & Driveway 4		Future Intersection															
8	Cedar Av. & I-10 WB Ramps	TS	1	2	0	0	3	1	0	0	0	0	1	1	25.7	25.5	C	C
9	Cedar Av. & I-10 EB Ramps	TS	0	3	1	1	2	0	1	1	0	0	0	0	36.0	36.7	D	D
10	Cedar Av. & Orange St.	TS	1	2	0	1	2	1	1	1	0	0	1	0	21.1	10.8	C	B
11	Cedar Av. & Slover Av.	TS	1	2	0	1	2	0	1	2	d	1	2	0	38.6	25.3	D	C
12	Cedar Av. & Santa Ana Av.	TS	1	2	0	1	2	0	0	1	0	0	1	0	31.4	44.4	C	D
13	Cedar Av. & Jurupa Av.	TS	1	2	0	1	2	0	0	1	d	0	1	d	**69.1**	**66.5**	**E**	**E**
14	Cedar Av. & 7th St.	TS	1	2	0	1	2	0	0	1	0	0	1	0	13.4	17.3	B	B
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	TS	1	2	0	1	2	0	0	1	0	0	1	1	9.9	11.6	A	B
16	Rubidoux Bl. & 20th St./Market St.	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	46.1	**60.4**	D	**E**
17	Rubidoux Bl. & 24th St.	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**48.2**	**>100.0**	**E**	**F**
18	Rubidoux Bl. & 26th St.	CSS	0	2	0	0	2	0	0	1	0	0	1	0	27.8	**43.5**	D	**E**
19	Rubidoux Bl. & 28th St.	TS	1	2	0	1	2	0	0	1	0	0	1	0	10.2	12.1	B	B
20	Rubidoux Bl. & SR-60 WB Off-Ramp	TS	1	2	0	0	2	0	1	0	1	0	1	0	28.4	48.6	C	D
21	Rubidoux Bl. & SR-60 WB On-Ramp	UC	1	2	0	0	2	0	0	0	0	0	0	0	19.6	15.8	C	C
22	Rubidoux Bl. & SR-60 EB Ramps	TS	0	2	0	1	2	0	0	2	0	1	0	1	27.0	33.0	C	C
23	Rubidoux Bl. & 34th St.	TS	1	2	0	1	2	0	0	1	0	0	1	d	16.1	20.1	B	C
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	CSS	0	1	0	0	0	0	0	1	0	0	0	0	14.1	10.7	B	B
25	Agua Mansa Rd. & Market St.	TS	0	1	0	0	1	0	1	2	1	1	2	d	26.0	35.7	C	D
26	Hall Av. & 24th St.	CSS	0	1	0	0	1	0	0	1	d	0	1	d	8.1	8.1	A	A
27	Hall Av. & 26th St.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.5	10.1	A	B
28	Via Cerro/24th St. & Market St.	TS	0	1	1	1	1	0	1	1	1	1	1	0	22.4	28.4	C	C
29	Market St. & Rivera St.	TS	1	2	1>	1	2	0	0	1	1	1	1	1	11.0	19.4	B	B
30	Market St. & SR-60 WB Ramps	TS	1	2	0	0	2	1	0	0	0	1	0	1>>	8.7	10.7	A	B
31	Market St. & SR-60 EB Ramps	TS	0	2	1	1	2	0	1	0	2	0	0	0	19.9	24.8	B	C
32	Market St. & Redwood Dr.	CSS	1	2	0	1	2	1	0	1	0	0	1	0	18.7	18.6	C	C
33	Agua Mansa Rd. & El Rivino Rd.	CSS	1	1	0	0	1	0	0	1	0	0	0	0	17.5	**>100.0**	C	**F**
34	Riverside Av. & Agua Mansa Rd.	TS	1	2	0	1	2	d	1	1	1	1	1	1	37.8	35.3	D	D

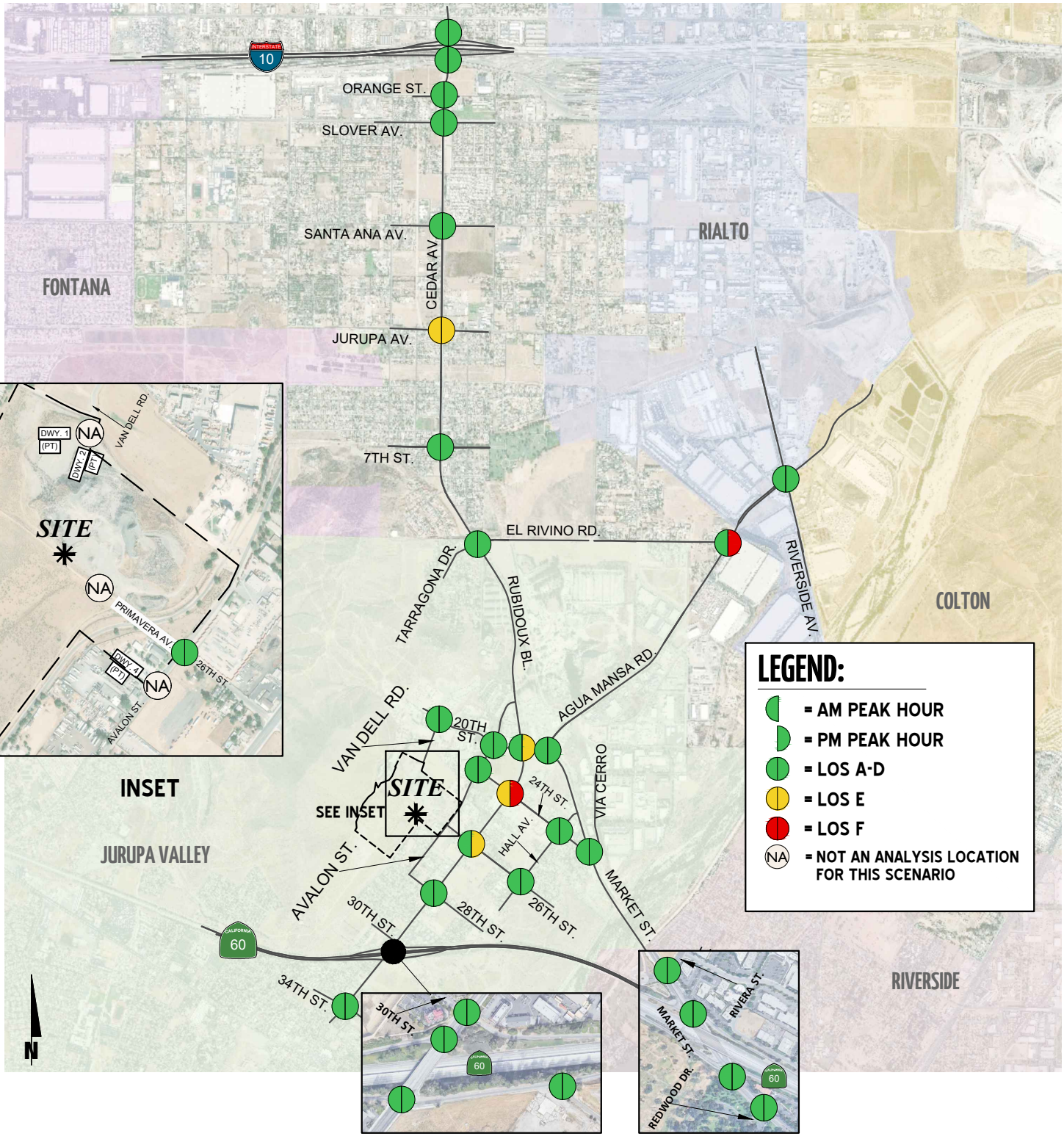
* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; >> = Free-Right Turn Lane; d = Defacto Right Turn Lane

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

[3] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; UC = Uncontrolled

EXHIBIT 3-23: EXISTING (2020) SUMMARY OF LOS



3.10 EXISTING (2020) OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, and SR-60 Freeway at Market Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway or SR-60 Freeway mainline. Queuing analysis findings are presented in Table 3-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 3-2, the following movement currently experiences a queuing issue during the weekday AM or weekday PM peak 95th percentile traffic flows:

- Cedar Avenue & I-10 Eastbound Ramps (#9), Eastbound left turn lane – PM peak hour only

It should be noted, although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. Worksheets for Existing (2020) traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

3.11 EXISTING (2020) FREEWAY FACILITY ANALYSIS

Existing (2020) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 3-24. As shown in Table 3-3, the following study area freeway segments and merge/diverge ramp junctions analyzed for this study are currently operating at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for Existing (2020) traffic conditions:

- SR-60 Freeway Westbound, West of Rubidoux Boulevard (#9) – LOS E PM peak hour only
- SR-60 Freeway Westbound, Off-Ramp at Rubidoux Boulevard (#11) – LOS E PM peak hour only
- SR-60 Freeway Westbound, Rubidoux Boulevard to Market Street (#12) – LOS E PM peak hour only
- SR-60 Freeway Westbound, Off-Ramp at Market Street (#14) – LOS E PM peak hour only
- SR-60 Freeway Westbound, East of Market Street (#15) – LOS E PM peak hour only
- SR-60 Freeway Eastbound, West of Rubidoux Boulevard (#16) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Off-Ramp at Rubidoux Boulevard (#17) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, On-Ramp at Rubidoux Boulevard (#18) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Rubidoux Boulevard to Market Street (#19) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Off-Ramp at Market Street (#20) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, On-Ramp at Market Street (#21) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, East of Market Street (#22) – LOS F AM and PM peak hours

Existing (2020) freeway facility analysis worksheets are provided in Appendix 3.5.

Table 3-2

Peak Hour Freeway Off-Ramp Queuing Summary for Existing (2020) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Cedar Av. & I-10 WB Ramps	WBL/T/R	1,270	464 [2]	515 [2]	Yes	Yes
	WBR	480	328	428 [2]	Yes	Yes
Cedar Av. & I-10 EB Ramps	EBL	400	394 [2]	**682** [2,3]	Yes	**No**
	EBL/T/R	1,900	323	602 [2]	Yes	Yes
Rubidoux Bl. & SR-60 WB Off-Ramp	WBL/T/R	1,250	509 [2]	781 [2]	Yes	Yes
Rubidoux Bl. & SR-60 EB Off-Ramp	EBL/T/R	1,100	178	444 [2]	Yes	Yes
Market St. & SR-60 WB Ramps	WBL	170	120 [2]	91	Yes	Yes
	WBR[4]	1,350	0	0	Yes	Yes
Market St. & SR-60 EB Ramps	EBL	155	95	91	Yes	Yes
	EBR	1,635	92	246	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline.

[4] Movement is a free-right turn lane. As such, there is no queue during the peak hours.

Table 3-3

Freeway Facility Analysis for Existing (2020) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	30.6	D	27.1	D
		On-Ramp at Cedar Av.	4	30.0	D	26.7	C
		Off-Ramp at Cedar Av.	5	21.2	C	20.4	C
		East of Cedar Av.	5	22.0	C	20.7	C
	Eastbound	West of Cedar Av.	4	24.1	C	27.2	D
		Off-Ramp at Cedar Av.	5	18.5	C	20.5	C
		On-Ramp at Cedar Av.	4	24.7	C	25.7	C
		East of Cedar Av.	4	24.5	C	26.0	C
SR-60	Westbound	West of Rubidoux Bl.	3	29.4	D	**36.2**	**E**
		On-Ramp at Rubidoux Bl.	3	30.9	D	34.1	D
		Off-Ramp at Rubidoux Bl.	3	31.4	D	**36.0**	**E**
		Rubidoux Bl. to Market St.	3	27.5	D	**36.6**	**E**
		On-Ramp at Market St.	3	29.0	D	34.9	D
		Off-Ramp at Market St.	3	32.9	D	**36.0**	**E**
		East of Market St.	3	29.4	D	**36.6**	**E**
	Eastbound	West of Rubidoux Bl.	3	**45.0**	**F**	**45.0**	**F**
		Off-Ramp at Rubidoux Bl.	3	**43.4**	**F**	**40.5**	**F**
		On-Ramp at Rubidoux Bl.	3	**41.8**	**F**	**33.6**	**F**
		Rubidoux Bl. to Market St.	3	**38.1**	**F**	**36.1**	**F**
		Off-Ramp at Market St.	3	**37.2**	**F**	**37.0**	**F**
		On-Ramp at Market St.	3	**35.3**	**F**	**31.1**	**F**
		East of Market St.	3	**37.5**	**F**	**30.5**	**F**

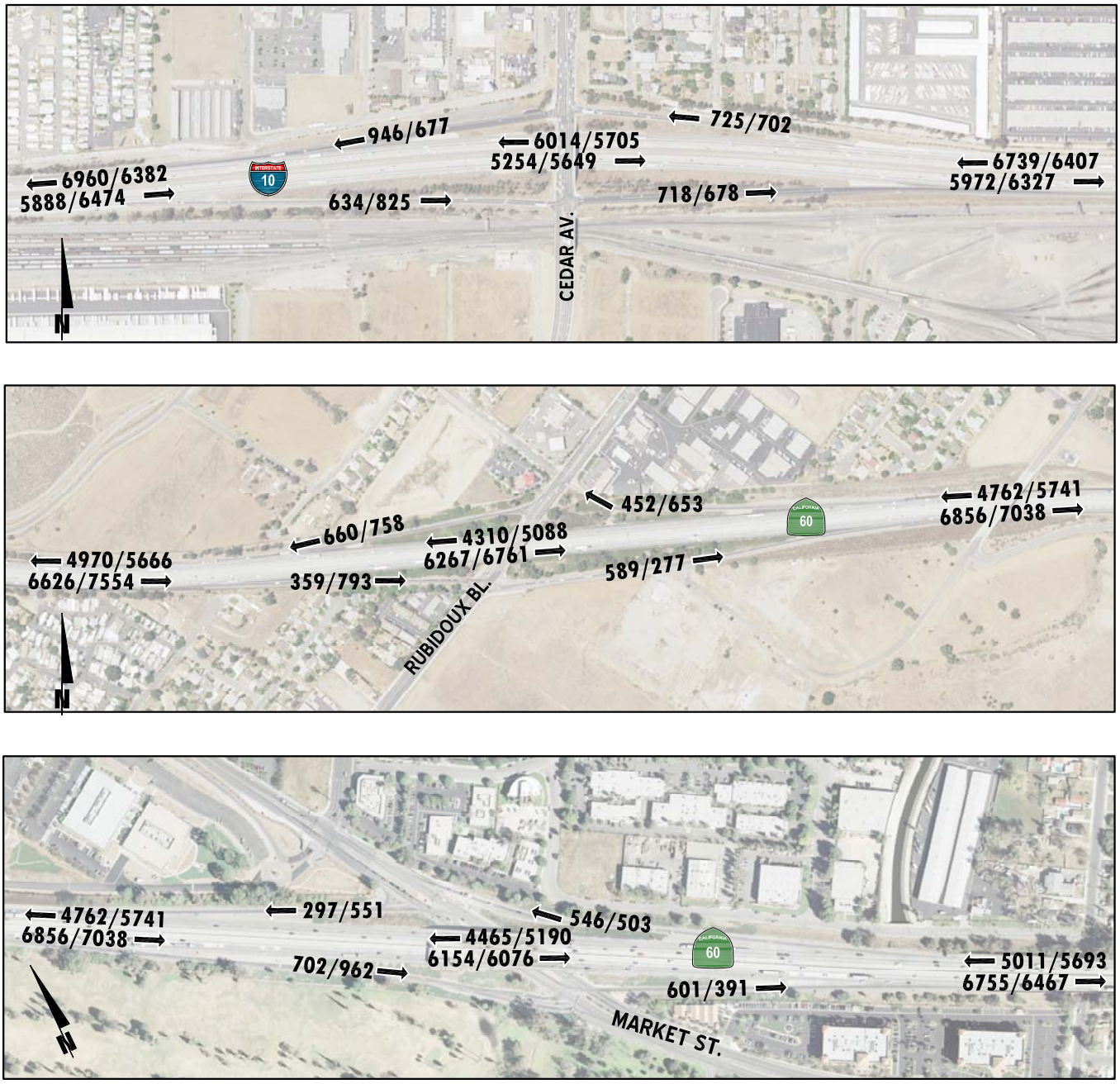
* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 3-24: EXISTING (2020) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

3.12 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of existing deficiencies and recommended improvements. Based on the City of Jurupa Valley deficiency criteria discussed in Section 2.7 *Minimum Acceptable Levels of Service (LOS) and Intersection Deficiency Criteria*, the following intersections were found to be deficient. Improvements necessary to improve traffic deficiencies back to acceptable levels are also discussed below.

3.12.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the proposed recommended improvements is presented in Table 3-4 for Existing (2020) traffic conditions. The intersection operations analysis worksheets for Existing (2020) traffic conditions, with improvements, are included in Appendix 3.6 of this TIA.

Recommended Improvement – Cedar Avenue & Jurupa Avenue (#13) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide one left turn lane and one shared through-right turn lane.
- Restripe the westbound approach to provide one left turn lane and one shared through-right turn lane.

Recommended Improvement – Rubidoux Boulevard & 20th Street/Market Street (#16) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 24th Street (#17) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 26th Street (#18) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

It should be noted, the Project will construct the improvements at this intersection as part of the Project design features.

Table 3-4

Intersection Analysis for Existing (2020) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
13	Cedar Av. & Jurupa Av.																	
	Existing Conditions:																	
	-Without Improvements	TS	1	2	0	1	2	0	0	1	d	0	1	d	**69.1**	**66.5**	**E**	**E**
	-With Improvements	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	35.5	22.3	D	C
16	Rubidoux Bl. & 20th St./Market St.																	
	Existing Conditions:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	46.1	**60.4**	D	**E**
	-With Improvements[4]	TS	1	2	1	1	2	1	1	1	0	**1**	1	1>>	40.8	50.7	D	D
17	Rubidoux Bl. & 24th St.																	
	Existing Conditions:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**48.2**	**>100.0**	**E**	**F**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	9.6	10.0	A	A
18	Rubidoux Bl. & 26th St.																	
	Existing Conditions:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	27.8	**43.5**	D	**E**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	5.3	5.5	A	A
33	Agua Mansa Rd. & El Rivino Rd.																	
	Existing Conditions:																	
	-Without Improvements	CSS	1	1	0	0	1	0	0	1	0	0	0	0	17.5	**>100.0**	C	**F**
	-With Improvements	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	8.2	11.5	A	B

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

L = Left; T = Through; R = Right; >> = Free Right Turn Lane; **1** = Improvement

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

[3] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

Recommended Improvement – Agua Mansa Road & El Rivino Road (#33) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

3.12.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 3-2, there are currently no peak hour queuing issues at the SR-60 Freeway at Rubidoux Boulevard and SR-60 Freeway at Market Street interchanges. At the I-10 Freeway at Cedar Avenue interchange, the 95th percentile queue currently exceeds the available storage for the turn lane, however the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. As such, no improvements have been recommended.

3.12.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 3-3, there are study area freeway mainline segments and ramp junctions that currently operate at an unacceptable LOS for Existing (2020) traffic conditions. At this time, Caltrans has no fee programs or other improvement programs in place to address the deficiencies caused by development projects in the City of Jurupa Valley (or other neighboring jurisdictions) on the SHS roadway segments. As such, no improvements have been recommended to address the Existing (2020) deficiencies on the SHS.

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 proposed to consist of the following uses:

- 1,261,904 square feet of High-Cube Fulfillment Center use (Building 1)
- 37,454 square feet of General Light Industrial use (Building 2)

Regional access to the Project site is available from the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, SR-60 Freeway and Market Street interchanges. The Project is located west of Avalon Street at 26th Street in the City of Jurupa Valley. Vehicular and truck traffic access will be provided via the following driveways:

- Driveway 1 via Van Dell Road – Full access for both passenger cars and trucks for Building 1
- Driveway 2 via Van Dell Road – Full access for both passenger cars and trucks for Building 1
- Driveway 3 via Primavera Avenue – Emergency Vehicle Access Only
- Driveway 4 via Avalon Street – Full access for both passenger cars and trucks for Building 2

4.1 PROJECT TRIP GENERATION

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

Trip generation rates used to estimate Project traffic are shown in Table 4-1. A summary of the Project's trip generation based on actual vehicles and in PCE is shown in Table 4-2. The trip generation rates used for this analysis are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their Trip Generation Manual, 10th Edition, 2017 and the High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019). (4) (5)

Table 4-1

Project Trip Generation Rates

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Actual Vehicle Trip Generation Rates									
General Light Industrial[3]	TSF	110	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (80.0%)			0.493	0.067	0.560	0.066	0.438	0.504	3.968
2-Axle Trucks (3.34%)			0.021	0.003	0.023	0.003	0.018	0.021	0.166
3-Axle Trucks (4.14%)			0.026	0.003	0.029	0.003	0.023	0.026	0.205
4-Axle+ Trucks (12.52%)			0.077	0.011	0.088	0.010	0.069	0.079	0.621
High-Cube Fulfillment Center Warehouse[4]	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks			0.006	0.002	0.008	0.003	0.008	0.011	0.162
5+-Axle Trucks			0.008	0.003	0.011	0.003	0.007	0.010	0.217
Passenger Car Equivalent (PCE) Trip Generation Rates[5]									
General Light Industrial[3]	TSF	110	0.616	0.084	0.700	0.082	0.548	0.630	4.960
Passenger Cars (80.0%)			0.493	0.067	0.560	0.066	0.438	0.504	3.968
2-Axle Trucks (3.34%) (PCE = 1.5)			0.031	0.004	0.035	0.004	0.027	0.032	0.248
3-Axle Trucks (4.14%) (PCE = 2.0)			0.051	0.007	0.058	0.007	0.045	0.052	0.411
4-Axle+ Trucks (12.52%) (PCE = 3.0)			0.231	0.032	0.263	0.031	0.206	0.237	1.863
High-Cube Fulfillment Center Warehouse[4]	TSF	--	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (PCE = 2.0)			0.012	0.004	0.016	0.006	0.016	0.022	0.324
5+-Axle Trucks (PCE = 3.0)			0.025	0.008	0.033	0.008	0.022	0.030	0.651

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

[2] TSF = thousand square feet

[3] Vehicle mix source: ITE Trip Generation Handbook, 2017.
Truck Mix Source: Truck Mix Source: South Coast Air Quality Management District (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (2014).

[4] Vehicle Mix Source: High Cube Warehouse Trip Generation Study, WSP for WRCOG, January 29, 2019.
Inbound and outbound split source: High Cube Warehouse Vehicle Trip Generation Analysis, October 2016, ITE.

[5] PCE rates are per the City's traffic study guidelines

Table 4-2

Project Trip Generation Summary

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary (Actual Vehicles)									
High-Cube Fulfillment Center Warehouse (Bldg. 1)	1,261.904	TSF							
Passenger Cars:			100	30	130	51	131	182	2,208
Truck Trips:									
2-4 axle:			8	2	10	4	10	14	204
5+-axle:			11	3	14	4	9	13	274
- Truck Trips			19	5	24	8	19	27	478
Fulfillment Center Total Trips (Actual Vehicles) [2]			**119**	**35**	**154**	**59**	**150**	**209**	**2,686**
General Light Industrial (Bldg. 2)	37.454	TSF							
Passenger Cars:			18	3	21	2	16	18	150
Truck Trips:									
2-axle:			1	0	1	0	1	1	6
3-axle:			1	0	1	0	1	1	8
4+-axle:			3	0	3	0	3	3	24
- Truck Trips			5	0	5	0	5	5	38
General Light Industrial Total Trips (Actual Vehicles) [2]			**23**	**3**	**26**	**2**	**21**	**23**	**188**
Proposed Project Total Passenger Cars			*118*	*33*	*151*	*53*	*147*	*200*	*2,358*
Proposed Project Total Trucks (Actual Vehicles)			*24*	*5*	*29*	*8*	*24*	*32*	*516*
Total Proposed Project (Actual Vehicles)			**142**	**38**	**180**	**61**	**171**	**232**	**2,874**
Project Trip Generation Summary (PCE)									
High-Cube Fulfillment Center Warehouse (Bldg. 1)	1,261.904	TSF							
Passenger Cars:			100	30	130	51	131	182	2,208
Truck Trips:									
2-4 axle:			16	5	21	8	20	28	410
5+-axle:			32	10	42	11	27	38	822
- Truck Trips			48	15	63	19	47	66	1,232
Fulfillment Center Total Trips (PCE) [2]			**148**	**45**	**193**	**70**	**178**	**248**	**3,440**
General Light Industrial (Bldg. 2)	37.454	TSF							
Passenger Cars:			18	3	21	2	16	18	150
Truck Trips:									
2-axle:			1	0	1	0	1	1	10
3-axle:			2	0	2	0	2	2	16
4+-axle:			9	1	10	1	8	9	70
- Truck Trips			12	1	13	1	11	12	96
General Light Industrial Total Trips (PCE) [2]			**30**	**4**	**34**	**3**	**27**	**30**	**246**
Proposed Project Total Passenger Cars			*118*	*33*	*151*	*53*	*147*	*200*	*2,358*
Proposed Project Total Trucks (PCE)			*60*	*16*	*76*	*20*	*58*	*78*	*1,328*
Total Proposed Project (PCE)			**178**	**49**	**227**	**73**	**205**	**278**	**3,686**

[1] TSF = thousand square feet

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

For purposes of this analysis, the following ITE land use codes and vehicle mixes have been utilized for the proposed Project:

- High-Cube Fulfillment Center Warehouse has been used to derive site specific trip generation estimates for up to 1,261,904 square feet of the proposed Project. The ITE Trip Generation Manual (2017) has trip generation rates for high-cube fulfillment center use (ITE land use code 155), however, these rates are unreliable because they are based on limited data (i.e., one to two surveyed sites) and the ITE Trip Generation Manual recommends the use of local data sources where available. As such, 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, has been utilized for the high-cube fulfillment center use. The WSP trip generation rates were published in January 2019 and are based on data collected at 11 local high-cube fulfillment center sites. However, the WSP study does not include a split for inbound and outbound vehicles, as such, the inbound and outbound splits per the ITE High-Cube Warehouse Vehicle Trip Generation Analysis (October 2016) have been utilized. (11)
- ITE land use code 110 (General Light Industrial) has been used to derive site specific trip generation estimates for up to 37,454 square feet of the proposed Project. The ITE Trip Generation Handbook (3rd Edition, 2017) identifies a 20% mix of heavy trucks, however, does not provide a breakdown of the 20% further by axle type. As such, the percentage of trucks, by axle type, were obtained from the South Coast Air Quality Management District (SCAQMD) Warehouse Truck Trip Study Data Results and Usage (2014) recommended truck mix. Based on this guidance from the SCAQMD, the following truck fleet mix was utilized for the purposes of estimating the truck trip generation: 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. (12) (13)

Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. PCE factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in the City's traffic study guidelines.

As shown in Table 4-2, the proposed Project is anticipated to generate a total of 3,686 PCE trip-ends per day, 227 PCE AM peak hour trips and 278 PCE PM peak hour trips. The proposed Project is anticipated to generate a total of 2,874 actual vehicle trip-ends per day with 193 AM peak hour trips and 248 PM peak hour trips (see Table 4-2).

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The trip distribution pattern of passenger cars is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. The trip distribution pattern for truck traffic is also influenced by the local truck routes approved by the City of Jurupa Valley, City of Riverside, County of San Bernardino, City of Rialto, and City of Colton. Given these differences, separate trip distributions were generated for both passenger cars and truck trips. The Project truck trip distribution pattern is graphically depicted on Exhibit 4-1. The Project passenger car trip distribution pattern for Building 2 and for Building 2 is graphically depicted on Exhibits 4-2 and 4-3, respectively. Each of these distribution patterns was reviewed by the City of Jurupa Valley as part of the traffic study scoping process (see Appendix 1.1).

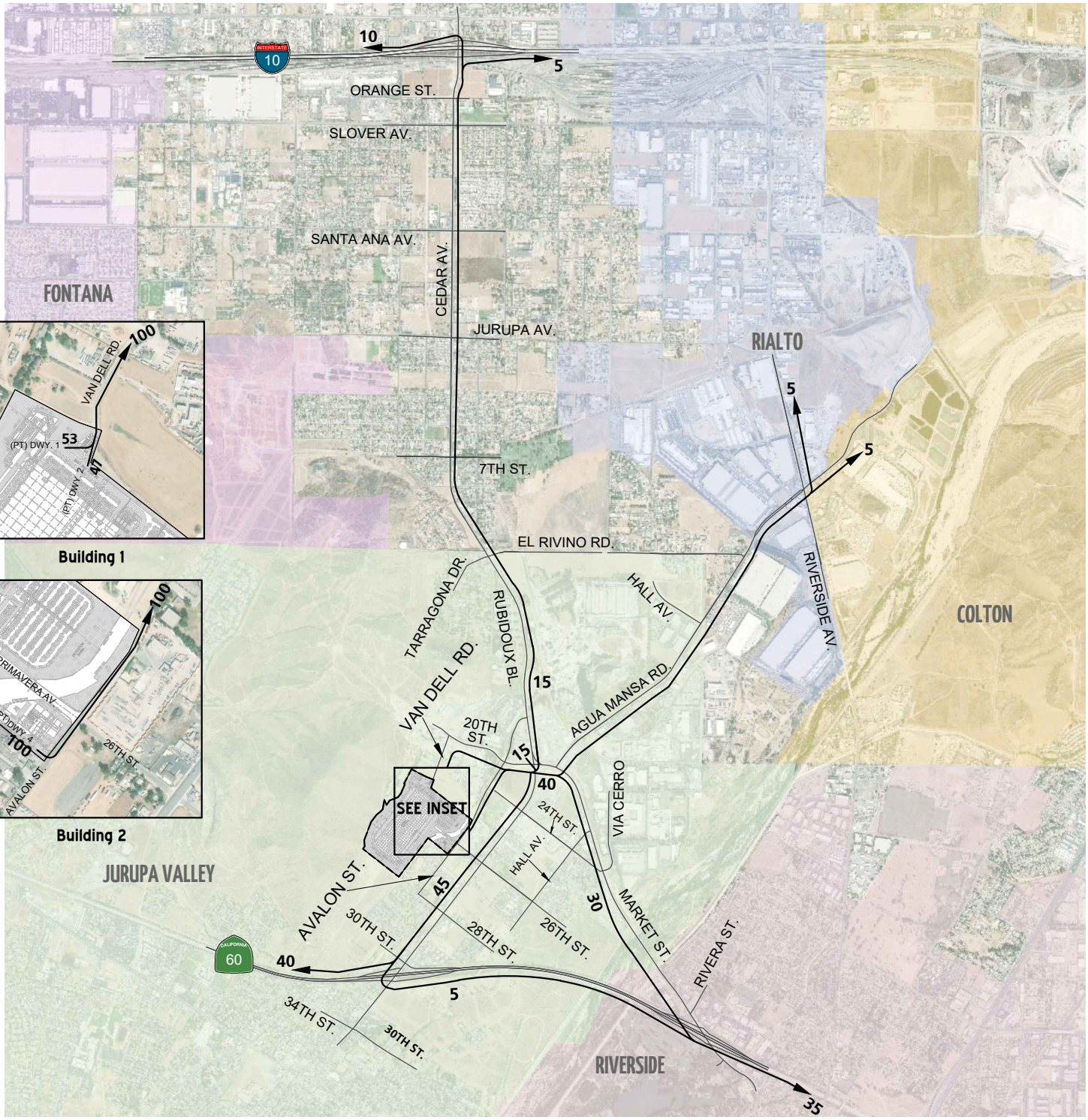
4.3 MODAL SPLIT

The potential for Project trips (non-truck) to be reduced by the use of public transit, walking or bicycling have not been included as part of the Project's estimated trip generation. Essentially, the Project's traffic projections are "conservative" in that these alternative travel modes would reduce the forecasted traffic volumes (non-truck 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 only ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-4 and 4-5, respectively.

EXHIBIT 4-1: PROJECT (TRUCK) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

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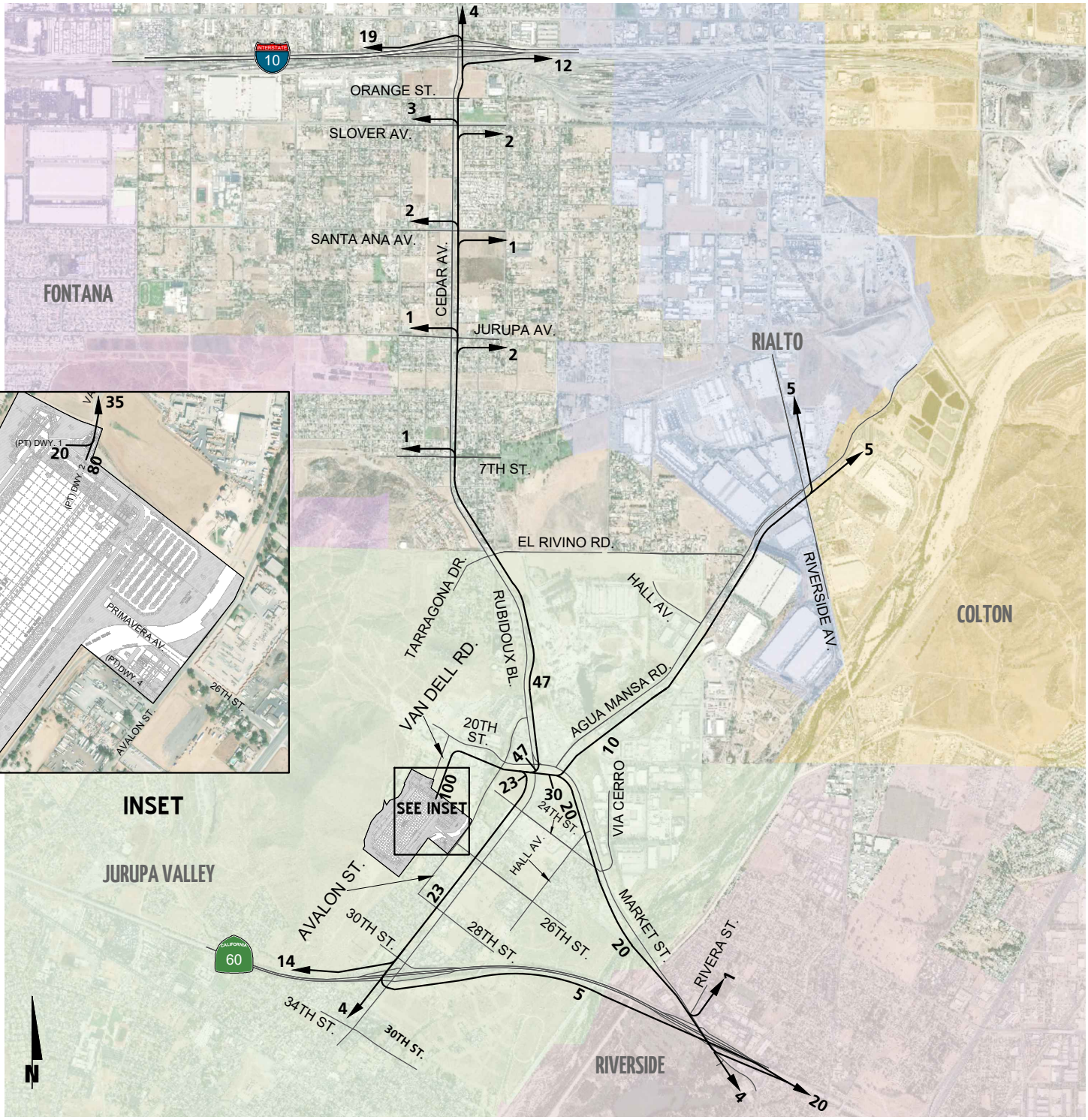
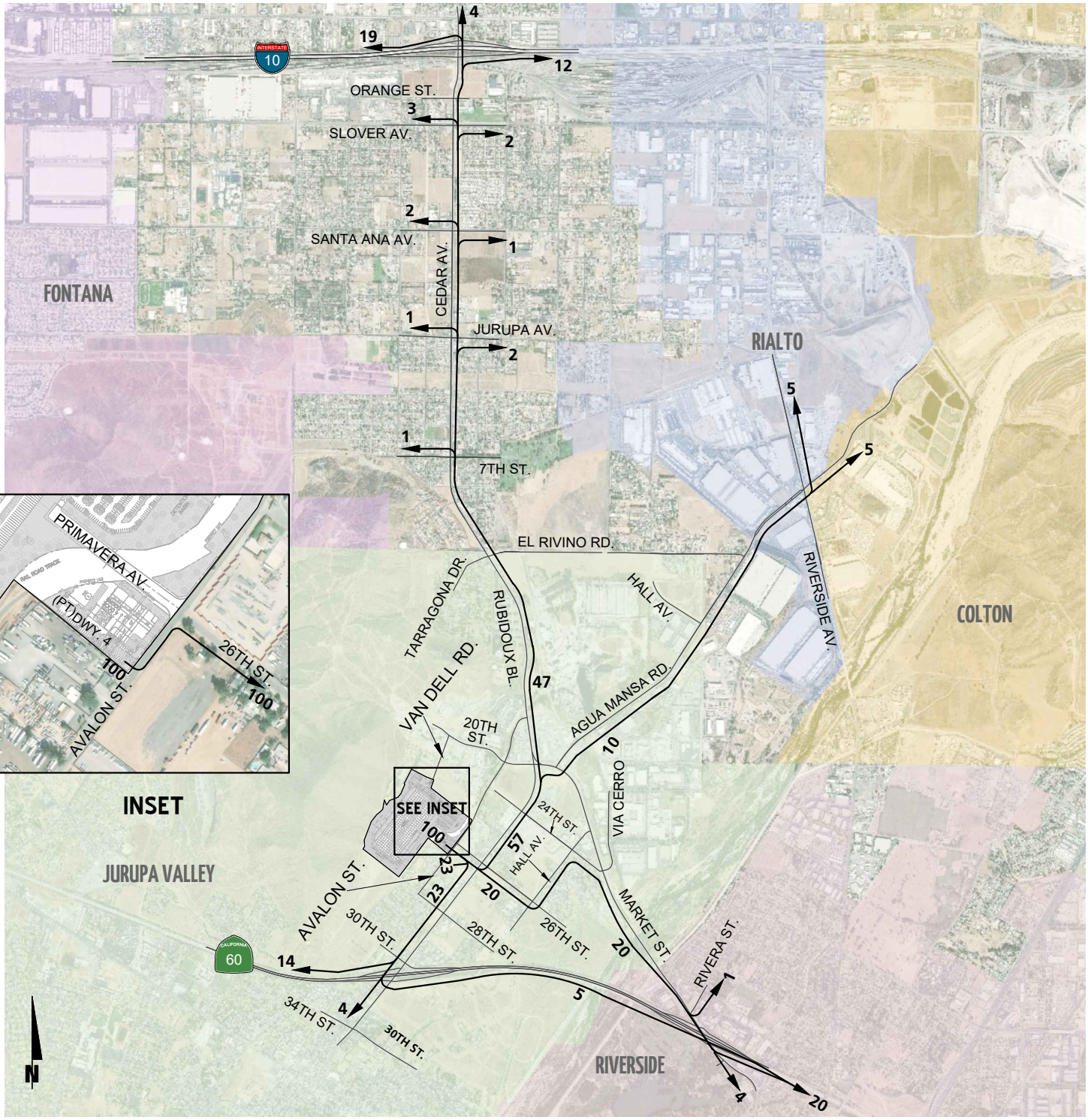
EXHIBIT 4-2: PROJECT (BUILDING 1 PASSENGER CAR) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

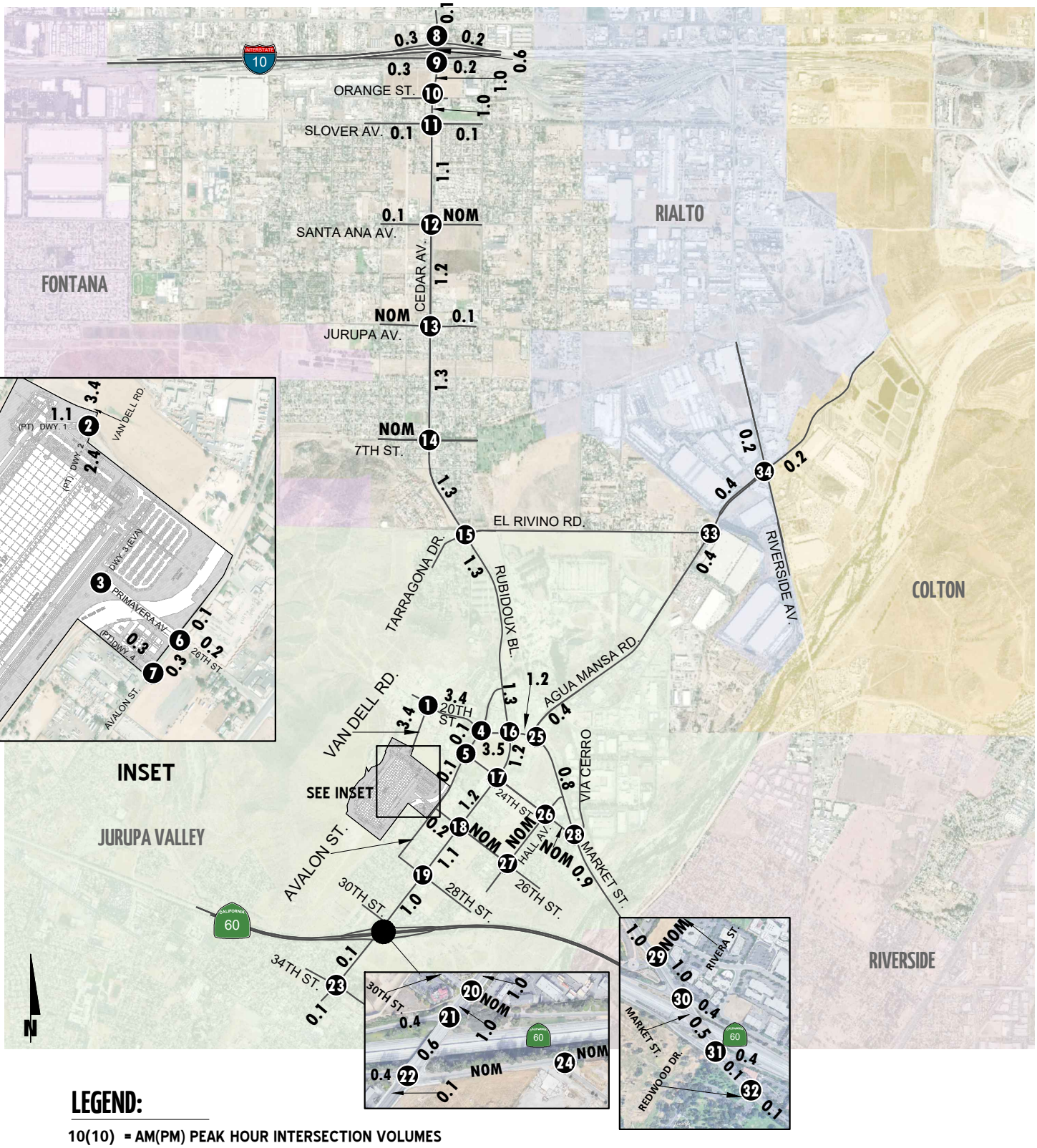
EXHIBIT 4-3: PROJECT (BUILDING 2 PASSENGER CAR) TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

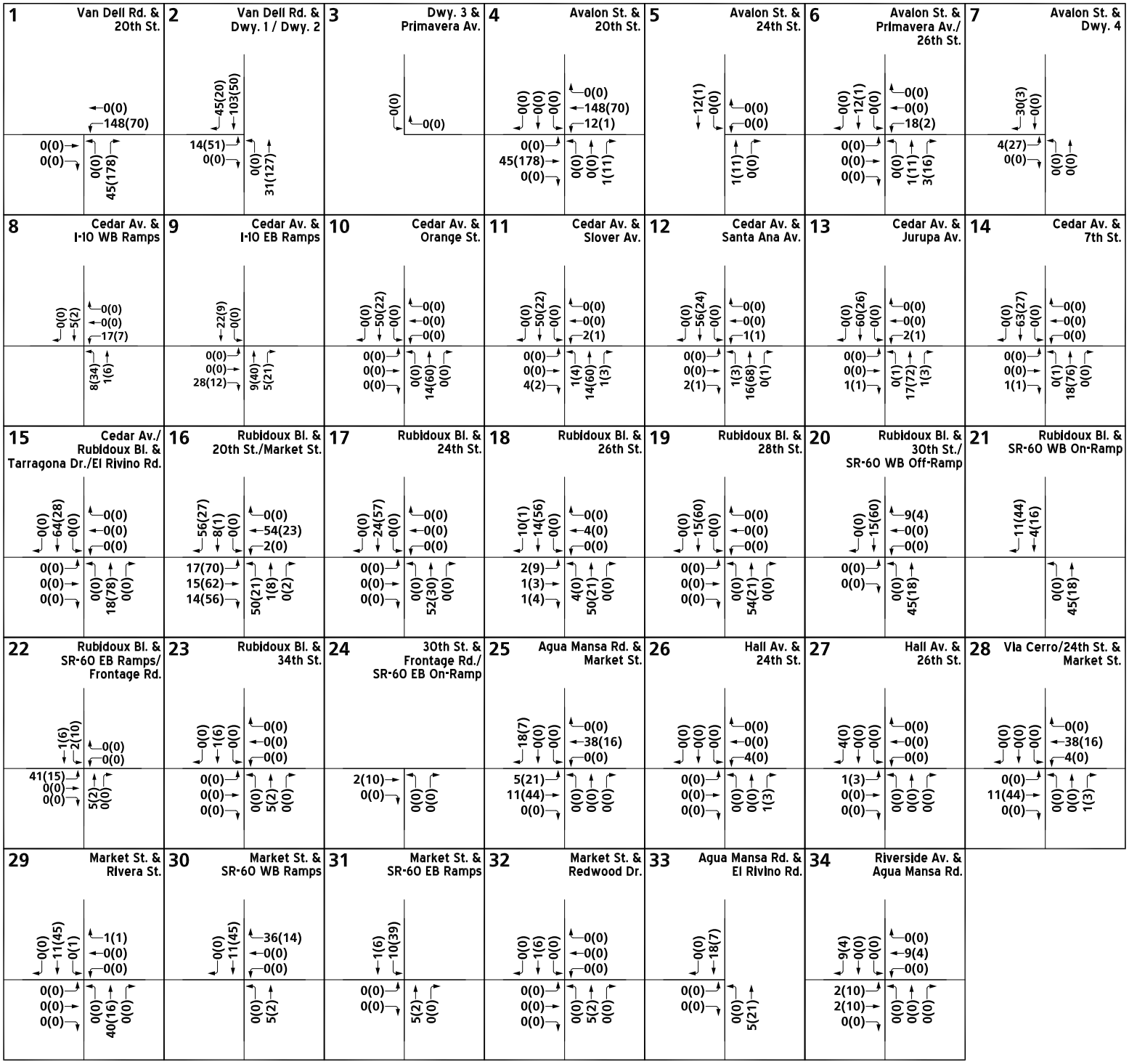
EXHIBIT 4-4: PROJECT ONLY AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

EXHIBIT 4-5: PROJECT ONLY TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

4.5 BACKGROUND TRAFFIC

4.5.1 NEAR-TERM CONDITIONS

Future year traffic forecasts have been based upon background (ambient) growth at 2.0% per year for 2023 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 6.12% for 2023 traffic conditions (growth of 2.0 percent per year over 3 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. EAP (2023) and EAPC (2023) traffic volumes are provided in Section 6 and Section 7 of this report, respectively.

4.5.2 HORIZON YEAR (2040) CONDITIONS

Horizon Year conditions represents the General Plan Buildout of the City of Jurupa Valley and is based on the RivTAM (see Section 4.7 *Horizon Year Volume Development* for additional discussion). 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. (14) 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.

Based on a comparison of Existing (2020) traffic volumes to the Horizon Year forecasts, the average growth rate is estimated at approximately 2.16%, compounded annually between Existing (2020) and 2040 traffic conditions. The annual growth rate at each individual intersection is not lower than 1.03% compounded annually to as high as 6.01% compounded annually over the same time period.

Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Jurupa Valley for near-term and Horizon Year (2040) traffic conditions, especially when considered along with the addition of project-related traffic. As such, the growth in traffic volumes assumed in this traffic impact analysis would tend to overstate as opposed to understate the potential impacts to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

California Environmental Quality Act (CEQA) guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. 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. The neighboring jurisdictions of the County of San Bernardino, City of Fontana, City of Riverside, City of Rialto, and City of Colton have also been contacted to include key projects in their respective cities.

Exhibit 4-6 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown in Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to the EAP (2023) forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-5 are reflected as part of the background traffic. Trip generation for cumulative projects they were manually added has been provided in Table 4-6. Cumulative ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-7 and 4-8, respectively.

4.7 HORIZON YEAR (2040) VOLUME DEVELOPMENT

Traffic projections for Horizon Year without Project conditions were derived from the RivTAM and SBTAM using accepted procedures for model forecast refinement and smoothing for study area intersections located within the County of Riverside and San Bernardino, respectively. The current version of the SBTAM (Version 2.20, March 2019) reflects the local input in the adopted 2016 SCAG RTP within the County of San Bernardino.

The traffic forecasts reflect the area-wide growth anticipated between Existing (2020) conditions and Horizon Year (2040) traffic conditions. In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location in May of 2019 (plus 2% growth to reflect 2020 conditions). The SBTAM has a base (validation) year of 2012 and a horizon (future forecast) year of 2040. The difference in model volumes (2040-2012) defines the growth in traffic over the 28-year period. The Riverside Transportation Analysis Model (RivTAM) has a base (validation) year of 2012 and a horizon (future forecast) year of 2040. The RivTAM 2040 model utilized for the purposes of this analysis assumes buildout of the City of Jurupa Valley.

The refined future peak hour approach and departure volumes obtained from the model output data are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

EXHIBIT 4-6: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP

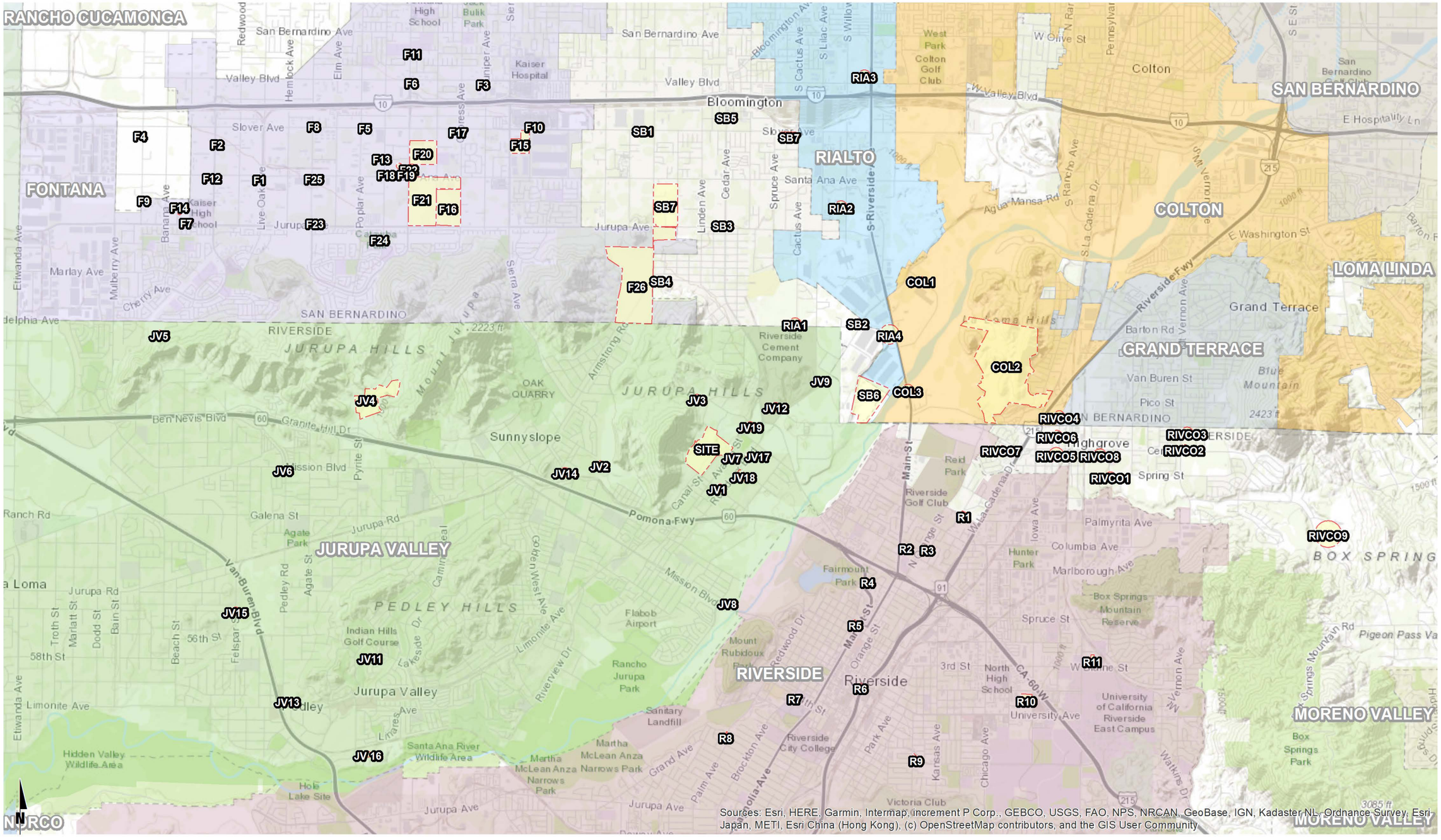


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EXHIBIT 4-7: CUMULATIVE ONLY AVERAGE DAILY TRAFFIC (ADT) (IN PCE)

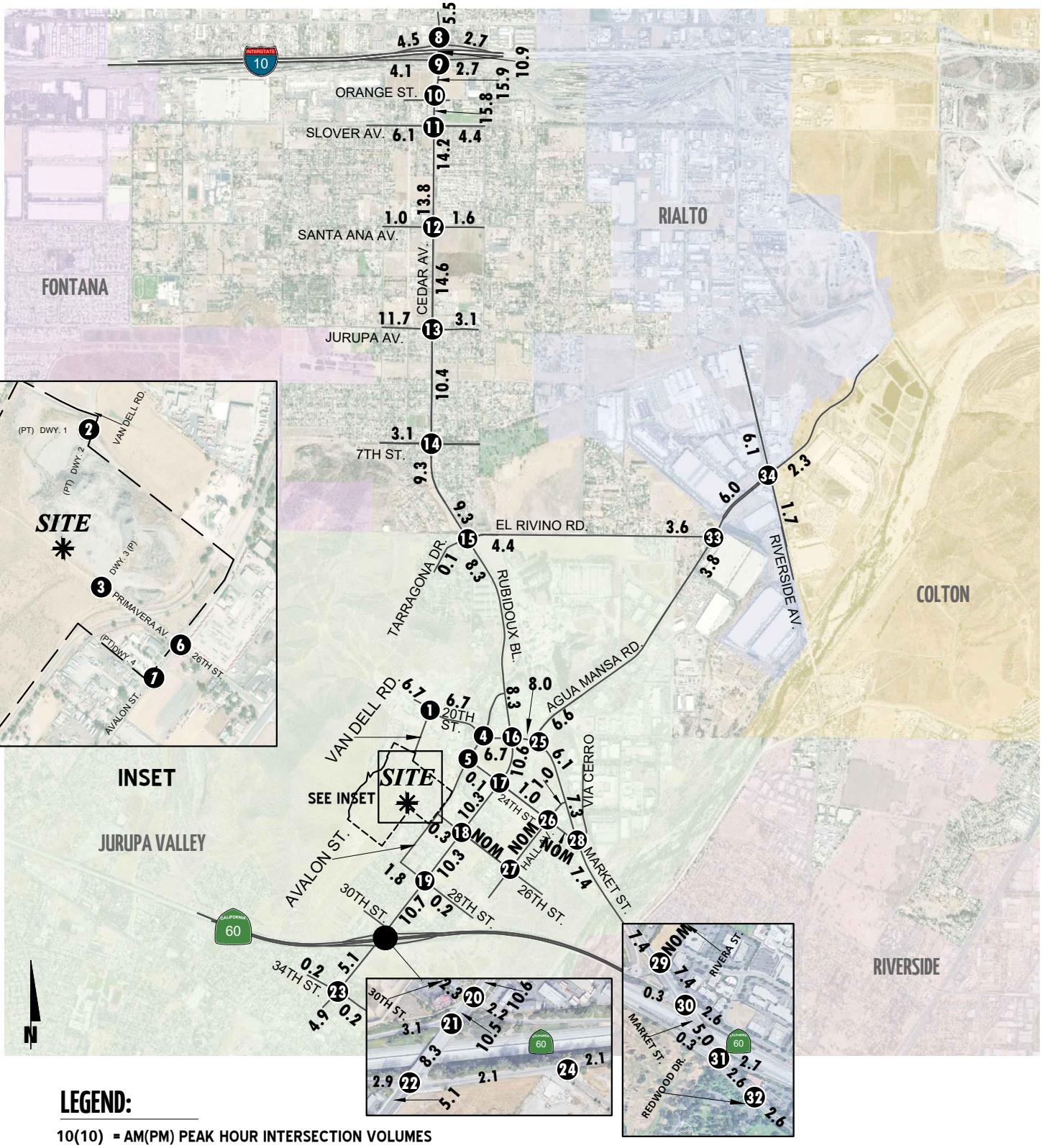
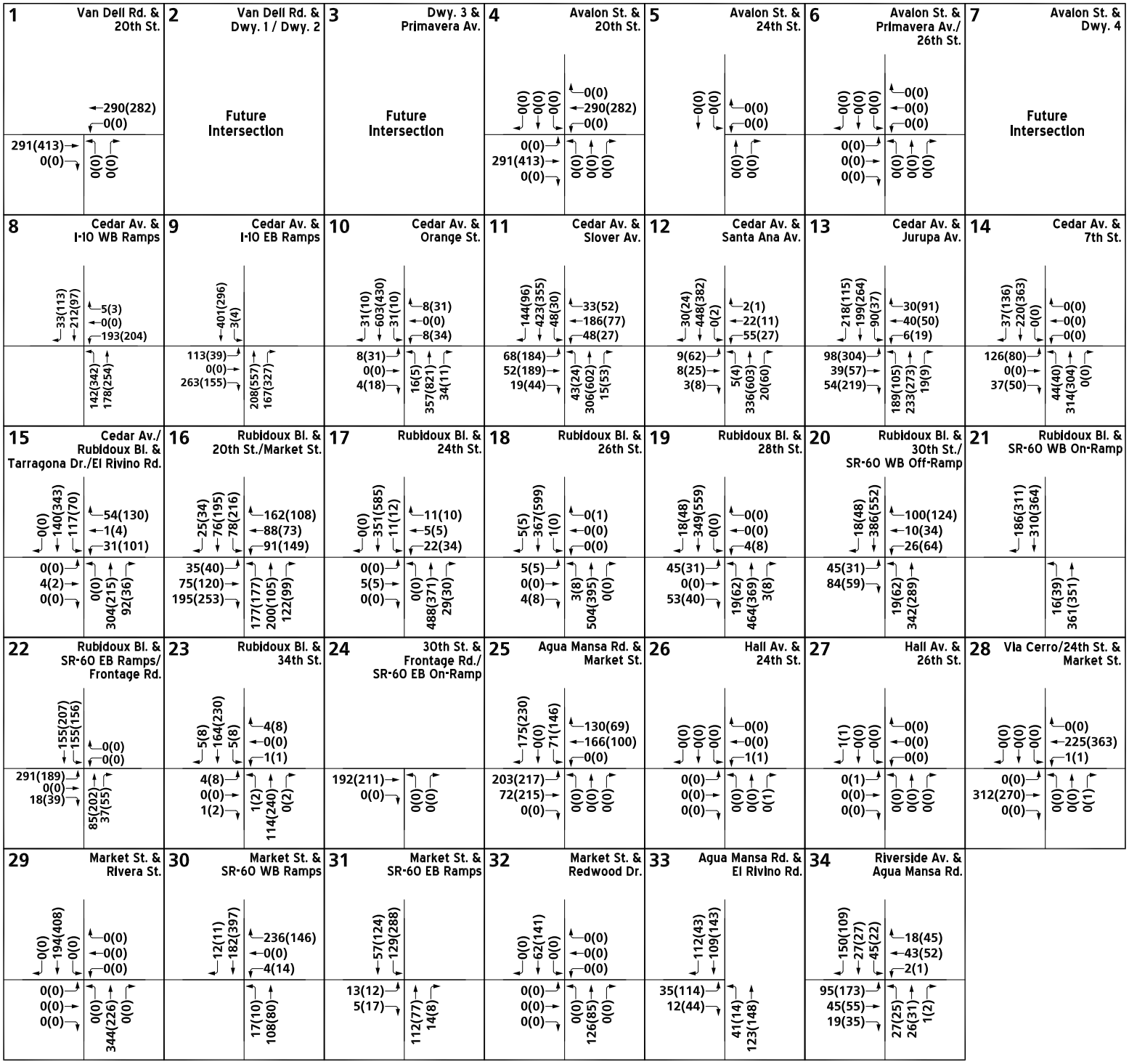


EXHIBIT 4-8: CUMULATIVE ONLY TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

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URBAN CROSSROADS

Table 4-3

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
City of Jurupa Valley				
JV1	Emerald Ridge South	SFDR	97	DU
		Condo/Townhomes	118	DU
JV2	Highland Park	SFDR	398	DU
JV3	New Rio Vista Specific Plan 243	SFDR	579	DU
		Condo/Townhomes	290	DU
		Apartment	346	DU
		Active Park	22.2	AC
		School (K-8)	600	STU
JV4	Pick-a-Part	Car Auction	50	AC
JV5	Boureston Medical Clinic	Medical Clinic	40.000	TSF
JV6	Emerald Ridge North	SFDR	184	DU
JV7	Northtown Housing Development Group	Apartments	68	DU
		Commercial Retail	31.375	TSF
JV8	Agua Mansa Commerce Park Specific Plan	High-Cube Warehouse	4277.000	TSF
		General Light Industrial	150.000	TSF
		Commercial Retail	25.000	TSF
JV9	NWC of Hall Av. & Agua Mansa	Warehouse	334.523	TSF
JV10	SEC of Opal St. and Canal St.	SFDR	41	DU
JV11	SEC of Camino Real and Limonite Av.	Multifamily Housing	121	DU
JV12	Carson Companies	Warehouse	334.523	TSF
JV13	Pearl Community	SFDR	90	DU
JV14	Home Development (TTM37211 & CZ17003)	SFDR	48	DU
JV15	Mobile Home Park	SFDR	39	DU
JV16	General & Clay Industrial Park	Warehouse	328.056	TSF
JV17	Kiewit Industrial Park	Storage Yard	25.000	TSF
		Warehouse	38.000	TSF
JV18	Midland Carriers	Warehouse	42.132	TSF
JV19	Rubidoux Commercial Development LLC	General Light Industrial	306.894	TSF
County of San Bernardino				
SB1	Slover Av. between Locust Av. and Laurel Av.	High-Cube Warehouse	344	TSF
SB2	West of Agua Mansa Rd. and North of El Rivino Rd.	High-Cube Warehouse	476.000	TSF
		Warehouse	30.000	TSF
SB3	NWC of Cedar Av. and Jurupa Av.	High-Cube Warehouse	677.000	TSF
SB4	Locust Av. and 7th St.	SFDR	198	DU
SB5	NEC and NWC of Cedar Av. and Orange St.	Warehouse	395.000	TSF
SB6	Holly Street Truck Terminal	Truck Terminal	450.000	TSF
SB7	Bloomington Commerce Center	High-Cube Warehouse	800.000	TSF
		High-Cube Fulfillment Center	451.640	TSF
SB8	Slover and Cactus Warehouse	Warehouse	257.855	TSF

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
City of Fontana				
F1	Fontana Skilled Nursing Facility (ASP 16-07)	Nursing Facility	59	Beds
F2	Industrial Repair Facility (ASP 16-13)	General Light Industrial	17.930	TSF
F3	Retail Center with Gas Station (ASP 16-18)	Shopping Center	18.800	TSF
		Gas Station	16	VFP
F4	Starbucks (ASP 16-36)	Coffee/Donut Shop w/ Drive-thru	2.500	TSF
F5	DRP 16-05	SFDR	7	DU
F6	Light Industrial Building (DRP 16-13)	General Light Industrial	230.300	TSF
F7	Fontana South Walmart	Walmart	200.000	TSF
		Fuel Station	16	VFP
		Shopping Center	5.340	TSF
		Fast Food w/o Drive-Thru	5.340	TSF
F8	Citrus Commerce Center (NWC of Oleander and Jurupa)	High-Cube Warehouse	2171.449	TSF
F9	Arrow Recovery Group (TPM 14-18)	General Light Industrial	73.020	TSF
F10	NWC of Citrus and Santa Ana	High-Cube Warehouse	431.530	TSF
F11	SEC of Catawba and Santa Ana	High-Cube Warehouse	319.100	TSF
F12	Citrus Center	General Office	47.000	TSF
		Shopping Center	44.500	TSF
		Fast Food	8.658	TSF
F13	Southwest Industrial Park[5]	General Light Industrial	6018.092	TSF
		Manufacturing	1113.002	TSF
		High-Cube Warehouse	12414.730	TSF
		Single Family	397.000	DU
		Church	103.670	TSF
		General Office	1584.670	TSF
		Office Park	3095.710	TSF
		Research & Development	1626.490	TSF
		Shopping Center	1638.790	TSF
F14	Seefried	High-Cube Warehouse	424.000	TSF
F15	DCT Industrial	High-Cube Warehouse	971.000	TSF
F16	West Valley Logistics Center	Warehouse	290.590	TSF
		High-Cube Warehouse	3183.100	TSF
City of Rialto				
RIA1	Panattoni I-10 (Cactus Av. & El Rivino Rd.)	Warehouse	2,475.745	TSF
RIA2	CapRock III	Warehouse	582.000	TSF
RIA3	Newmark Merrill Companies	Discount Super Store	198.000	TSF
		Tire Store	9.861	TSF
		Retail	25.436	TSF
		Fast Food w/ Drive-Thru	5.484	TSF
RIA4	Kore Infrastructure	Biosolids Facility	288	TPD

Cumulative Development Land Use Summary

ID	Project Name	Land Use[1]	Quantity	Units[2]
City of Colton				
COL1	2036 Miguel Bustamante Pkwy.	Warehouse	124.588	TSF
	2053 Miguel Bustamante Pkwy.	Warehouse	174.996	TSF
COL2	Roquet Ranch	SFDR	754	DU
		Condo/Townhomes	244	DU
		Active Adult - Attached	52	DU
		Shopping Center	6.500	TSF
		Coffee Shop with Drive Thru	1.500	TSF
		Fast Food with Drive Thru	4.000	TSF
		Active Park[2, 4]	11.1	AC
		Passive Park[4]	8.4	AC
COL3	2163 Riverside Av.	High Cube Warehouse	447.330	TSF
City of Riverside				
R1	P06-0782 (Tract Map 34908) (1006 & 1008 Clark St.)	SFDR	15	DU
R2	P05-0269 & P08-0416 (Tract Map 33550) (3719 Strong St.)	SFDR	9	DU
R3	P06-1031 (Tract Map 31825) (1562 Orange St.)	SFDR	7	DU
R4	P13-0087 P13-0262 (2450 Market St.)	Senior Housing	67	DU
R5	P14-0183 (Centerpointe Apartments) (3105 Market St.)	Apartments	146	DU
R6	P09-0835 P10-0002 (3372 University Av.)	General Office	132.136	TSF
R7	P06-1237 (Jacobs Medical Office) (14th and Brockton Av.)	Medical Office	65.281	TSF
R8	P12-0799 & P12-0800 (Tract Map 36516)	SFDR	7	DU
R9	P09-0808 & P08-0809 (2340 14th St.)	Senior Housing	134	Beds
R10	P08-0980 & P09-0095 (3549 Iowa Av.)	Student Housing	114	Beds

[1] SFDR = Single Family Detached Residential

[2] DU = Dwelling Units; TSF = Thousand Square Feet; STU = Students; AC = Acres; TPD = Tons Per Day; VFP = Vehicle Fueling Positions

Table 4-4

Cumulative Development Trip Generation Summary

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Project Trip Generation Summary (Actual)									
JV18: Midland Carriers	42.132	TSF							
Passenger Cars:			4	1	5	2	5	7	50
Truck Trips:									
2-axle:			0	0	0	0	0	0	4
3-axle:			0	0	0	0	0	0	6
4+-axle:			1	0	1	0	1	1	16
- Net Truck Trips			1	0	1	0	1	1	26
WAREHOUSING TOTAL NET TRIPS (Actual Vehicles) [2]			**5**	**1**	**6**	**2**	**6**	**8**	**76**
JV12: Carson Companies	334.523	TSF							
Passenger Cars:			27	8	35	13	35	48	586
Truck Trips:									
2-4 axle:			2	1	3	1	3	4	54
5+-axle:			3	1	4	1	2	3	74
- Net Truck Trips			5	2	7	2	5	7	128
FULFILLMENT CENTER TOTAL NET TRIPS (Actual Vehicles) [2]			**32**	**10**	**42**	**15**	**40**	**55**	**714**
Total (Actual Vehicles)			**37**	**11**	**48**	**17**	**46**	**63**	**790**
Project Trip Generation Summary (PCE)									
JV18: Midland Carriers	42.132	TSF							
Passenger Cars:			4	1	5	2	5	7	50
Truck Trips:									
2-axle:			0	0	0	0	0	0	6
3-axle:			1	0	1	0	1	1	10
4+-axle:			3	1	4	1	2	3	44
- Net Truck Trips			4	1	5	1	3	4	60
WAREHOUSING TOTAL NET TRIPS (PCE) [2]			**8**	**2**	**10**	**3**	**8**	**11**	**110**
JV12: Carson Companies	334.523	TSF							
Passenger Cars:			27	8	35	13	35	48	586
Truck Trips:									
2-4 axle:			4	1	5	2	5	7	108
5+-axle:			9	3	12	3	7	10	218
- Net Truck Trips			13	4	17	5	12	17	326
FULFILLMENT CENTER TOTAL NET TRIPS (PCE) [2]			**40**	**12**	**52**	**18**	**47**	**65**	**912**
Total (PCE)			**48**	**14**	**62**	**21**	**55**	**76**	**1,022**

[1] TSF = thousand square feet

[2] TOTAL NET TRIPS = Passenger Cars + Net Truck Trips.

The SBTAM uses an AM peak period-to-peak hour factor of 0.35 and a PM peak period-to-peak hour factor of 0.27. These factors represent the relationship of the highest single AM peak hour to the modeled 3-hour AM peak period (an even distribution would result in a factor of 0.33) and the highest single PM peak hour to the modeled 4-hour PM peak period (an even distribution would result in a factor of 0.25). The model data from RivTAM represents peak hour data and therefore did not require adjustments.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing, EAP, and EAPC traffic conditions were not assumed as part of this analysis. As such, in conjunction with the addition of cumulative projects that are not consistent with the General Plan, additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year forecasts. Horizon Year turning volumes were compared to EAPC (2023) volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between EAPC (2023) and Horizon Year (2040) traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2020) and EAPC (2023) conditions.

Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year (2040) peak hour forecasts.

The future Horizon Year (2040) Without Project peak hour turning movements were then reviewed by Urban Crossroads, Inc. for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two adjacent driveway locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

RivTAM and SBTAM either do not include a truck component or have data that is unusually low. As such, in an effort to conduct a conservative analysis, the presence of trucks has been accounted for based on the manual volume adjustments made to demonstrate growth above EAPC (2023) traffic forecasts, which are presented and evaluated in PCE (see Section 3.7 *Existing (2020) Traffic Counts* for discussion on PCE). As such, the Horizon Year (2040) forecasts are also assumed to be in PCE for the purposes of this analysis. Post-processing worksheets for Horizon Year (2040) Without Project traffic conditions are provided in Appendix 4.1.

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5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

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

5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT volumes and weekday AM and PM peak hour intersection turning movement volumes which can be expected for E+P traffic conditions are shown on Exhibits 5-1 and 5-2, respectively.

5.3 INTERSECTION OPERATIONS ANALYSIS

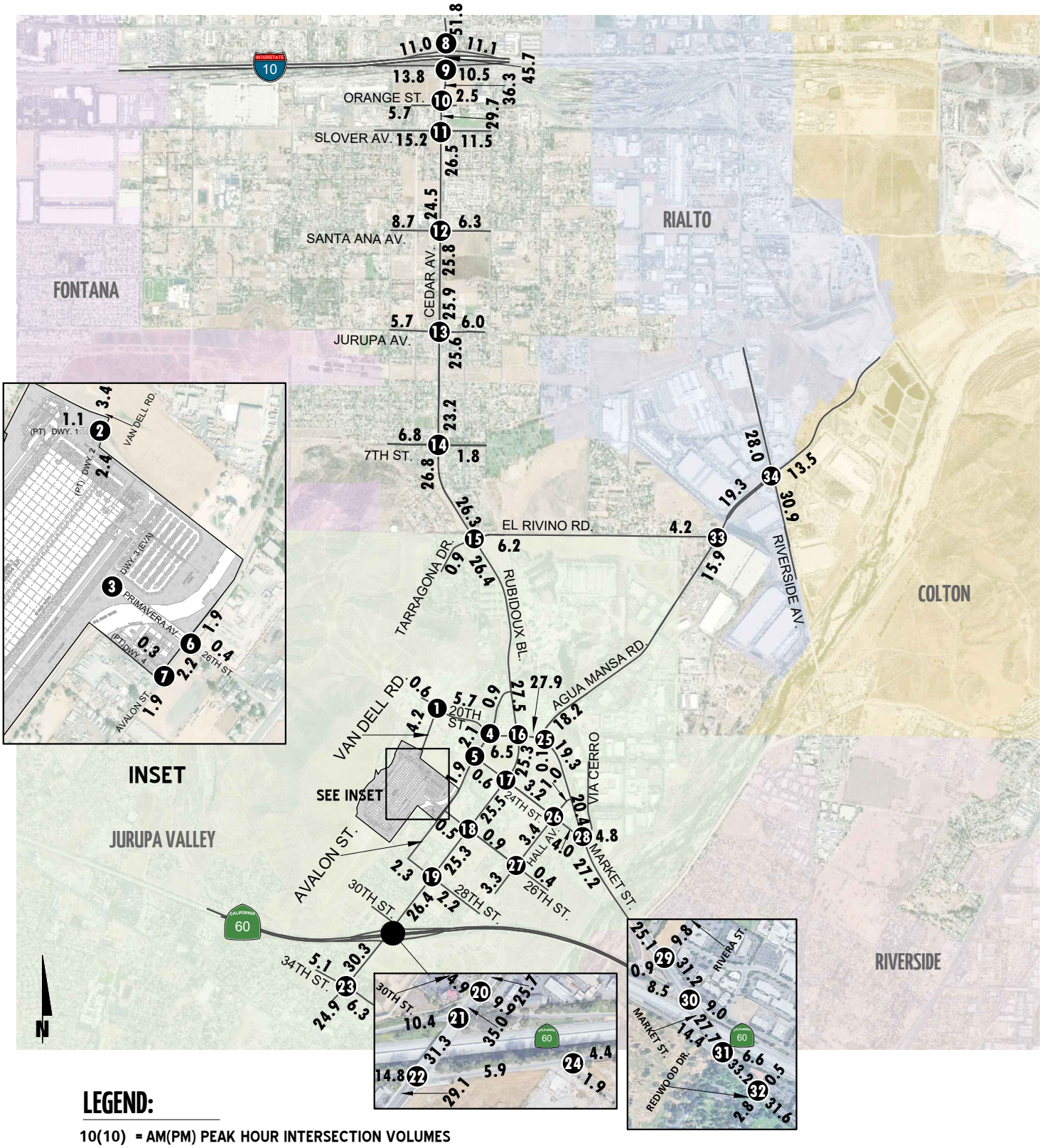
E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TIA. The intersection analysis results are summarized in Table 5-1, which indicates that there are no study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic, in addition to the locations identified previously for Existing traffic conditions. Consistent with Table 5-1, a summary of the peak hour intersection LOS for E+P conditions is shown on Exhibit 5-3. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix 5.1.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following study area intersection is anticipated to warrant a peak hour traffic signal under E+P traffic conditions (see Appendix 5.2):

- Rubidoux Boulevard & 26th Street (#18)

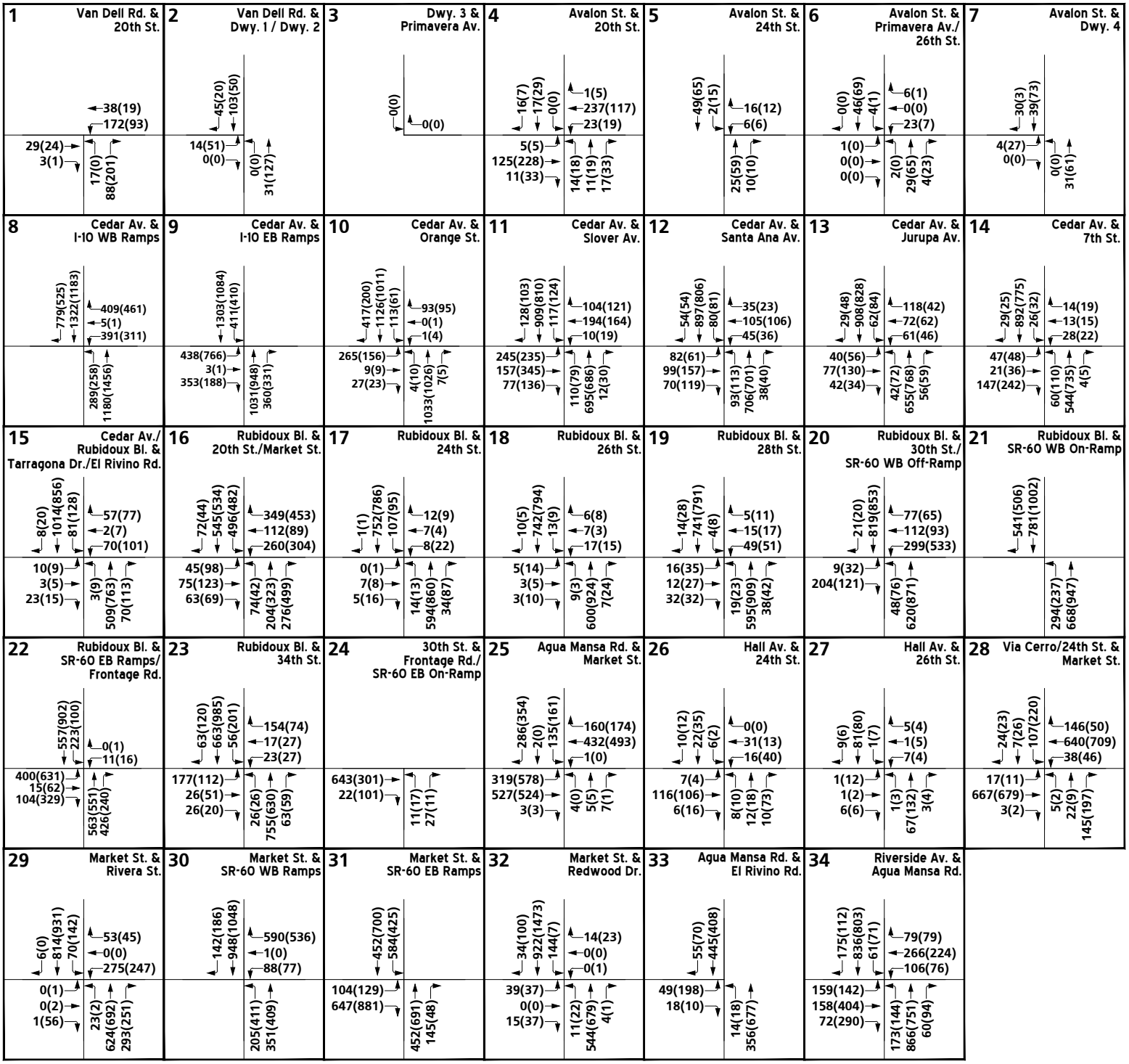
EXHIBIT 5-1: E+P AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

EXHIBIT 5-2: E+P TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

11759 - vols-c2.dwg

URBAN CROSSROADS

EXHIBIT 5-3: E+P SUMMARY OF LOS

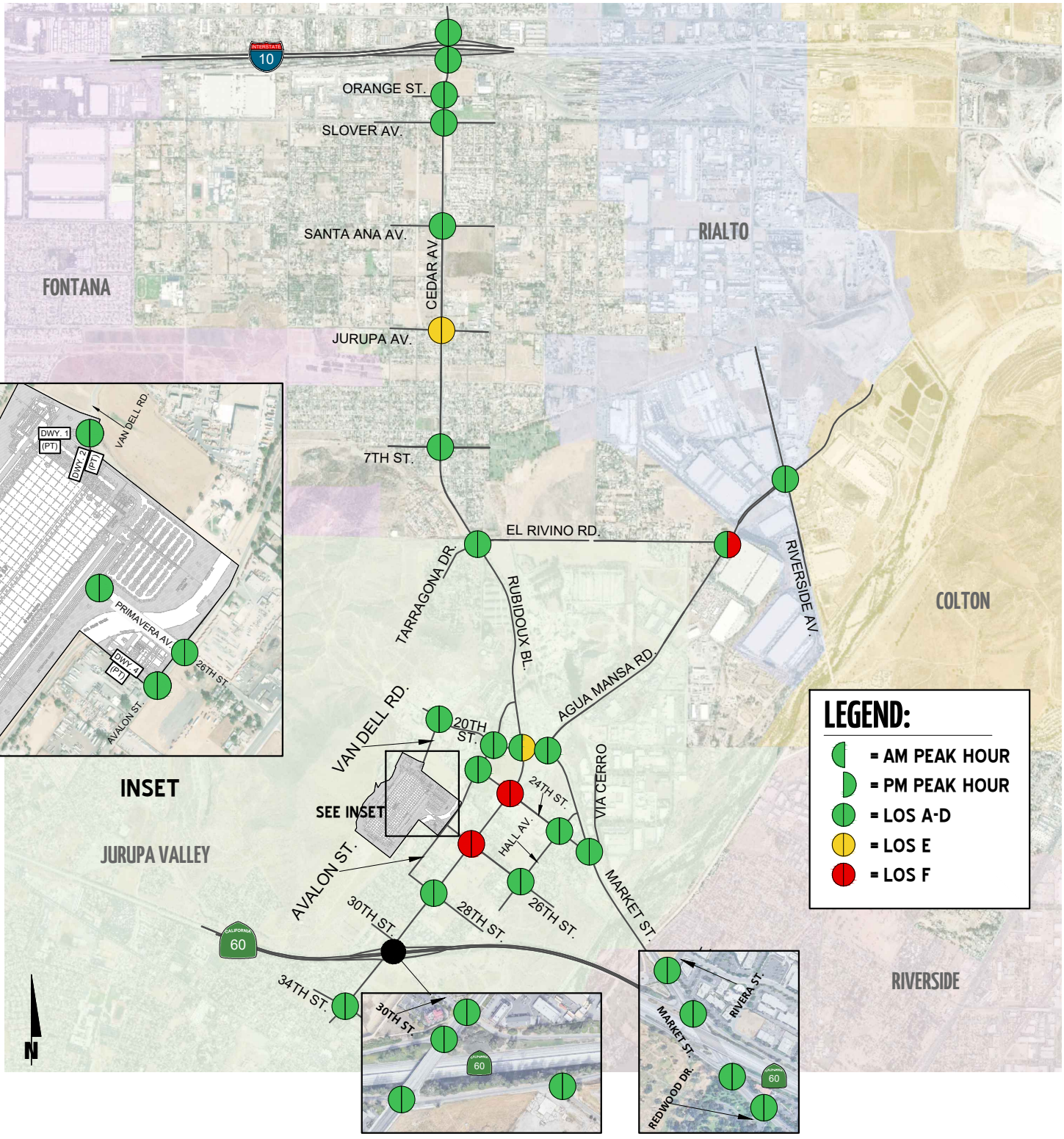


Table 5-1

Intersection Analysis for E+P Conditions

#	Intersection	Traffic Control[2]	Existing (2020) Delay[1] (secs.) AM	Existing (2020) Delay[1] (secs.) PM	Existing (2020) Level of Service AM	Existing (2020) Level of Service PM	E+P Delay[1] (secs.) AM	E+P Delay[1] (secs.) PM	E+P Level of Service AM	E+P Level of Service PM	Change in Delay[3] AM	Change in Delay[3] PM
1	Van Dell Rd. & 20th St.	CSS	9.0	8.5	A	A	9.8	9.5	A	A	--	--
2	Van Dell Rd. & Driveway 1/Driveway 2	**CSS**	Future Intersection				9.6	10.1	A	B	--	--
3	Driveway 3 & Primavera St.	**CSS**	Future Intersection				0.0	0.0	A	A	--	--
4	Avalon St. & 20th St.	CSS	10.3	10.4	B	B	12.5	13.0	B	B	--	--
5	Avalon St. & 24th St.	CSS	9.0	9.4	A	A	9.1	9.5	A	A	--	--
6	Avalon St. & Primavera Av./26th St.	CSS	9.1	9.2	A	A	9.2	9.4	A	A	--	--
7	Avalon St. & Driveway 4	**CSS**	Future Intersection				9.0	9.4	A	A	--	--
8	Cedar Av. & I-10 WB Ramps	TS	25.7	25.5	C	C	26.8	26.7	C	C	--	--
9	Cedar Av. & I-10 EB Ramps	TS	36.0	36.7	D	D	36.7	37.9	D	D	--	--
10	Cedar Av. & Orange St.	0	21.1	10.8	C	B	21.6	10.8	C	B	--	--
11	Cedar Av. & Slover Av.	TS	38.6	25.3	D	C	39.1	25.6	D	C	--	--
12	Cedar Av. & Santa Ana Av.	TS	31.4	44.4	C	D	32.2	44.8	C	D	--	--
13	Cedar Av. & Jurupa Av.	TS	**69.1**	**66.5**	**E**	**E**	**69.4**	**66.9**	**E**	**E**	--	--
14	Cedar Av. & 7th St.	TS	13.4	17.3	B	B	13.4	17.6	B	B	--	--
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	TS	9.9	11.6	A	B	10.0	11.7	A	B	--	--
16	Rubidoux Bl. & 20th St./Market St.	TS	46.1	**60.4**	D	**E**	45.4	**78.7**	D	**E**	--	18.3
17	Rubidoux Bl. & 24th St.	CSS	**48.2**	**>100.0**	**E**	**F**	**56.4**	**>100.0**	**F**	**F**	8.2	>3.0
18	Rubidoux Bl. & 26th St.	CSS	27.8	**43.5**	D	**E**	**35.4**	**50.7**	**E**	**F**	7.6	7.2
19	Rubidoux Bl. & 28th St.	TS	10.2	12.1	B	B	10.4	12.5	B	B	--	--
20	Rubidoux Bl. & SR-60 WB Off-Ramp	TS	28.4	48.6	C	D	28.7	49.0	C	D	--	--
21	Rubidoux Bl. & SR-60 WB On-Ramp	UC	19.6	15.8	C	C	19.4	17.4	C	C	--	--
22	Rubidoux Bl. & SR-60 EB Ramps	TS	27.0	33.0	C	C	28.4	35.3	C	D	--	--
23	Rubidoux Bl. & 34th St.	TS	16.1	20.1	B	C	16.2	20.1	B	C	--	--
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	CSS	14.1	10.7	B	B	14.1	10.8	B	B	--	--
25	Agua Mansa Rd. & Market St.	TS	26.0	35.7	C	D	26.9	37.6	C	D	--	--
26	Hall Av. & 24th St.	CSS	8.1	8.1	A	A	8.2	8.1	A	A	--	--
27	Hall Av. & 26th St.	CSS	9.5	10.1	A	B	9.6	10.1	A	B	--	--
28	Via Cerro/24th St. & Market St.	TS	22.4	28.4	C	C	23.1	28.9	C	C	--	--
29	Market St. & Rivera St.	TS	11.0	19.4	B	B	11.2	19.2	B	B	--	--
30	Market St. & SR-60 WB Ramps	TS	8.7	10.7	A	B	8.7	10.9	A	B	--	--
31	Market St. & SR-60 EB Ramps	TS	19.9	24.8	B	C	20.1	24.9	C	C	--	--
32	Market St. & Redwood Dr.	CSS	18.7	18.6	C	C	18.7	18.7	C	C	--	--
33	Agua Mansa Rd. & El Rivino Rd.	CSS	17.5	**>100.0**	C	**F**	18.0	**>100.0**	C	**F**	--	--
34	Riverside Av. & Agua Mansa Rd.	TS	37.8	35.3	D	D	39.6	36.1	D	D	--	--

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

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

[2] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; UC = Uncontrolled; **CSS** = Improvement

[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 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, and SR-60 Freeway at Market Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway or SR-60 Freeway mainline. Queuing analysis findings are presented in Table 5-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 5-2, there are no additional movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under E+P traffic conditions, in addition to the movement previously identified under Existing (2020) traffic conditions. It should be noted, although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. Worksheets for E+P traffic conditions off-ramp queuing analysis are provided in Appendix 5.3.

5.6 FREEWAY FACILITY ANALYSIS

E+P mainline directional volumes for the AM and PM peak hours are provided on Exhibit 5-4. As shown in Table 5-3, there are no additional freeway mainline segments and merge/diverge ramp junctions anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for E+P traffic conditions, in addition to the freeway mainline segments and merge/diverge ramp junctions previously identified under Existing (2020) traffic conditions. E+P freeway facility analysis worksheets are provided in Appendix 5.4.

5.7 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements for E+P traffic conditions. Based on deficiency criteria discussed in Section 2.7 *Minimum Acceptable Levels of Service (LOS) and Intersection Deficiency Criteria*, the following intersections were found to be deficient. Improvements necessary to improve these traffic deficiencies back to acceptable levels are also discussed below.

Table 5-2

Peak Hour Freeway Off-Ramp Queuing Summary for E+P Conditions

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2020)				E+P			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
Cedar Av. & I-10 WB Ramps	WBL/T/R	1,270	464 [2]	515 [2]	Yes	Yes	493 [2]	523 [2]	Yes	Yes
	WBR	480	328	428 [2]	Yes	Yes	328	438 [2]	Yes	Yes
Cedar Av. & I-10 EB Ramps	EBL	400	394 [2]	**682** [2,3]	Yes	**No**	394 [2]	**697** [2,3]	Yes	**No**
	EBL/T/R	1,900	323	602 [2]	Yes	Yes	362 [2]	608 [2]	Yes	Yes
Rubidoux Bl. & SR-60 WB Off-Ramp	WBL/T/R	1,250	509 [2]	781 [2]	Yes	Yes	517 [2]	782 [2]	Yes	Yes
Rubidoux Bl. & SR-60 EB Off-Ramp	EBL/T/R	1,100	178	444 [2]	Yes	Yes	196	458 [2]	Yes	Yes
Market St. & SR-60 WB Ramps	WBL	170	120 [2]	91	Yes	Yes	120 [2]	91	Yes	Yes
	WBR[4]	1,350	0	0	Yes	Yes	0	0	Yes	Yes
Market St. & SR-60 EB Ramps	EBL	155	95	91	Yes	Yes	95	91	Yes	Yes
	EBR	1,635	92	246	Yes	Yes	93	248	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline.

[4] Movement is a free-right turn lane. As such, there is no queue during the peak hours.

Table 5-3

Freeway Facility Analysis for E+P Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Existing (2020)				E+P			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	30.6	D	27.1	D	30.6	D	27.2	D
		On-Ramp at Cedar Av.	4	30.0	D	26.7	C	30.0	D	27.0	C
		Off-Ramp at Cedar Av.	5	21.2	C	20.4	C	21.7	C	20.5	C
		East of Cedar Av.	5	22.0	C	20.7	C	22.5	C	20.8	C
	Eastbound	West of Cedar Av.	4	24.1	C	27.2	D	24.2	C	27.3	D
		Off-Ramp at Cedar Av.	5	18.5	C	20.5	C	18.8	C	20.5	C
		On-Ramp at Cedar Av.	4	24.7	C	25.7	C	24.7	C	25.8	C
		East of Cedar Av.	4	24.5	C	26.0	C	24.5	C	26.1	D
SR-60	Westbound	West of Rubidoux Bl.	3	29.4	D	**36.2**	**E**	29.4	D	**36.5**	**E**
		On-Ramp at Rubidoux Bl.	3	30.9	D	34.1	D	30.9	D	34.4	D
		Off-Ramp at Rubidoux Bl.	3	31.4	D	**36.0**	**E**	31.4	D	**36.0**	**E**
		Rubidoux Bl. to Market St.	3	27.5	D	**36.6**	**E**	27.5	D	**36.6**	**E**
		On-Ramp at Market St.	3	29.0	D	34.9	D	29.0	D	34.9	D
		Off-Ramp at Market St.	3	32.9	D	**36.0**	**E**	33.4	D	**36.1**	**E**
		East of Market St.	3	29.4	D	**36.6**	**E**	30.1	D	**36.8**	**E**
	Eastbound	West of Rubidoux Bl.	3	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**
		Off-Ramp at Rubidoux Bl.	3	**43.4**	**F**	**40.5**	**F**	**43.7**	**F**	**40.5**	**F**
		On-Ramp at Rubidoux Bl.	3	**41.8**	**F**	**33.6**	**F**	**41.8**	**F**	**33.5**	**F**
		Rubidoux Bl. to Market St.	3	**38.1**	**F**	**36.1**	**F**	**38.1**	**F**	**36.0**	**F**
		Off-Ramp at Market St.	3	**37.2**	**F**	**37.0**	**F**	**37.2**	**F**	**37.0**	**F**
		On-Ramp at Market St.	3	**35.3**	**F**	**31.1**	**F**	**35.4**	**F**	**31.3**	**F**
		East of Market St.	3	**37.5**	**F**	**30.5**	**F**	**37.6**	**F**	**30.8**	**F**

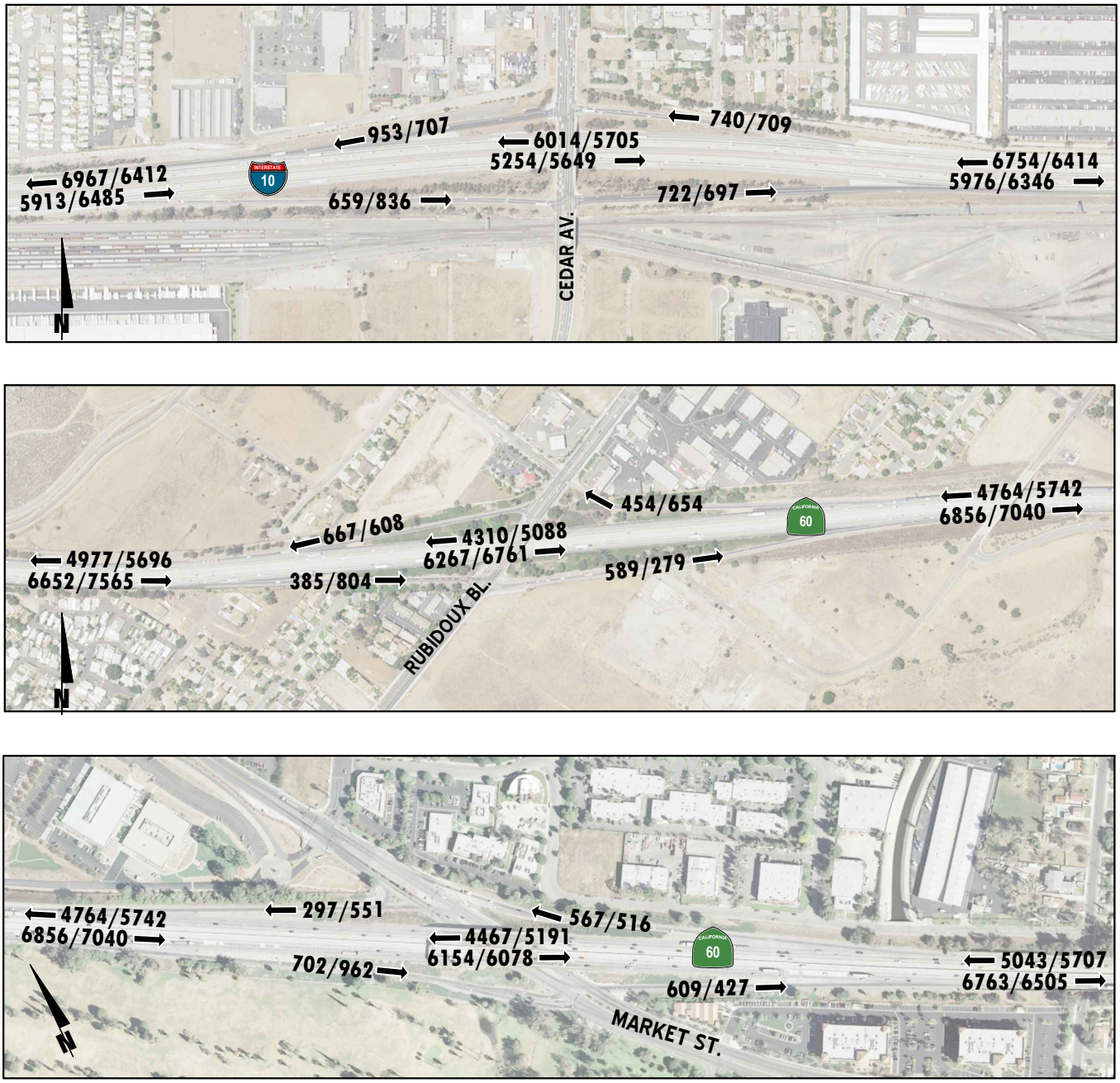
* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 5-4: E+P FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

5.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the proposed recommended improvements is presented in Table 5-4 for E+P traffic conditions. The recommended improvements for E+P traffic conditions are consistent with Existing (2020) traffic conditions and are discussed below. The intersection operations analysis worksheets for E+P traffic conditions, with improvements, are included in Appendix 5.5 of this TIA.

Recommended Improvement – Cedar Avenue & Jurupa Avenue (#13) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide one left turn lane and one shared through-right turn lane.
- Restripe the westbound approach to provide one left turn lane and one shared through-right turn lane.

Recommended Improvement – Rubidoux Boulevard & 20th Street/Market Street (#16) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 24th Street (#17) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 26th Street (#18) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

It should be noted, the Project will construct the improvements at this intersection as part of the Project design features.

Recommended Improvement – Agua Mansa Road & El Rivino Road (#33) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

Table 5-4

Intersection Analysis for E+P Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
13	Cedar Av. & Jurupa Av.																	
	Existing Conditions:																	
	-Without Improvements	TS	1	2	0	1	2	0	0	1	d	0	1	d	**69.1**	**66.5**	**E**	**E**
	-With Improvements	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	35.5	22.3	D	C
	E+P:																	
	-Without Improvements	TS	1	2	0	1	2	0	0	1	d	0	1	d	**69.4**	**66.9**	**E**	**E**
	-With Improvements	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	36.2	22.9	D	C
16	Rubidoux Bl. & 20th St./Market St.																	
	Existing Conditions:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	46.1	**60.4**	D	**E**
	-With Improvements[4]	TS	1	2	1	1	2	1	1	1	0	**1**	1	1>>	40.8	50.7	D	D
	E+P:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	45.4	**78.7**	D	**E**
	-With Improvements[4]	TS	1	2	1	1	2	1	1	1	0	**1**	1	1>>	42.7	54.5	D	D
17	Rubidoux Bl. & 24th St.																	
	Existing Conditions:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**48.2**	**>100.0**	**E**	**F**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	9.6	10.0	A	A
	E+P:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**56.4**	**>100.0**	**F**	**F**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	10.1	10.1	B	B
18	Rubidoux Bl. & 26th St.																	
	Existing Conditions:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	27.8	**43.5**	D	**E**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	5.3	5.5	A	A
	E+P:																	
	-Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**35.4**	**50.7**	**E**	**F**
	-With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	6.1	6.2	A	A
33	Agua Mansa Rd. & El Rivino Rd.																	
	Existing Conditions:																	
	-Without Improvements	CSS	1	1	0	0	1	0	0	1	0	0	0	0	17.5	**>100.0**	C	**F**
	-With Improvements	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	8.2	11.5	A	B
	E+P:																	
	-Without Improvements	CSS	1	1	0	0	1	0	0	1	0	0	0	0	18.0	**>100.0**	C	**F**
	-With Improvements	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	8.3	11.6	A	B

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

L = Left; T = Through; R = Right; >> = Free Right Turn Lane; **1** = Improvement

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

[3] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

5.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 5-2, there are no anticipated peak hour queuing issues at the SR-60 Freeway at Rubidoux Boulevard and SR-60 Freeway at Market Street interchanges. At the I-10 Freeway at Cedar Avenue interchange, the 95th percentile queue is anticipated to exceed the available storage for the turn lane, however the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. As such, no improvements have been recommended.

5.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 5-3, there are study area freeway mainline segments and ramp junctions that are anticipated to operate at an unacceptable LOS for E+P traffic conditions. At this time, Caltrans has no fee programs or other improvement programs in place to address the deficiencies caused by development projects in the City of Jurupa Valley (or other neighboring jurisdictions) on the SHS roadway segments. As such, no improvements have been recommended to address the E+P deficiencies on the SHS.

6 EAP (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAP (2023) traffic forecasts, and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

6.1 ROADWAY IMPROVEMENTS

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

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2023) conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).

6.2 EAP (2023) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12% plus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for EAP (2023) traffic conditions are shown on Exhibits 6-1 and 6-2, respectively.

6.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAP (2023) conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, there are no additional study area intersections anticipated to operate at an unacceptable LOS under EAP (2023) traffic conditions, in addition to the locations identified previously for Existing (2020) traffic conditions. A summary of the peak hour intersection LOS for EAP (2023) traffic conditions is shown on Exhibit 6-3. The intersection operations analysis worksheets for EAP (2023) traffic conditions are included in Appendix 6.1.

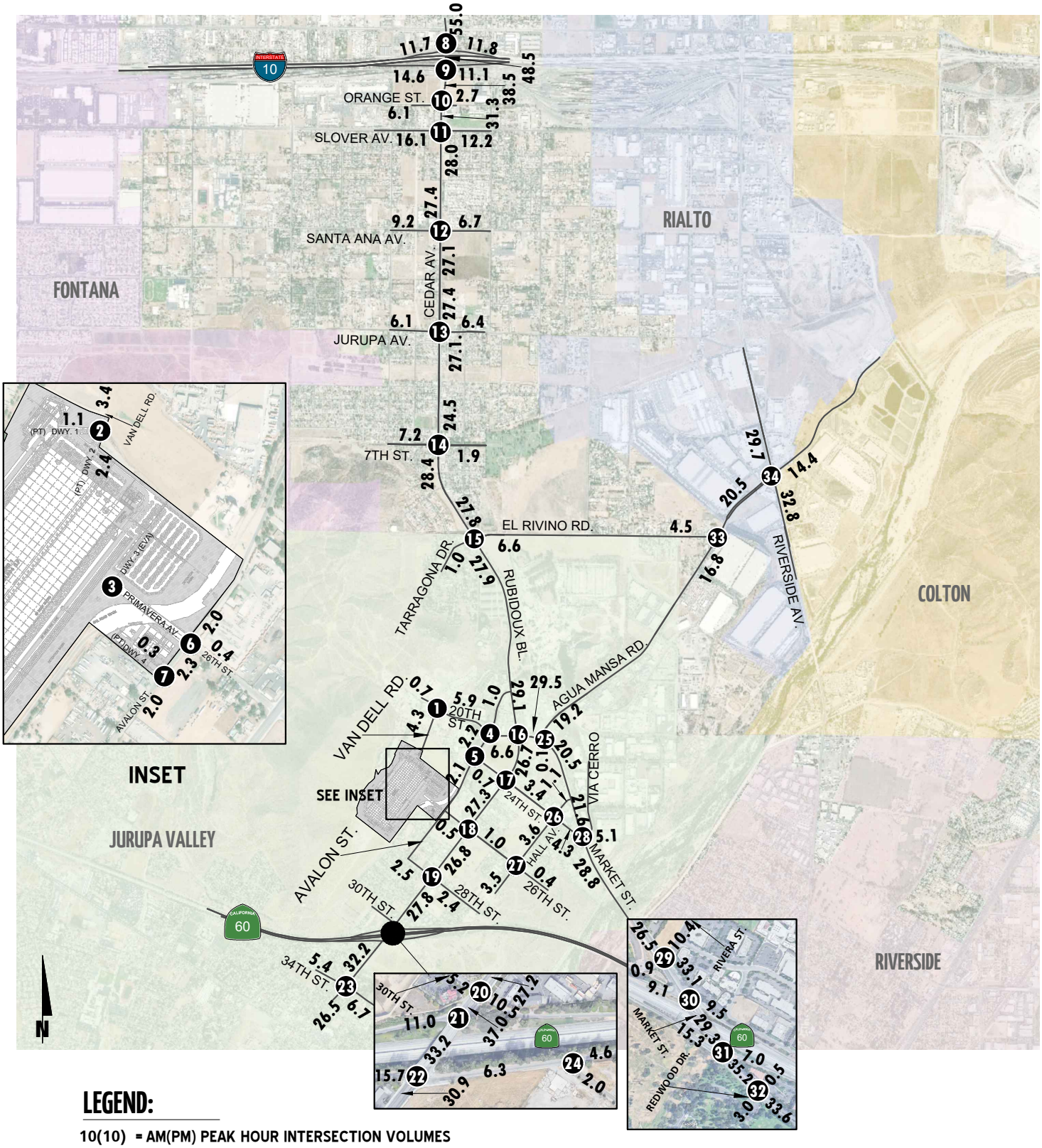
6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following study area intersection is anticipated to warrant a traffic signal for EAP (2023) traffic conditions, in addition to the intersections previously warranted under E+P traffic conditions:

- Agua Mansa Rd. & El Rivino Rd. (#33)

EAP (2023) conditions traffic signal warrant analysis worksheets are provided in Appendix 6.2.

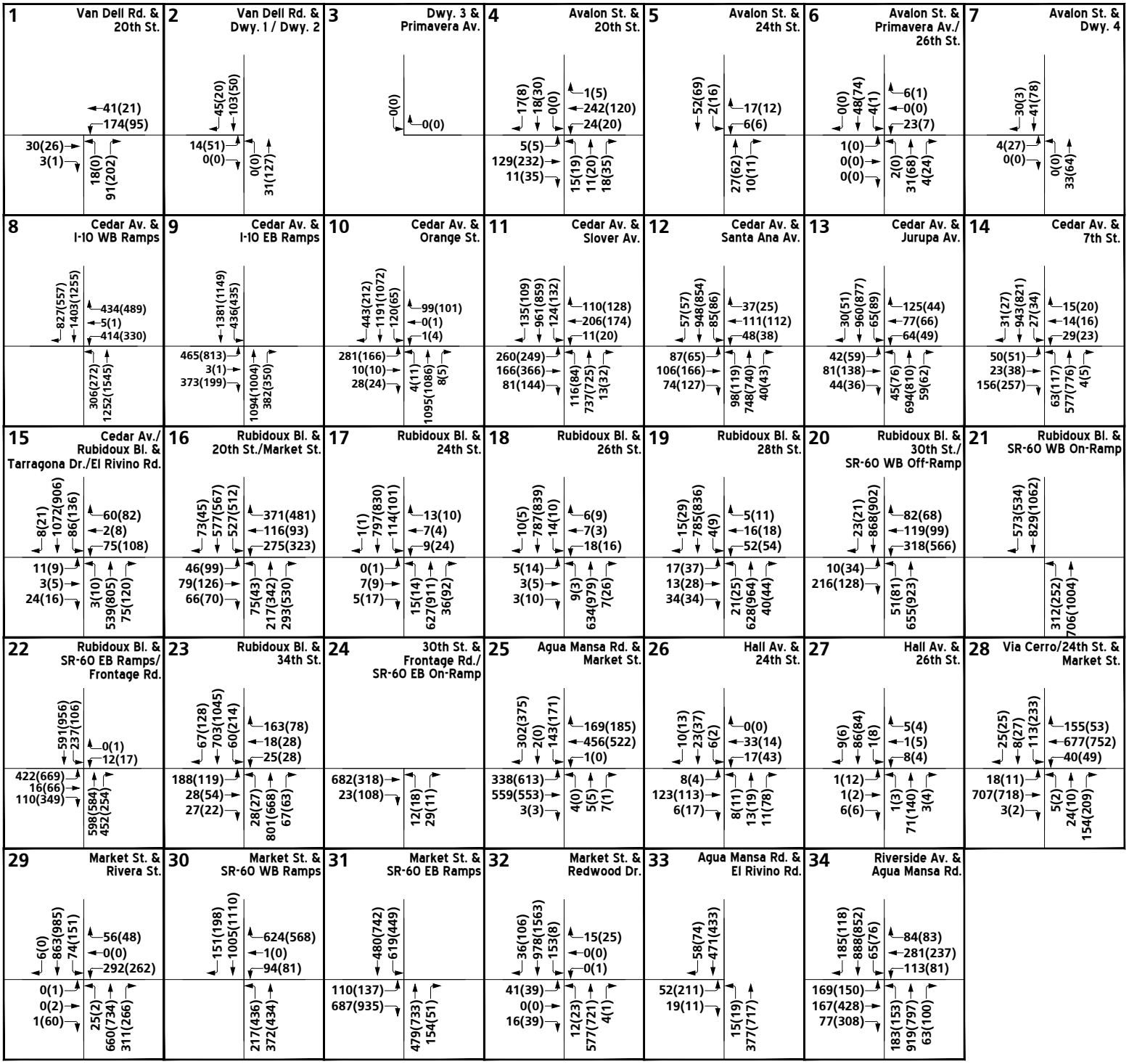
EXHIBIT 6-1: EAP (2023) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

EXHIBIT 6-2: EAP (2023) TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

EXHIBIT 6-3: EAP (2023) SUMMARY OF LOS

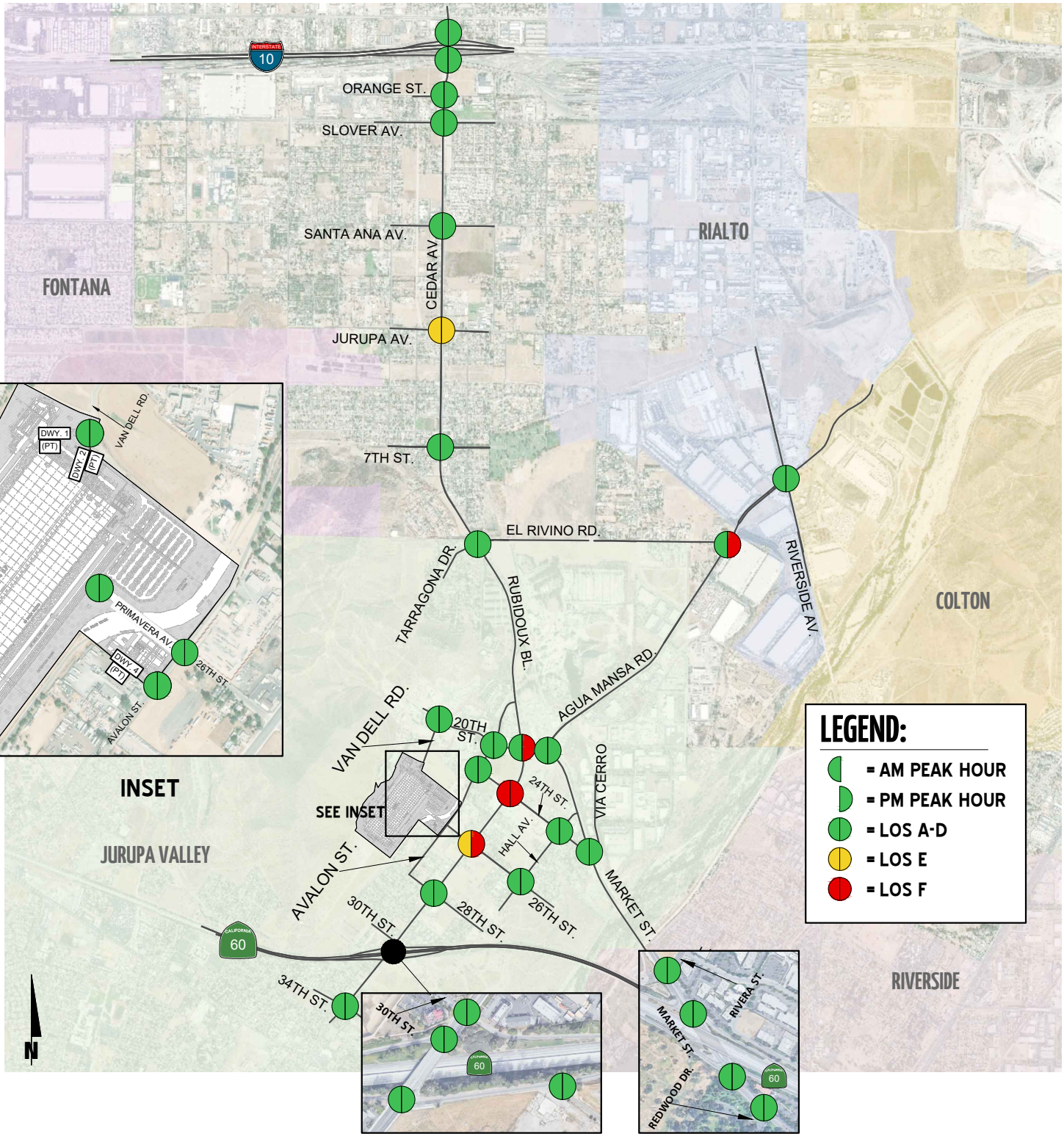


Table 6-1

Intersection Analysis for EAP (2023) Conditions

#	Intersection	Traffic Control[2]	Existing (2020) Delay[1] (secs.) AM	Existing (2020) Delay[1] (secs.) PM	Existing (2020) Level of Service AM	Existing (2020) Level of Service PM	EAP (2023) Delay[1] (secs.) AM	EAP (2023) Delay[1] (secs.) PM	EAP (2023) Level of Service AM	EAP (2023) Level of Service PM
1	Van Dell Rd. & 20th St.	CSS	9.0	8.5	A	A	9.9	9.5	A	A
2	Van Dell Rd. & Driveway 1/Driveway 2	**CSS**	Future Intersection				9.6	10.1	A	B
3	Driveway 3 & Primavera St.	**CSS**	Future Intersection				0.0	0.0	A	A
4	Avalon St. & 20th St.	CSS	10.3	10.4	B	B	12.7	13.1	B	B
5	Avalon St. & 24th St.	CSS	9.0	9.4	A	A	9.1	9.4	A	A
6	Avalon St. & Primavera Av./26th St.	CSS	9.1	9.2	A	A	9.2	9.4	A	A
7	Avalon St. & Driveway 4	**CSS**	Future Intersection				9.0	9.4	A	A
8	Cedar Av. & I-10 WB Ramps	TS	25.7	25.5	C	C	31.6	28.7	C	C
9	Cedar Av. & I-10 EB Ramps	TS	36.0	36.7	D	D	39.4	42.2	D	D
10	Cedar Av. & Orange St.	TS	21.1	10.8	C	B	23.0	11.4	C	B
11	Cedar Av. & Slover Av.	TS	38.6	25.3	D	C	42.6	26.8	D	C
12	Cedar Av. & Santa Ana Av.	TS	31.4	44.4	C	D	32.7	46.1	C	D
13	Cedar Av. & Jurupa Av.	TS	**69.1**	**66.5**	**E**	**E**	**74.1**	**72.7**	**E**	**E**
14	Cedar Av. & 7th St.	TS	13.4	17.3	B	B	14.1	18.7	B	B
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	TS	9.9	11.6	A	B	10.3	12.8	B	B
16	Rubidoux Bl. & 20th St./Market St.	TS	46.1	**60.4**	D	**E**	50.9	**90.9**	D	**F**
17	Rubidoux Bl. & 24th St.	CSS	**48.2**	**>100.0**	**E**	**F**	**74.9**	**>100.0**	**F**	**F**
18	Rubidoux Bl. & 26th St.	CSS	27.8	**43.5**	D	**E**	**41.2**	**62.1**	**E**	**F**
19	Rubidoux Bl. & 28th St.	TS	10.2	12.1	B	B	10.8	13.2	B	B
20	Rubidoux Bl. & SR-60 WB Off-Ramp	TS	28.4	48.6	C	D	35.1	54.7	D	D
21	Rubidoux Bl. & SR-60 WB On-Ramp	UC	19.6	15.8	C	C	25.2	20.7	D	C
22	Rubidoux Bl. & SR-60 EB Ramps	TS	27.0	33.0	C	C	29.8	41.1	C	D
23	Rubidoux Bl. & 34th St.	TS	16.1	20.1	B	C	17.3	22.9	B	C
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	CSS	14.1	10.7	B	B	14.8	11.0	B	B
25	Agua Mansa Rd. & Market St.	TS	26.0	35.7	C	D	28.5	44.1	C	D
26	Hall Av. & 24th St.	CSS	8.1	8.1	A	A	8.2	8.3	A	A
27	Hall Av. & 26th St.	CSS	9.5	10.1	A	B	9.6	10.2	A	B
28	Via Cerro/24th St. & Market St.	TS	22.4	28.4	C	C	24.8	31.4	C	C
29	Market St. & Rivera St.	TS	11.0	19.4	B	B	11.2	21.2	B	C
30	Market St. & SR-60 WB Ramps	TS	8.7	10.7	A	B	10.0	10.8	A	B
31	Market St. & SR-60 EB Ramps	TS	19.9	24.8	B	C	22.0	29.2	C	C
32	Market St. & Redwood Dr.	CSS	18.7	18.6	C	C	21.6	21.2	C	C
33	Agua Mansa Rd. & El Rivino Rd.	CSS	17.5	**>100.0**	C	F	19.6	**>100.0**	C	**F**
34	Riverside Av. & Agua Mansa Rd.	TS	37.8	35.3	D	D	44.3	40.6	D	D

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

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

[2] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; UC = Uncontrolled; **CSS** = Improvement

6.5 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, and SR-60 Freeway at Market Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway or SR-60 Freeway mainline. Queuing analysis findings are presented in Table 6-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 6-2, there are no additional movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under EAP (2023) traffic conditions. It should be noted, although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. Worksheets for EAP (2023) traffic conditions off-ramp queuing analysis are provided in Appendix 6.3.

6.6 FREEWAY FACILITY ANALYSIS

EAP (2023) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 6-4. As shown in Table 6-3, the following freeway mainline segments and merge/diverge ramp junctions are anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for EAP (2023) traffic conditions, in addition to the freeway mainline segments and merge/diverge ramp junctions previously identified under Existing (2020) traffic conditions:

- SR-60 Freeway Westbound, On-Ramp at Rubidoux Boulevard (#10) – LOS E PM peak hour only
- SR-60 Freeway Westbound, On-Ramp at Market Street (#13) – LOS E PM peak hour only

EAP (2023) freeway facility analysis worksheets are provided in Appendix 6.4.

Table 6-2

Peak Hour Freeway Off-Ramp Queuing Summary for EAP (2023) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2020)				EAP (2023)			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
Cedar Av. & I-10 WB Ramps	WBL/T/R	1,270	464 [2]	515 [2]	Yes	Yes	541 [2]	569 [2]	Yes	Yes
	WBR	480	328	428	Yes	Yes	393 [2]	462 [2,3]	Yes	Yes
Cedar Av. & I-10 EB Ramps	EBL	400	394 [2]	**682** [2,3]	Yes	**No**	**454** [2,3]	**753** [2,3]	**No**	**No**
	EBL/T/R	1,900	323	602 [2]	Yes	Yes	420 [2]	664 [2]	Yes	Yes
Rubidoux Bl. & SR-60 WB Off-Ramp	WBL/T/R	1,250	509 [2]	781 [2]	Yes	Yes	570 [2]	842 [2]	Yes	Yes
Rubidoux Bl. & SR-60 EB Off-Ramp	EBL/T/R	1,100	178	444 [2]	Yes	Yes	208	507 [2]	Yes	Yes
Market St. & SR-60 WB Ramps	WBL	170	120 [2]	91	Yes	Yes	131 [2]	96 [2]	Yes	Yes
	WBR[4]	1,350	0	0	Yes	Yes	0	0	Yes	Yes
Market St. & SR-60 EB Ramps	EBL	155	95	91	Yes	Yes	95	96	Yes	Yes
	EBR	1,635	92	246	Yes	Yes	117	288	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline.

[4] Movement is a free-right turn lane. As such, there is no queue during the peak hours.

Table 6-3

Freeway Facility Analysis for EAP (2023) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Existing (2020)				EAP (2023)			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	30.6	D	27.1	D	34.8	D	30.4	D
		On-Ramp at Cedar Av.	4	30.0	D	26.7	C	32.4	D	29.1	D
		Off-Ramp at Cedar Av.	5	21.2	C	20.4	C	23.9	C	22.4	C
		East of Cedar Av.	5	22.0	C	20.7	C	24.2	C	22.7	C
	Eastbound	West of Cedar Av.	4	24.1	C	27.2	D	26.8	D	30.5	D
		Off-Ramp at Cedar Av.	5	18.5	C	20.5	C	20.4	C	22.4	C
		On-Ramp at Cedar Av.	4	24.7	C	25.7	C	26.7	C	27.9	C
		East of Cedar Av.	4	24.5	C	26.0	C	27.1	C	29.1	D
SR-60	Westbound	West of Rubidoux Bl.	3	29.4	D	**36.2**	**E**	33.2	D	**42.5**	**E**
		On-Ramp at Rubidoux Bl.	3	30.9	D	34.1	D	33.3	D	**37.0**	**E**
		Off-Ramp at Rubidoux Bl.	3	31.4	D	**36.0**	**E**	33.2	D	**38.6**	**E**
		Rubidoux Bl. to Market St.	3	27.5	D	**36.6**	**E**	30.7	D	**42.6**	**E**
		On-Ramp at Market St.	3	29.0	D	34.9	D	31.1	D	**37.5**	**E**
		Off-Ramp at Market St.	3	32.9	D	**36.0**	**E**	35.3	D	**39.0**	**E**
		East of Market St.	3	29.4	D	**36.6**	**E**	33.5	D	**42.9**	**E**
	Eastbound	West of Rubidoux Bl.	3	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**
		Off-Ramp at Rubidoux Bl.	3	**43.4**	**F**	**40.5**	**F**	**49.0**	**F**	**40.5**	**F**
		On-Ramp at Rubidoux Bl.	3	**41.8**	**F**	**33.6**	**F**	**46.8**	**F**	**33.3**	**F**
		Rubidoux Bl. to Market St.	3	**38.1**	**F**	**36.1**	**F**	**38.1**	**F**	**35.5**	**F**
		Off-Ramp at Market St.	3	**37.2**	**F**	**37.0**	**F**	**37.3**	**F**	**37.0**	**F**
		On-Ramp at Market St.	3	**35.3**	**F**	**31.1**	**F**	**35.5**	**F**	**31.0**	**F**
		East of Market St.	3	**37.5**	**F**	**30.5**	**F**	**37.5**	**F**	**30.0**	**F**

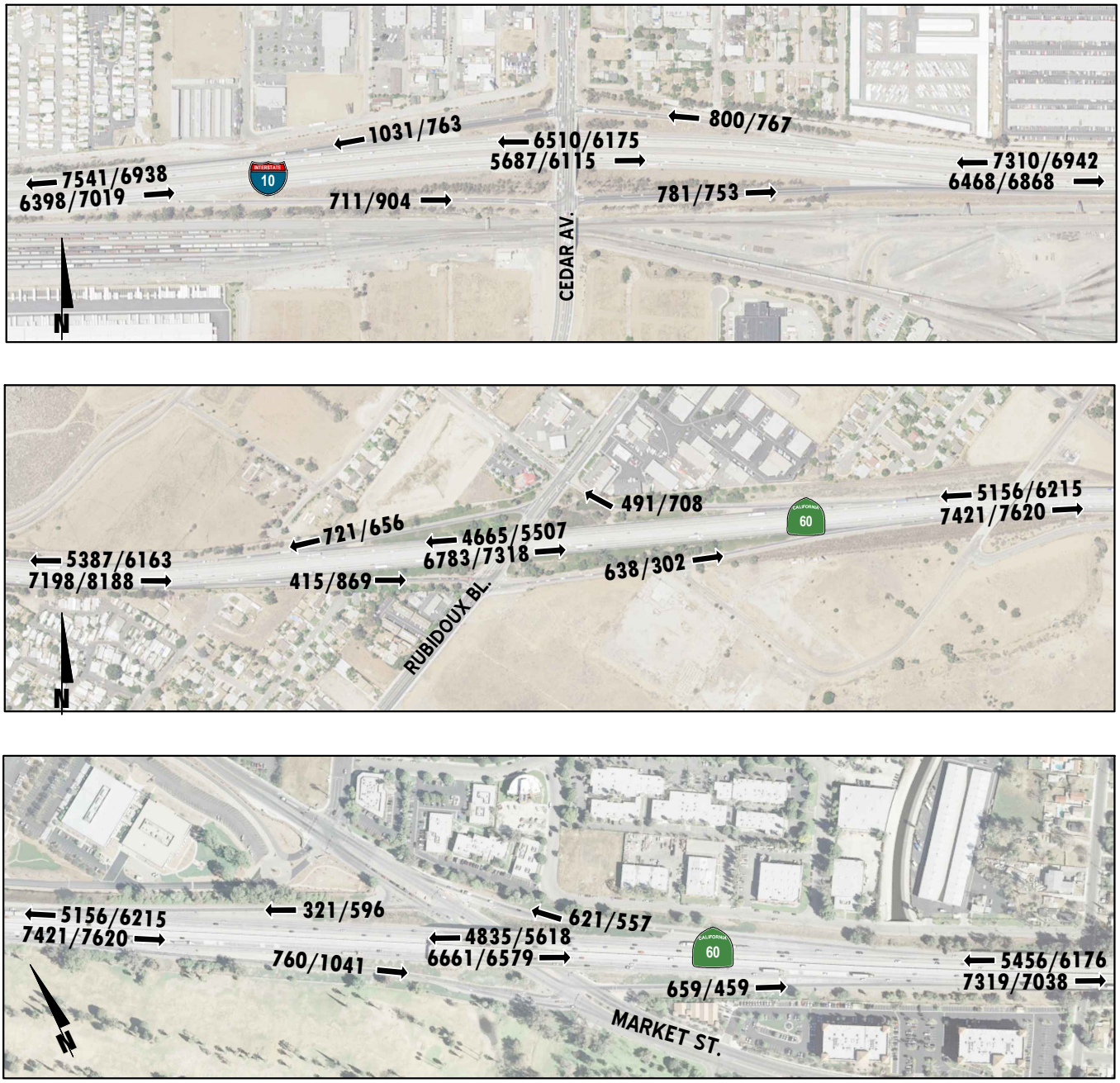
* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 6-4: EAP (2023) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

6.7 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements for EAP (2023) traffic conditions. Based on the deficiency criteria discussed in Section 2.7 *Minimum Acceptable Levels of Service (LOS) and Intersection Deficiency Criteria*, the following intersections were found to be deficient. Improvements necessary to improve the traffic deficiencies back to acceptable levels are also discussed below.

6.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address EAP (2023) traffic deficiencies is presented in Table 6-4 and described below. The intersection operations analysis worksheets for EAP (2023) traffic conditions, with improvements, are included in Appendix 6.5 of this TIA.

Recommended Improvement – Cedar Avenue & Jurupa Avenue (#13) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide one left turn lane and one shared through-right turn lane.
- Restripe the westbound approach to provide one left turn lane and one shared through-right turn lane.

Recommended Improvement – Rubidoux Boulevard & 20th Street/Market Street (#16) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a 2nd southbound left turn lane.
- Add a westbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 24th Street (#17) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 26th Street (#18) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

It should be noted, the Project will construct the improvements at this intersection as part of the Project design features.

Table 6-4

Intersection Analysis for EAP (2023) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
13	Cedar Av. & Jurupa Av.																	
	EAP (2023):																	
	- Without Improvements	TS	1	2	0	1	2	0	0	1	d	0	1	d	**74.1**	**72.7**	**E**	**E**
	- With Improvements	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	36.7	23.3	D	C
16	Rubidoux Bl. & 20th St./Market St.																	
	EAP (2023):																	
	- Without Improvements	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	50.9	**90.9**	D	**F**
	- With Improvements[4]	TS	1	2	1	**2**	2	1	1	1	0	**1**	1	1>>	37.6	49.2	D	D
	- With Improvements (Alternative)[5]	TS	1	2	1	1	2	1	1	1	**1**	**1**	1	1>>	47.0	**65.4**	D	**E**
17	Rubidoux Bl. & 24th St.																	
	EAP (2023):																	
	- Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**74.9**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	9.9	10.4	A	B
18	Rubidoux Bl. & 26th St.																	
	EAP (2023):																	
	- Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**41.2**	**62.1**	**E**	**F**
	- With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	6.2	6.4	A	A
33	Agua Mansa Rd. & El Rivino Rd.																	
	EAP (2023):																	
	- Without Improvements	CSS	1	1	0	0	1	0	0	1	0	0	0	0	19.6	**>100.0**	C	**F**
	- With Improvements	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	8.4	11.9	A	B

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

L = Left; T = Through; R = Right; >> = Free Right Turn Lane; **1** = Improvement

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

[3] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

[5] Alternative improvements have been provided for this intersection to compare the LOS results of alternate improvements.

Recommended Improvement – Agua Mansa Road & El Rivino Road (#33) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

6.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 6-2, there are no anticipated peak hour queuing issues at the SR-60 Freeway at Rubidoux Boulevard and SR-60 Freeway at Market Street interchanges. At the I-10 Freeway at Cedar Avenue interchange, the 95th percentile queue is anticipated to exceed the available storage for the turn lanes, however the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. As such, no improvements have been recommended.

6.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 6-3, there are study area freeway mainline segments and ramp junctions that are anticipated to operate at an unacceptable LOS for EAP (2023) traffic conditions. At this time, Caltrans has no fee programs or other improvement programs in place to address the deficiencies caused by development projects in the City of Jurupa Valley (or other neighboring jurisdictions) on the SHS roadway segments. As such, no improvements have been recommended to address the EAP (2023) deficiencies on the SHS.

7 EAPC (2023) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAPC (2023) traffic forecasts, and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

7.1 ROADWAY IMPROVEMENTS

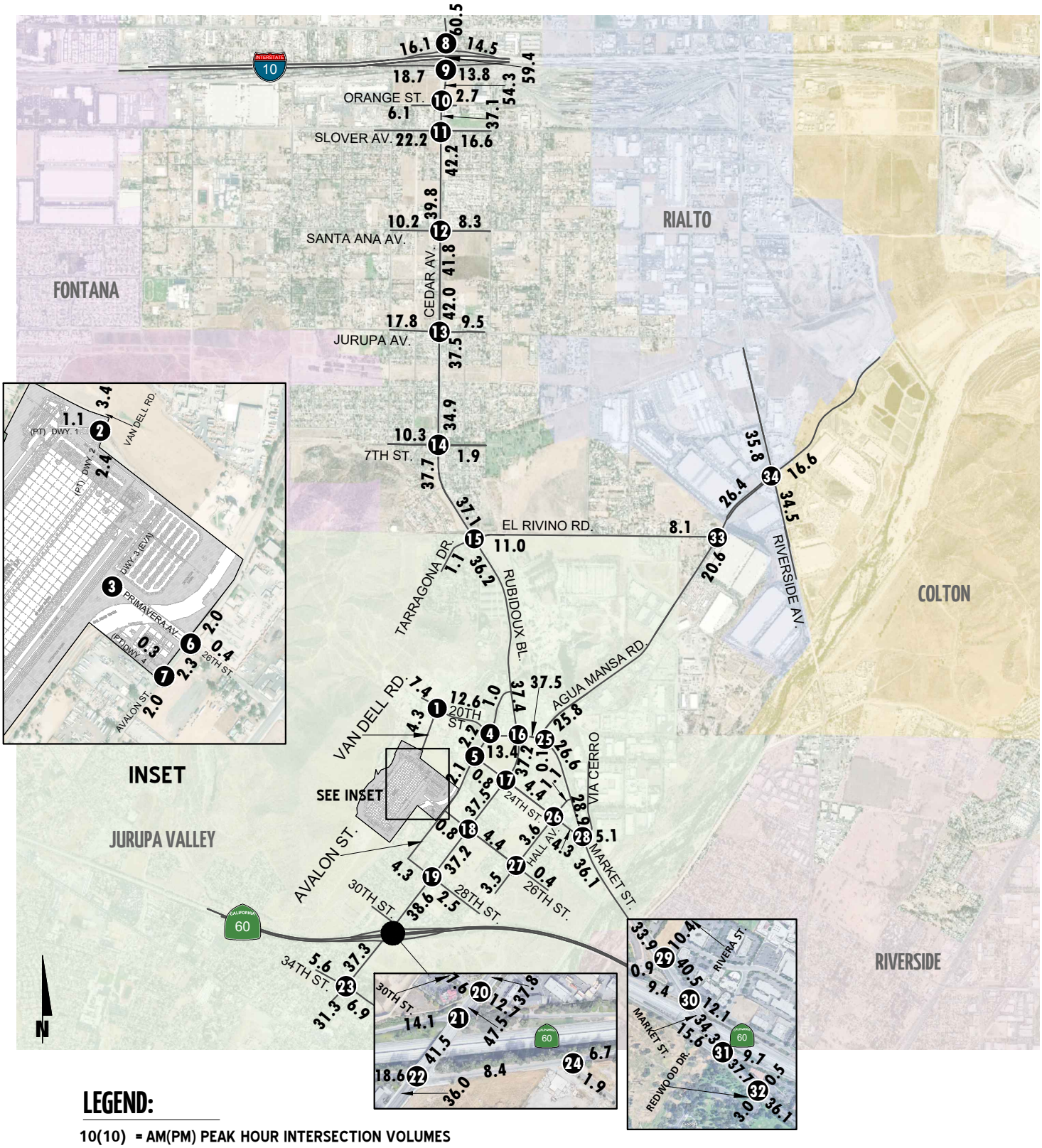
The lane configurations and traffic controls assumed to be in place for EAPC (2023) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC (2023) conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAPC (2023) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

7.2 EAPC (2023) TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus an ambient growth factor of 6.12% plus traffic from pending and approved but not yet constructed known development projects in the area, plus Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for EAPC (2023) traffic conditions are shown on Exhibits 7-1 and 7-2, respectively.

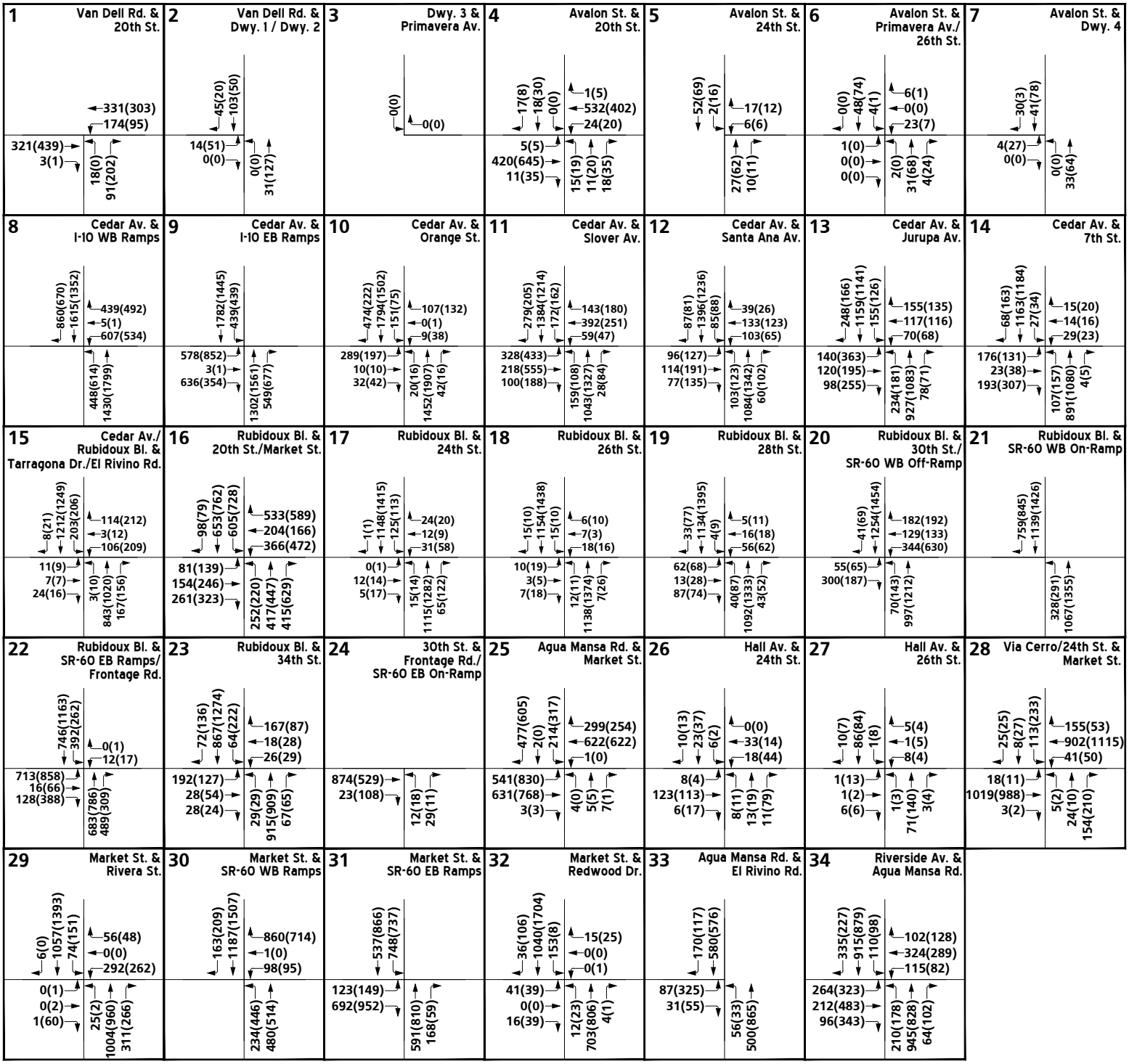
EXHIBIT 7-1: EAPC (2023) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

EXHIBIT 7-2: EAPC (2023) TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

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URBAN CROSSROADS

Table 7-1

Intersection Analysis for EAPC (2023) Conditions

#	Intersection	Traffic Control[2]	EAPC (2023) Delay[1] (secs.) AM	EAPC (2023) Delay[1] (secs.) PM	EAPC (2023) Level of Service AM	EAPC (2023) Level of Service PM
1	Van Dell Rd. & 20th St.	CSS	16.8	17.4	C	C
2	Van Dell Rd. & Driveway 1/Driveway 2	**CSS**	9.6	10.1	A	B
3	Driveway 3 & Primavera St.	**CSS**	0.0	0.0	A	A
4	Avalon St. & 20th St.	CSS	32.4	22.7	D	C
5	Avalon St. & 24th St.	CSS	9.1	9.6	A	A
6	Avalon St. & Primavera Av./26th St.	CSS	9.2	10.8	A	B
7	Avalon St. & Driveway 4	**CSS**	9.0	9.4	A	A
8	Cedar Av. & I-10 WB Ramps	TS	**74.2**	**84.2**	**E**	**F**
9	Cedar Av. & I-10 EB Ramps	TS	**83.6**	**81.4**	**F**	**F**
10	Cedar Av. & Orange St.	TS	41.9	32.8	D	C
11	Cedar Av. & Slover Av.	TS	37.9	**121.6**	D	**F**
12	Cedar Av. & Santa Ana Av.	TS	35.4	37.7	D	D
13	Cedar Av. & Jurupa Av.	TS	**>200.0**	**>200.0**	**F**	**F**
14	Cedar Av. & 7th St.	TS	25.2	32.7	C	C
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	TS	16.1	39.7	B	D
16	Rubidoux Bl. & 20th St./Market St.	TS	**>200.0**	**>200.0**	**F**	**F**
17	Rubidoux Bl. & 24th St.	CSS	**>100.0**	**>100.0**	**F**	**F**
18	Rubidoux Bl. & 26th St.	CSS	**>100.0**	**>100.0**	**F**	**F**
19	Rubidoux Bl. & 28th St.	TS	17.4	15.8	B	B
20	Rubidoux Bl. & SR-60 WB Off-Ramp	TS	**103.6**	**141.8**	**F**	**F**
21	Rubidoux Bl. & SR-60 WB On-Ramp	UC	**>100.0**	**>100.0**	**F**	**F**
22	Rubidoux Bl. & SR-60 EB Ramps	TS	**102.1**	**81.3**	**F**	**F**
23	Rubidoux Bl. & 34th St.	TS	19.4	26.7	B	C
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	CSS	18.4	13.3	C	B
25	Agua Mansa Rd. & Market St.	TS	**80.3**	**144.1**	**E**	**F**
26	Hall Av. & 24th St.	CSS	8.2	8.3	A	A
27	Hall Av. & 26th St.	CSS	9.7	10.2	A	B
28	Via Cerro/24th St. & Market St.	TS	51.2	**60.0**	D	**E**
29	Market St. & Rivera St.	TS	11.3	23.1	B	C
30	Market St. & SR-60 WB Ramps	TS	10.3	11.3	B	B
31	Market St. & SR-60 EB Ramps	TS	34.1	29.8	C	C
32	Market St. & Redwood Dr.	CSS	23.8	24.6	C	C
33	Agua Mansa Rd. & El Rivino Rd.	CSS	**57.8**	**>100.0**	**F**	**F**
34	Riverside Av. & Agua Mansa Rd.	TS	**75.2**	**92.9**	**E**	**F**

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

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

[2] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; UC = Uncontrolled; **CSS** = Improvement

7.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAPC (2023) conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersections are anticipated to operate at an unacceptable LOS under EAPC (2023) traffic conditions:

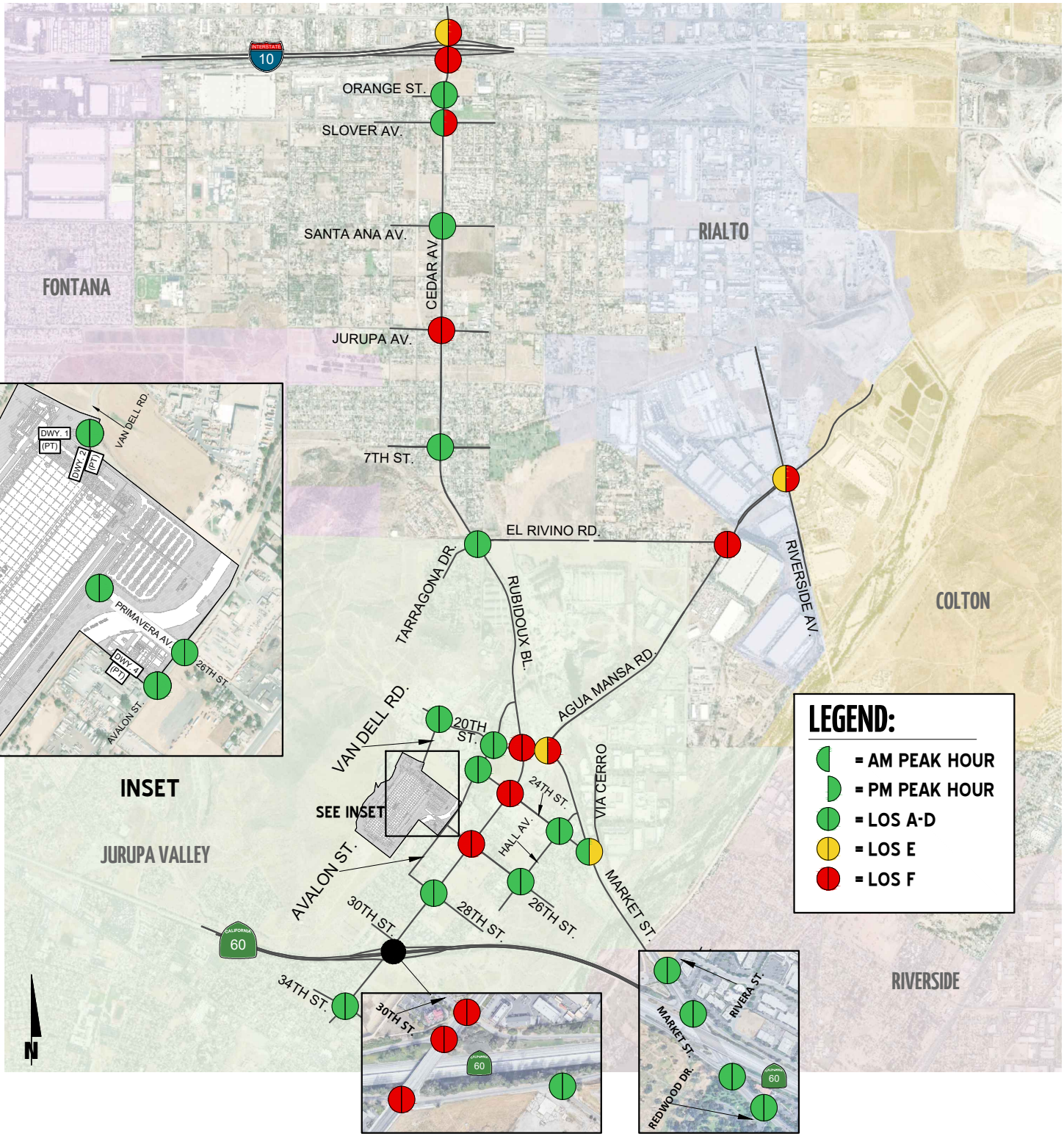
- Cedar Avenue & I-10 Westbound Ramps (#8) – LOS E AM peak hour; LOS F PM peak hour
- Cedar Avenue & I-10 Eastbound Ramps (#9) – LOS F AM and PM peak hours
- Cedar Avenue & Slover Avenue (#11) – LOS F PM peak hour only
- Cedar Avenue & Jurupa Avenue (#13) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 20th Street/Market Street (#16) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 24th Street (#17) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 26th Street (#18) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – LOS F AM and PM peak hours
- Agua Mansa Road & Market Street (#25) – LOS E AM peak hour; LOS F PM peak hour
- Via Cerro/24th Street & Market Street (#28) – LOS E PM peak hour only
- Agua Mansa Road & El Rivino Road (#33) – LOS F AM and PM peak hours
- Riverside Drive & Agua Mansa Road (#34) – LOS E AM peak hour; LOS F PM peak hour

A summary of the peak hour intersection LOS for EAPC (2023) traffic conditions is shown on Exhibit 7-3. The intersection operations analysis worksheets for EAPC (2023) traffic conditions are included in Appendix 7.1.

7.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no additional study area intersections anticipated to warrant a traffic signal for EAPC (2023) traffic conditions. EAPC (2023) conditions traffic signal warrant analysis worksheets are provided in Appendix 7.2.

EXHIBIT 7-3: EAPC (2023) SUMMARY OF LOS



7.5 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, and SR-60 Freeway at Market Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway or SR-60 Freeway mainline. Queuing analysis findings are presented in Table 7-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 7-2, the following movements are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under EAPC (2023) traffic conditions:

- Cedar Avenue & I-10 Westbound Ramps (#8), Westbound right turn lane – PM peak hour only
- Cedar Avenue & I-10 Eastbound Ramps (#9), Eastbound left turn lane – AM and PM peak hours

It should be noted, although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. Worksheets for EAPC (2023) traffic conditions off-ramp queuing analysis are provided in Appendix 7.3.

7.6 FREEWAY FACILITY ANALYSIS

EAPC (2023) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 7-4. As shown in Table 7-3, there are no additional freeway mainline segments and merge/diverge ramp junctions anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for EAPC (2023) traffic conditions, in addition to the freeway mainline segments and merge/diverge ramp junctions previously identified under Existing (2020) and EAP (2023) traffic conditions. EAPC (2023) freeway facility analysis worksheets are provided in Appendix 7.4.

Table 7-2

Peak Hour Freeway Off-Ramp Queuing Summary for EAPC (2023) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	EAPC (2023)			
			95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM
Cedar Av. & I-10 WB Ramps	WBL/T/R	1,270	880 [2]	873 [2]	Yes	Yes
	WBR	480	407 [2]	**582** [2,3]	Yes	**No**
Cedar Av. & I-10 EB Ramps	EBL	400	**630** [2,3]	**942** [2,3]	**No**	**No**
	EBL/T/R	1,900	933 [2]	825 [2]	Yes	Yes
Rubidoux Bl. & SR-60 WB Off-Ramp	WBL/T/R	1,250	797 [2]	1,186 [2]	Yes	Yes
Rubidoux Bl. & SR-60 EB Off-Ramp	EBL/T/R	1,100	364	695 [2]	Yes	Yes
Market St. & SR-60 WB Ramps	WBL	170	137 [2]	124 [2]	Yes	Yes
	WBR[4]	1,350	0	0	Yes	Yes
Market St. & SR-60 EB Ramps	EBL	155	100	103	Yes	Yes
	EBR	1,635	145	326	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline.

[4] Movement is a free-right turn lane. As such, there is no queue during the peak hours.

Table 7-3

Freeway Facility Analysis for EAPC (2023) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	EAPC (2023)			
				AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	**36.1**	**E**	33.3	D
		On-Ramp at Cedar Av.	4	33.8	D	32.0	D
		Off-Ramp at Cedar Av.	5	24.6	C	23.5	C
		East of Cedar Av.	5	24.9	C	23.8	C
	Eastbound	West of Cedar Av.	4	29.0	D	31.7	D
		Off-Ramp at Cedar Av.	5	21.6	C	23.1	C
		On-Ramp at Cedar Av.	4	28.8	C	30.2	D
		East of Cedar Av.	4	28.7	D	31.4	D
SR-60	Westbound	West of Rubidoux Bl.	3	35.0	D	**38.8**	**F**
		On-Ramp at Rubidoux Bl.	3	34.7	D	**36.8**	**F**
		Off-Ramp at Rubidoux Bl.	3	34.2	D	**37.2**	**F**
		Rubidoux Bl. to Market St.	3	32.1	D	**38.1**	**F**
		On-Ramp at Market St.	3	32.1	D	**41.3**	**F**
		Off-Ramp at Market St.	3	**36.5**	**E**	**42.0**	**F**
		East of Market St.	3	**36.7**	**E**	**45.0**	**F**
	Eastbound	West of Rubidoux Bl.	3	**45.0**	**F**	**45.0**	**F**
		Off-Ramp at Rubidoux Bl.	3	**52.4**	**F**	**40.5**	**F**
		On-Ramp at Rubidoux Bl.	3	**48.5**	**F**	**34.2**	**F**
		Rubidoux Bl. to Market St.	3	**38.1**	**F**	**35.9**	**F**
		Off-Ramp at Market St.	3	**37.4**	**F**	**37.1**	**F**
		On-Ramp at Market St.	3	**48.6**	**F**	**32.3**	**F**
		East of Market St.	3	**38.1**	**F**	**31.4**	**F**

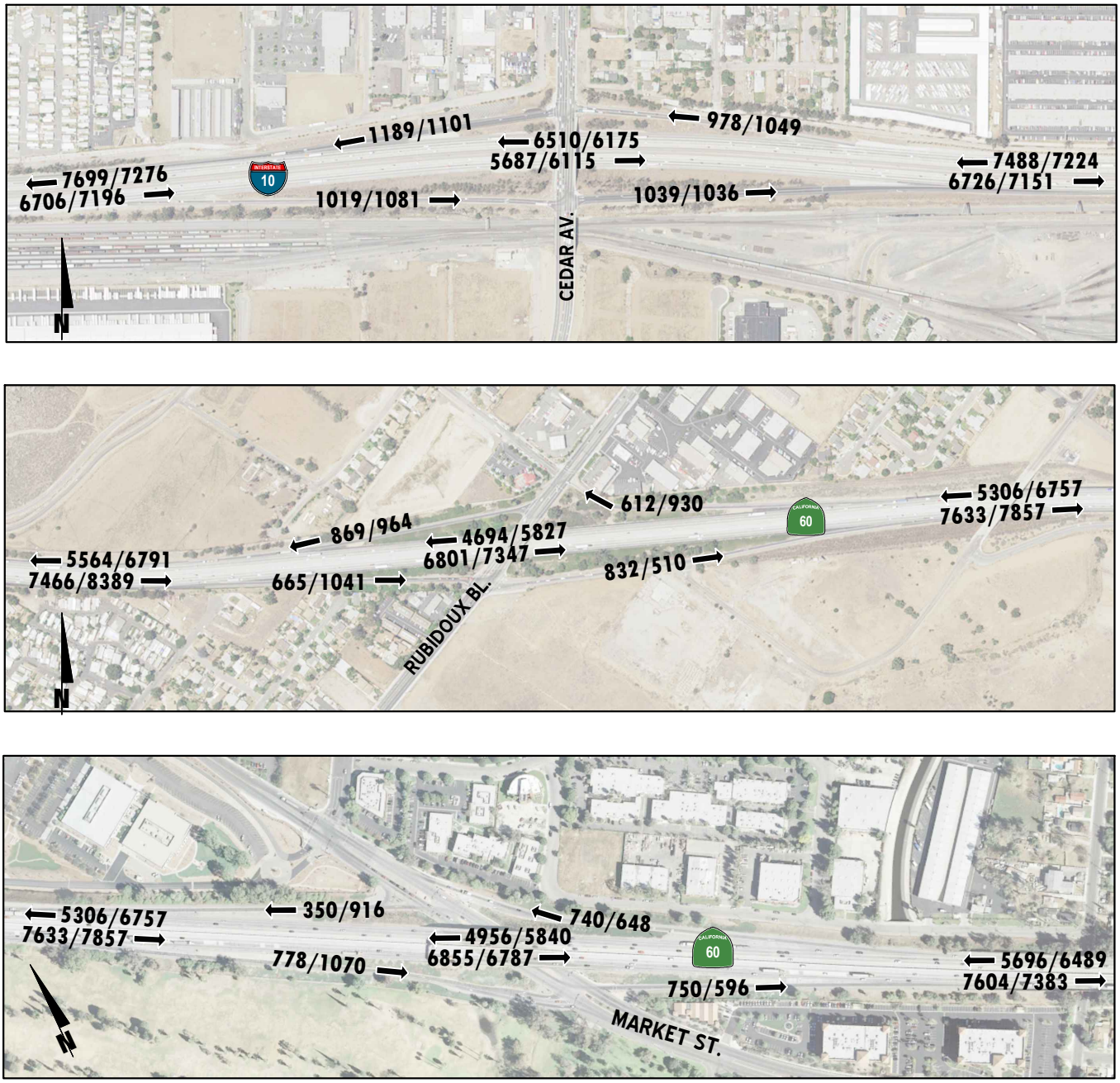
* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

EXHIBIT 7-4: EAPC (2023) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

7.7 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements for EAPC (2023) traffic conditions. Based on the deficiency criteria discussed in Section 2.7 *Minimum Acceptable Levels of Service (LOS) and Intersection Deficiency Criteria*, the following intersections were found to be deficient. Improvements necessary to improve traffic deficiencies back to acceptable levels are also discussed below.

7.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address EAPC (2023) traffic deficiencies are presented in Table 7-4 and described below. The intersection operations analysis worksheets for EAPC (2023) traffic conditions, with improvements, are included in Appendix 7.9 of this TIA.

Recommended Improvement – Cedar Avenue & I-10 Westbound Ramps (#8) – The following improvements are consistent with the interchange improvement project and are necessary to bring the LOS back to acceptable levels:

- Add a 2nd northbound left turn lane.

Recommended Improvement – Cedar Avenue & I-10 Eastbound Ramps (#9) – The following improvements are consistent with the interchange improvement project and are necessary to bring the LOS back to acceptable levels:

- Add a 2nd southbound left turn lane.
- Add an eastbound right turn lane.

Recommended Improvement – Cedar Avenue & Slover Avenue (#11) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide two left turn lanes, one through lane, and one shared through-right turn lane.
- Add a southbound right turn lane.

Recommended Improvement – Cedar Avenue & Jurupa Avenue (#13) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide one left turn lane and one shared through-right turn lane.
- Restripe the westbound approach to provide one left turn lane and one shared through-right turn lane.

Table 7-4

Intersection Analysis for EAPC (2023) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
8	Cedar Av. & I-10 WB Ramps																	
	EAPC (2023):																	
	- Without Improvements	TS	1	2	0	0	3	1	0	0	0	0	1	1	**74.2**	**84.2**	**E**	**F**
	- With Improvements[4]	TS	**2**	2	0	0	3	1	0	0	0	0	1	1	42.3	42.9	D	D
9	Cedar Av. & I-10 EB Ramps																	
	EAPC (2023):																	
	- Without Improvements	TS	0	3	1	1	2	0	1	1	0	0	0	0	**83.6**	**81.4**	**F**	**F**
	- With Improvements[4]	TS	0	3	1	**2**	2	0	1	1	**1**	0	0	0	36.9	44.3	D	D
11	Cedar Av. & Slover Av.																	
	EAPC (2023):																	
	- Without Improvements	TS	1	2	0	1	2	0	1	2	d	1	2	0	**37.9**	**121.6**	**D**	**F**
	- With Improvements	TS	1	2	0	1	2	**1**	**2**	2	**0**	1	2	0	49.8	52.4	D	D
13	Cedar Av. & Jurupa Av.																	
	EAPC (2023):																	
	- Without Improvements	TS	1	2	0	1	2	0	0	1	d	0	1	d	**>200.0**	**>200.0**	**F**	**F**
	- With Improvements	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	43.0	54.0	D	D
16	Rubidoux Bl. & 20th St./Market St.																	
	EAPC (2023):																	
	- Without Improvements	TS	1	2	1	1	2	1	1	1	0	0	1	1>>	**>200.0**	**>200.0**	**F**	**F**
	- With Improvements[5]	TS	1	2	1	**2**	2	1	1	**2**	**1>**	**2**	1	1>>	40.4	52.0	D	D
17	Rubidoux Bl. & 24th St.																	
	EAPC (2023):																	
	- Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	11.2	13.0	B	B
18	Rubidoux Bl. & 26th St.																	
	EAPC (2023):																	
	- Without Improvements	CSS	0	2	0	0	2	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	6.5	8.6	A	A
20	Rubidoux Bl. & SR-60 WB Off-Ramp																	
	EAPC (2023):																	
	- Without Improvements	TS	1	2	0	0	2	0	1	0	1	0	1	0	**103.6**	**141.8**	**F**	**F**
	- With Improvements	TS	1	2	0	0	2	0	1	0	1	**1**	1	0	32.7	52.3	C	D
21	Rubidoux Bl. & SR-60 WB On-Ramp																	
	EAPC (2023):																	
	- Without Improvements	UC	1	2	0	0	2	0	0	0	0	0	0	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	1	2	0	0	2	0	0	0	0	0	0	0	6.6	8.1	A	A
22	Rubidoux Bl. & SR-60 EB Ramps																	
	EAPC (2023):																	
	- Without Improvements	TS	0	2	0	1	2	0	0	2	0	1	0	1	**102.1**	**81.3**	**F**	**F**
	- With Improvements	TS	0	2	**1**	1	2	0	**1**	2	0	1	0	1	34.8	33.9	C	C

Table 7-4

Intersection Analysis for EAPC (2023) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
25	Agua Mansa Rd. & Market St. EAPC (2023):																	
	- Without Improvements	TS	0	1	0	0	1	0	1	2	1	1	2	d	**80.3**	**144.1**	**E**	**F**
	- With Improvements	TS	0	1	0	0	1	0	**2**	**1**	1	1	2	d	51.1	54.0	D	D
28	Via Cerro/24th St. & Market St. EAPC (2023):																	
	- Without Improvements	TS	0	1	1	1	1	0	1	1	1	1	1	0	51.2	**60.0**	D	**E**
	- With Improvements	TS	0	1	1	1	1	0	1	**2**	1	1	**2**	0	17.5	23.7	B	C
33	Agua Mansa Rd. & El Rivino Rd. EAPC (2023):																	
	- Without Improvements	CSS	1	1	0	0	1	0	0	1	0	0	0	0	**57.8**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	13.4	18.9	B	B
34	Riverside Av. & Agua Mansa Rd. EAPC (2023):																	
	- Without Improvements	TS	1	2	0	1	2	d	1	1	1	1	1	1	**75.2**	**92.9**	**E**	**F**
	- With Improvements	TS	1	2	0	1	2	d	**2**	1	1	1	1	1	54.7	54.8	D	C

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

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

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

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

[3] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvements are consistent with the I-10 Freeway/Cedar Avenue interchange project.

[5] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

[6] Alternative improvements have been provided for this intersection to compare the LOS results of alternate improvements.

Recommended Improvement – Rubidoux Boulevard & 20th Street/Market Street (#16) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.
- Add a 2nd southbound left turn lane.
- Add a 2nd eastbound through lane.
- Add an eastbound right turn lane.
- Add a 2nd westbound left turn lane.
- Modify the traffic signal to protect the eastbound and westbound left turns and to implement overlap phasing for the eastbound right turn lane.

Recommended Improvement – Rubidoux Boulevard & 24th Street (#17) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 26th Street (#18) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

It should be noted, the Project will construct the improvements at this intersection as part of the Project design features.

Recommended Improvement – Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

Recommended Improvement – Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a northbound right turn lane.
- Add an eastbound left turn lane.

Recommended Improvement – Agua Mansa Road & Market Street (#25) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide two left turn lanes, one through lane, and one right turn lane.

Recommended Improvement – Via Cerro/24th Street & Market Street (#28) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a 2nd eastbound through lane.
- Add a 2nd westbound through lane.

Recommended Improvement – Agua Mansa Road & El Rivino Road (#33) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

Recommended Improvement – Riverside Drive & Agua Mansa Road (#34) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a 2nd eastbound left turn lane.

7.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 7-2, there are no anticipated peak hour queuing issues at the SR-60 Freeway at Rubidoux Boulevard and SR-60 Freeway at Market Street interchanges. At the I-10 Freeway at Cedar Avenue interchange, the 95th percentile queue is anticipated to exceed the available storage for the turn lanes, however the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. As such, no improvements have been recommended.

7.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously in Table 7-3, there are study area freeway mainline segments and ramp junctions that are anticipated to operate at an unacceptable LOS for EAPC (2023) traffic conditions. At this time, Caltrans has no fee programs or other improvement programs in place to address the deficiencies caused by development projects in the City of Jurupa Valley (or other neighboring jurisdictions) on the SHS roadway segments. As such, no improvements have been recommended to address the EAPC (2023) deficiencies on the SHS.

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8 HORIZON YEAR (2040) TRAFFIC CONDITIONS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations, traffic signal warrant, and freeway facility operations analyses.

8.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).
- Other parallel facilities, that although not evaluated for the purposes of this analysis, are anticipated to be in place for Horizon Year traffic conditions and would affect the travel patterns within the study area. One future connection includes but is not limited to a future planned interchange at Alder Avenue and the I-10 Freeway which may result in reduced through traffic along other parallel routes, such as Cedar Avenue.

8.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM and SBTAM (see Section 4.7 *Horizon Year Volume Development* of this TIA for a detailed discussion on the post-processing methodology) and represents the General Plan buildout of the City of Jurupa Valley. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibits 8-1 and 8-2, respectively.

8.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM and SBTAM, plus the traffic generated by the proposed Project (see Section 4.7 *Horizon Year Volume Development* of this TIA for a detailed discussion on the post-processing methodology). Horizon Year (2040) With Project traffic forecasts reflects buildout of the Project. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibits 8-3 and 8-4, respectively.

EXHIBIT 8-1: HORIZON YEAR (2040) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT) (IN PCE)

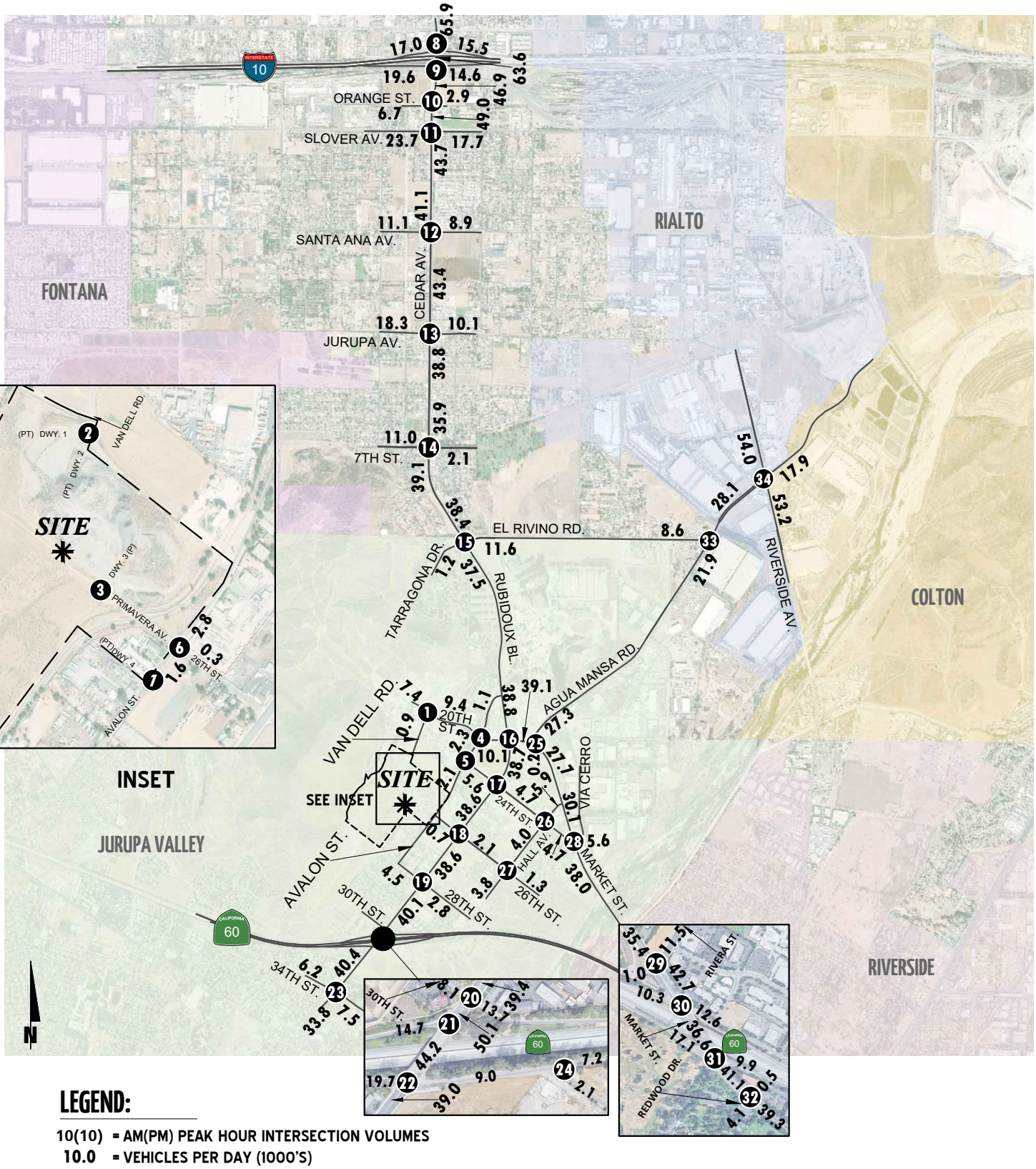
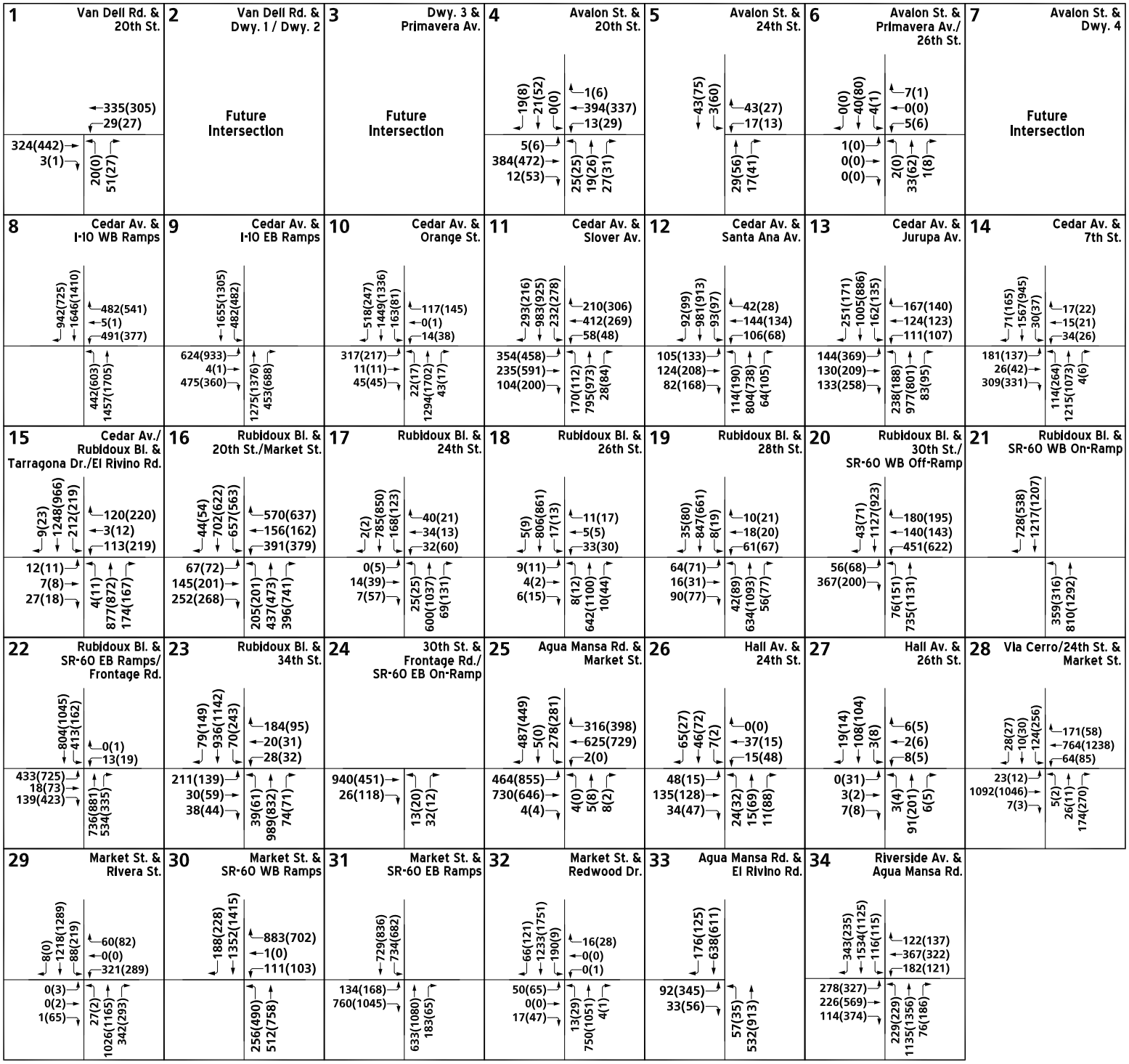


EXHIBIT 8-2: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)

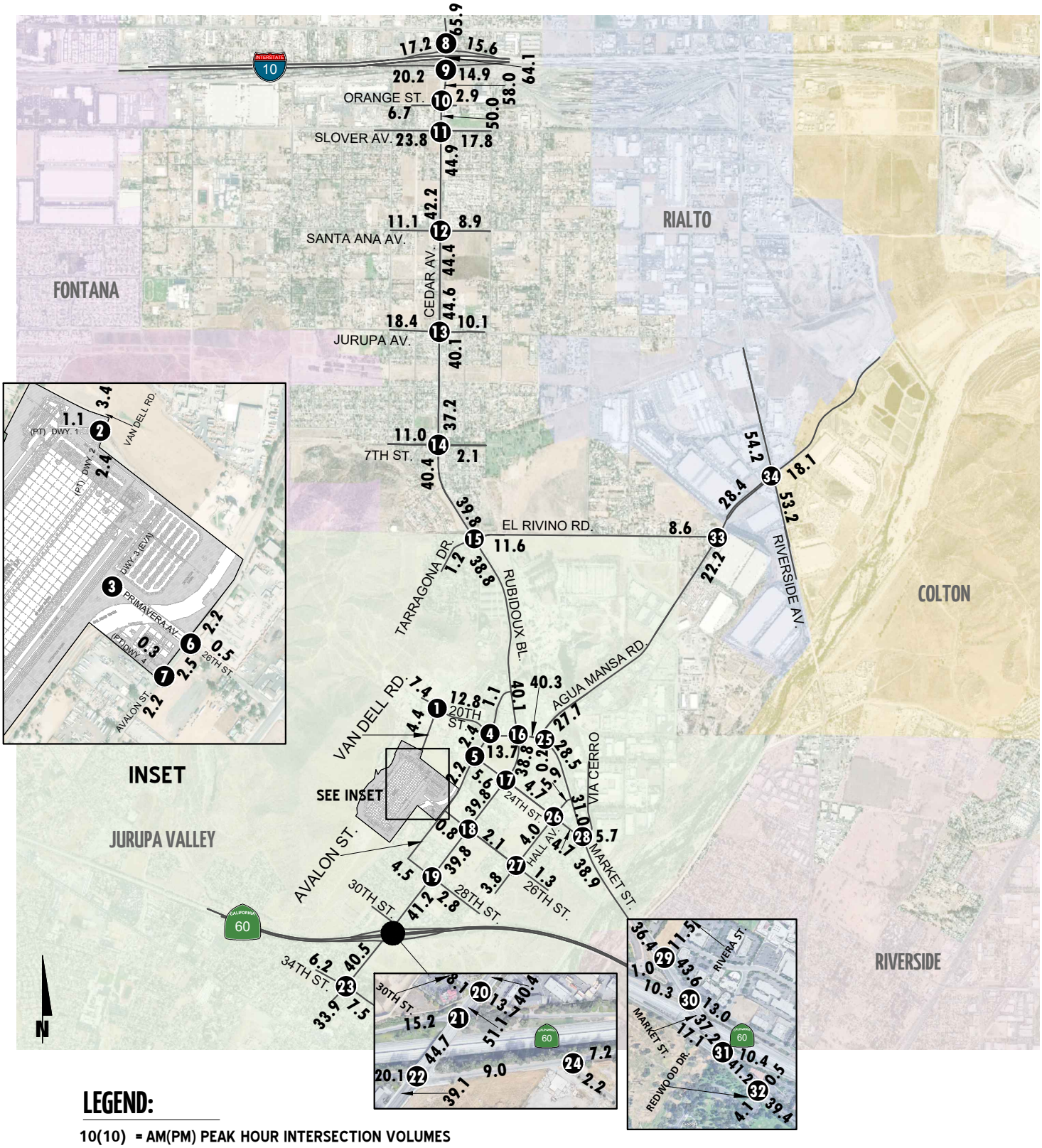


LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

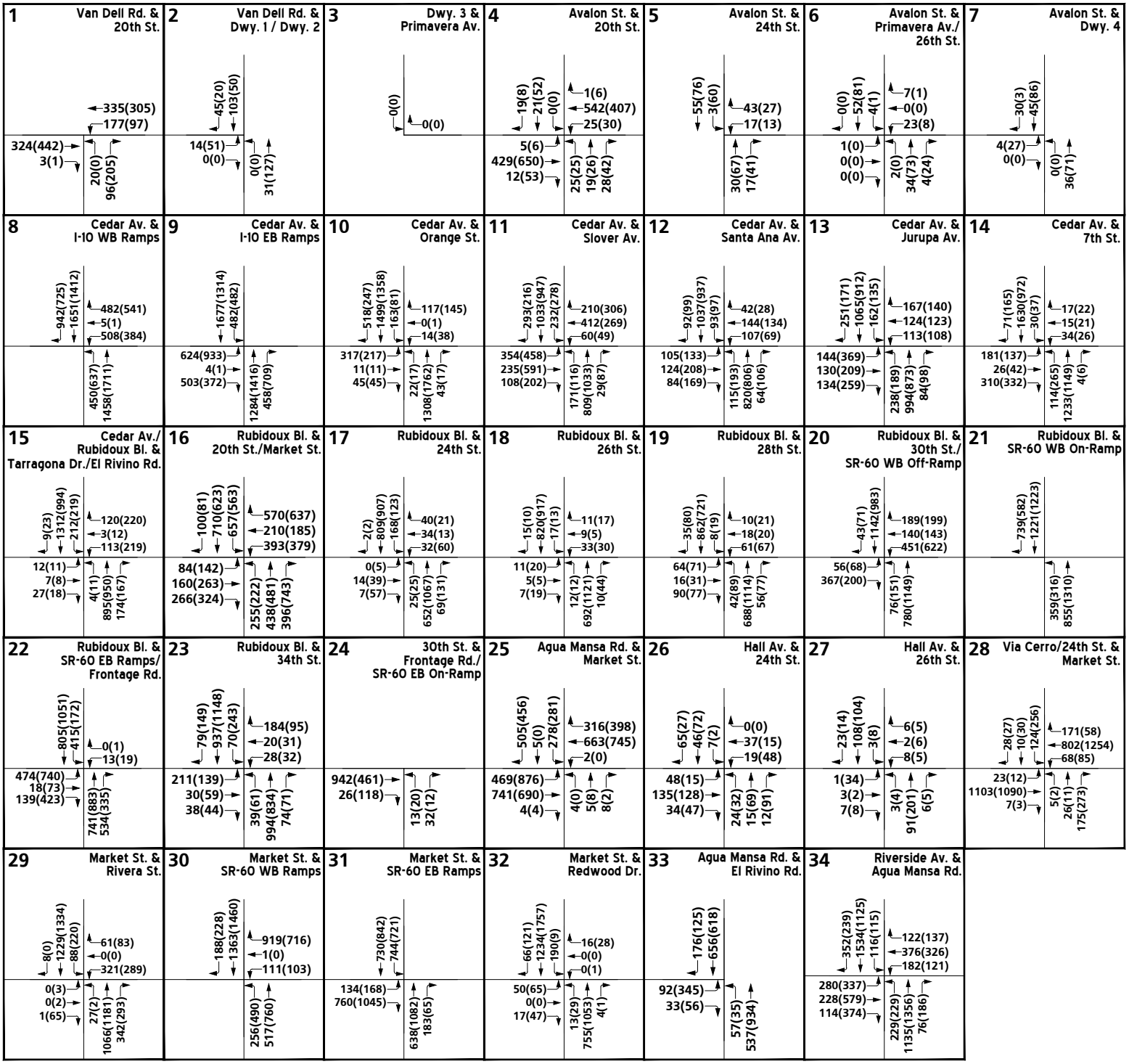
EXHIBIT 8-3: HORIZON YEAR (2040) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES
10.0 = VEHICLES PER DAY (1000'S)

EXHIBIT 8-4: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

N

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URBAN CROSSROADS

8.4 INTERSECTION OPERATIONS ANALYSIS

8.4.1 HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year Without Project traffic conditions with roadway and intersection geometrics consistent with Section 8.1 *Roadway Improvements*. As shown in Table 8-1, the following study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2040) Without Project traffic conditions:

- Cedar Avenue & I-10 Westbound Ramps (#8) – LOS E AM and PM peak hours
- Cedar Avenue & I-10 Eastbound Ramps (#9) – LOS E AM peak hour; LOS F PM peak hour
- Cedar Avenue & Slover Avenue (#11) – LOS E AM and PM peak hours
- Cedar Avenue & Jurupa Avenue (#13) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 20th Street/Market Street (#16) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 24th Street (#17) – LOS F AM and PM peak hours
- Rubidoux Boulevard & 26th Street (#18) – LOS F AM and PM peak hours
- Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – LOS E AM peak hour; LOS F PM peak hour
- Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – LOS F AM peak hour; LOS E PM peak hour
- Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – LOS F AM peak hour; LOS E PM peak hour
- Agua Mansa Road & Market Street (#25) – LOS E AM peak hour; LOS F PM peak hour
- Via Cerro/24th Street & Market Street (#28) – LOS E AM peak hour; LOS F PM peak hour
- Market Street & Redwood Drive (#32) – LOS E AM and PM peak hours
- Agua Mansa Road & El Rivino Road (#33) – LOS F AM and PM peak hours
- Riverside Drive & Agua Mansa Road (#34) – LOS F AM and PM peak hours

A summary of the peak hour intersection LOS for Horizon Year (2040) Without Project traffic conditions is shown on Exhibit 8-5. The intersection operations analysis worksheets for Horizon Year Without Project traffic conditions are included in Appendix 8.1 of this TIA.

EXHIBIT 8-5: HORIZON YEAR (2040) WITHOUT PROJECT SUMMARY OF LOS

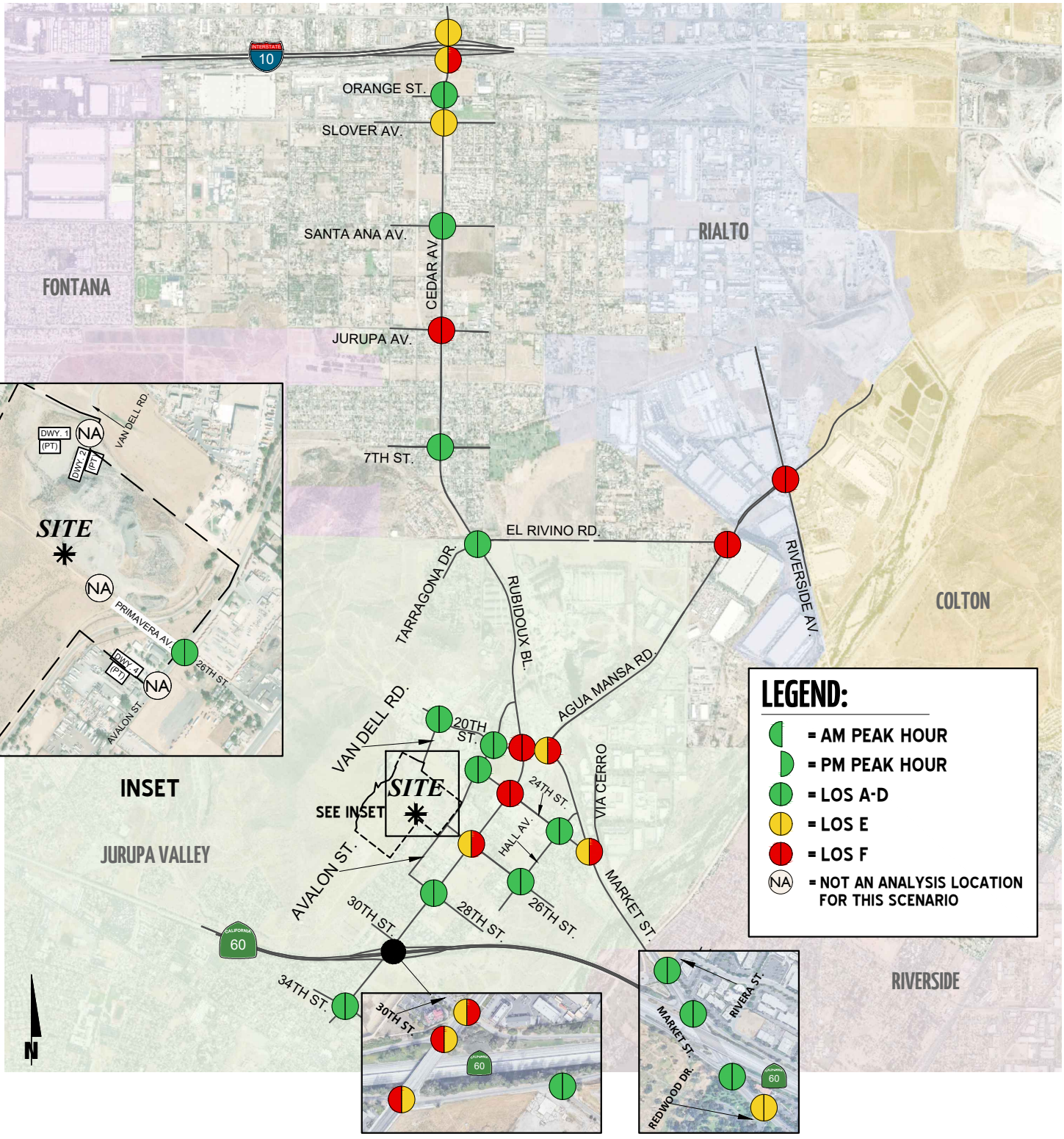

Table 8-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project Delay[1] (secs.) AM	2040 Without Project Delay[1] (secs.) PM	2040 Without Project Level of Service AM	2040 Without Project Level of Service PM	2040 With Project Delay[1] (secs.) AM	2040 With Project Delay[1] (secs.) PM	2040 With Project Level of Service AM	2040 With Project Level of Service PM	Change in Delay[3] AM	Change in Delay[3] PM
1	Van Dell Rd. & 20th St.	CSS	12.6	11.4	B	B	15.2	14.8	C	B	--	--
2	Van Dell Rd. & Driveway 1/Driveway 2	**CSS**	Future Intersection				9.6	10.1	A	B	--	--
3	Driveway 3 & Primavera St.	**CSS**	Future Intersection				0.0	0.0	A	A	--	--
4	Avalon St. & 20th St.	CSS	19.7	26.1	C	D	28.2	33.6	D	D	--	--
5	Avalon St. & 24th St.	CSS	9.0	10.5	A	B	9.1	10.6	A	B	--	--
6	Avalon St. & Primavera Av./26th St.	CSS	9.1	9.4	A	A	9.2	9.5	A	A	--	--
7	Avalon St. & Driveway 4	**CSS**	Future Intersection				9.0	9.5	A	A	--	--
8	Cedar Av. & I-10 WB Ramps	TS	**57.7**	**69.0**	**E**	**E**	**61.7**	**76.1**	**E**	**E**	--	--
9	Cedar Av. & I-10 EB Ramps	TS	**63.6**	**88.4**	**E**	**F**	**66.0**	**90.9**	**E**	**F**	--	--
10	Cedar Av. & Orange St.	TS	29.1	21.8	C	C	29.7	22.9	C	C	--	--
11	Cedar Av. & Slover Av.	TS	**62.2**	**66.0**	**E**	**E**	**63.2**	**71.5**	**E**	**E**	--	--
12	Cedar Av. & Santa Ana Av.	TS	30.9	39.7	C	D	31.4	40.6	C	D	--	--
13	Cedar Av. & Jurupa Av.	TS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	--	--
14	Cedar Av. & 7th St.	TS	42.7	36.6	D	D	47.3	37.0	D	D	--	--
15	Cedar Av./Rubidoux Bl. & Tarragona Dr./El Rivino Rd.	TS	16.2	30.7	B	C	16.4	33.6	B	C	--	--
16	Rubidoux Bl. & 20th St./Market St.	TS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	>3.0	>3.0
17	Rubidoux Bl. & 24th St.	CSS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**	>3.0	>3.0
18	Rubidoux Bl. & 26th St.	CSS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**	>3.0	>3.0
19	Rubidoux Bl. & 28th St.	TS	13.0	16.8	B	B	13.2	17.5	B	B	--	--
20	Rubidoux Bl. & SR-60 WB Off-Ramp	TS	**70.5**	**119.3**	**E**	**F**	**71.9**	**120.9**	**E**	**F**	1.4	1.6
21	Rubidoux Bl. & SR-60 WB On-Ramp	UC	**>100.0**	**39.1**	**F**	**E**	**>100.0**	**52.6**	**F**	**F**	>5.0	13.5
22	Rubidoux Bl. & SR-60 EB Ramps	TS	**105.1**	**79.9**	**F**	**E**	**115.3**	**82.5**	**F**	**F**	10.2	2.6
23	Rubidoux Bl. & 34th St.	TS	22.3	34.0	C	C	22.4	34.0	C	C	--	--
24	30th St. & Frontage Rd./SR-60 EB On-Ramp	CSS	20.2	12.4	C	B	20.3	12.5	C	B	--	--
25	Agua Mansa Rd. & Market St.	TS	**76.3**	**132.9**	**E**	**F**	**80.9**	**138.7**	**F**	**F**	4.6	5.8
26	Hall Av. & 24th St.	CSS	8.8	9.0	A	B	8.8	9.0	A	A	--	--
27	Hall Av. & 26th St.	CSS	9.8	11.2	A	B	9.8	11.3	A	B	--	--
28	Via Cerro/24th St. & Market St.	TS	**60.2**	**140.0**	**E**	**F**	**64.2**	**152.1**	**E**	**F**	4.0	12.1
29	Market St. & Rivera St.	TS	9.6	36.9	A	D	9.7	36.9	A	D	--	--
30	Market St. & SR-60 WB Ramps	TS	8.0	13.3	A	B	8.0	16.5	A	B	--	--
31	Market St. & SR-60 EB Ramps	TS	52.1	52.0	D	D	52.6	47.2	D	D	--	--
32	Market St. & Redwood Dr.	CSS	**40.9**	**41.6**	**E**	**E**	**41.3**	**41.9**	**E**	**E**	--	--
33	Agua Mansa Rd. & El Rivino Rd.	CSS	**88.8**	**>100.0**	**F**	**F**	**94.6**	**>100.0**	**F**	**F**	--	--
34	Riverside Av. & Agua Mansa Rd.	TS	**141.2**	**163.9**	**F**	**F**	**143.8**	**167.0**	**F**	**F**	--	--

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

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

[2] CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal; UC = Uncontrolled; **CSS** = Improvement

[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 W only.

8.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 8-1 and illustrated on Exhibit 8-6, with the addition of Project traffic, there are no additional intersections anticipated to result in an unacceptable LOS in addition to the intersections previously identified under Horizon Year (2040) Without Project traffic conditions. The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions are included in Appendix 8.2 of this TIA.

8.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following study area intersection is anticipated to warrant a peak hour traffic signal under Horizon Year (2040) Without Project traffic conditions (see Appendix 8.3):

- Market Street & Redwood Drive (#32)

With the addition of Project traffic, there are no additional unsignalized intersections anticipated to warrant a traffic signal under Horizon Year (2040) With Project traffic conditions (see Appendix 8.4).

8.6 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-10 Freeway at Cedar Avenue, SR-60 Freeway at Rubidoux Boulevard, and SR-60 Freeway at Market Street interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the I-10 Freeway or SR-60 Freeway mainline. Queuing analysis findings are presented in Table 8-2. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline. As shown in Table 8-2, the following movements are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows under Horizon Year (2040) Without and With Project traffic conditions:

- Cedar Avenue & I-10 Westbound Ramps (#8), Westbound right turn lane – PM peak hour only
- Cedar Avenue & I-10 Eastbound Ramps (#9), Eastbound left turn lane – AM and PM peak hours

It should be noted, although the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. Worksheets for Horizon Year (2040) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendices 8.5 and 8.6, respectively.

EXHIBIT 8-6: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS

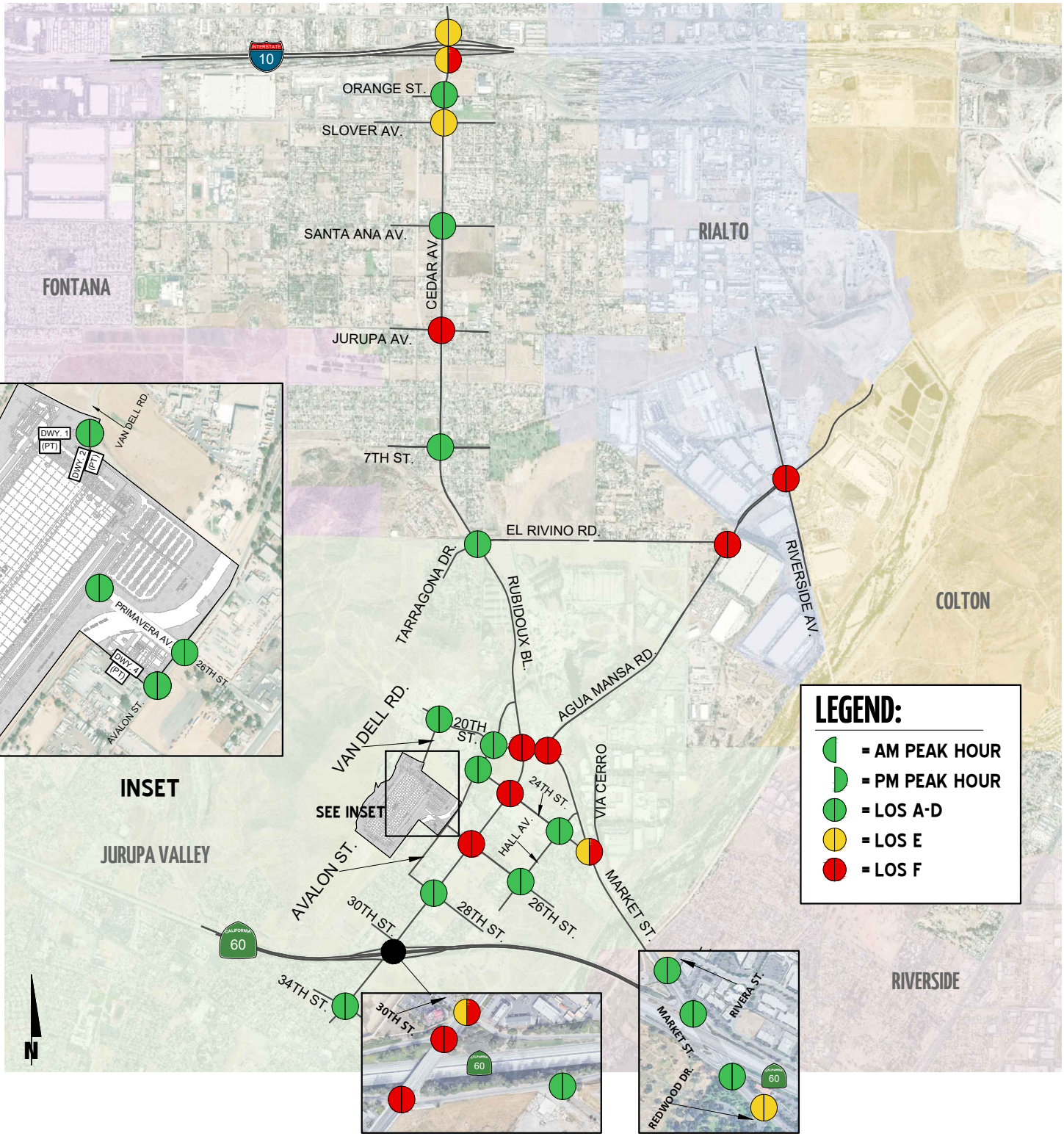

Table 8-2

Peak Hour Freeway Off-Ramp Queuing Summary for Horizon Year (2040) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	2040 Without Project				2040 With Project			
			95th Percentile Queue (Feet)		Acceptable?[1]		95th Percentile Queue (Feet)		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
Cedar Av. & I-10 WB Ramps	WBL/T/R	1,270	661 [2]	650 [2]	Yes	Yes	690 [2]	651 [2]	Yes	Yes
	WBR	480	454 [2,3]	**556** [2,3]	Yes	**No**	454 [2]	**567** [2,3]	Yes	**No**
Cedar Av. & I-10 EB Ramps	EBL	400	**674** [2,3]	**1,012** [2,3]	**No**	**No**	**674** [2,3]	**1,012** [2,3]	**No**	**No**
	EBL/T/R	1,900	638 [2]	857 [2]	Yes	Yes	688 [2]	880 [2]	Yes	Yes
Rubidoux Bl. & SR-60 WB Off-Ramp	WBL/T/R	1,250	983 [2]	1,198 [2]	Yes	Yes	989 [2]	1,200 [2]	Yes	Yes
Rubidoux Bl. & SR-60 EB Off-Ramp	EBL/T/R	1,100	224	608 [2]	Yes	Yes	244	622 [2]	Yes	Yes
Market St. & SR-60 WB Ramps	WBL	170	158 [2]	136 [2]	Yes	Yes	158 [2]	136 [2]	Yes	Yes
	WBR[4]	1,350	0	0	Yes	Yes	0	0	Yes	Yes
Market St. & SR-60 EB Ramps	EBL	155	130	154	Yes	Yes	130	155	Yes	Yes
	EBR	1,635	256 [2]	477 [2]	Yes	Yes	256 [2]	480 [2]	Yes	Yes

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

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

[3] Although 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline.

[4] Movement is a free-right turn lane. As such, there is no queue during the peak hours.

8.7 FREEWAY FACILITY ANALYSIS

Horizon Year (2040) Without Project mainline directional volumes for the AM and PM peak hours are provided on Exhibit 8-7. As shown in Table 8-3, the following freeway segments or merge/diverge ramp junctions analyzed for this study are anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for Horizon Year (2040) Without Project traffic conditions:

- I-10 Freeway Westbound, West of Cedar Avenue (#1) – LOS F AM and PM peak hours
- I-10 Freeway Westbound, On-Ramp at Cedar Avenue (#2) – LOS F AM and PM peak hours
- I-10 Freeway Westbound, Off-Ramp at Cedar Avenue (#3) – LOS F AM and PM peak hours
- I-10 Freeway Westbound, East of Cedar Avenue (#4) – LOS E AM And PM peak hours
- I-10 Freeway Eastbound, West of Cedar Avenue (#5) – LOS E PM peak hour only
- SR-60 Freeway Westbound, West of Rubidoux Boulevard (#9) – LOS F PM peak hour only
- SR-60 Freeway Westbound, On-Ramp at Rubidoux Boulevard (#10) – LOS F PM peak hour only
- SR-60 Freeway Westbound, Off-Ramp at Rubidoux Boulevard (#11) – LOS F PM peak hour only
- SR-60 Freeway Westbound, Rubidoux Boulevard to Market Street (#12) – LOS F PM peak hour only
- SR-60 Freeway Westbound, On-Ramp at Market Street (#13) – LOS F PM peak hour only
- SR-60 Freeway Westbound, Off-Ramp at Market Street (#14) – LOS F PM peak hour only
- SR-60 Freeway Westbound, East of Market Street (#15) – LOS F PM peak hour only
- SR-60 Freeway Eastbound, West of Rubidoux Boulevard (#16) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Off-Ramp at Rubidoux Boulevard (#17) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, On-Ramp at Rubidoux Boulevard (#18) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Rubidoux Boulevard to Market Street (#19) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, Off-Ramp at Market Street (#20) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, On-Ramp at Market Street (#21) – LOS F AM and PM peak hours
- SR-60 Freeway Eastbound, East of Market Street (#22) – LOS F AM and PM peak hours

Horizon Year (2040) With Project mainline directional volumes for the AM and PM peak hours are provided on Exhibit 8-8. With the addition of Project traffic, the following additional study area freeway segment is anticipated to operate at an unacceptable LOS under Horizon Year (2040) With Project traffic conditions:

- I-10 Freeway Eastbound, East of Cedar Avenue (#8) – LOS E PM peak hour only

Horizon Year (2040) Without and With Project freeway facility analysis worksheets are provided in Appendices 8.7 and 8.8, respectively.

EXHIBIT 8-7: HORIZON YEAR (2040) WITHOUT PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

EXHIBIT 8-8: HORIZON YEAR (2040) WITH PROJECT FREEWAY MAINLINE VOLUMES

LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

Table 8-3

Freeway Facility Analysis for Horizon Year (2040) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2040 Without Project				2040 With Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	**38.4**	**F**	**38.4**	**F**	**38.4**	**F**	**38.4**	**F**
		On-Ramp at Cedar Av.	4	**51.9**	**F**	**53.7**	**F**	**51.9**	**F**	**54.0**	**F**
		Off-Ramp at Cedar Av.	5	**78.5**	**F**	**80.1**	**F**	**78.2**	**F**	**80.0**	**F**
		East of Cedar Av.	5	**41.5**	**E**	**43.7**	**E**	**41.6**	**E**	**43.7**	**E**
	Eastbound	West of Cedar Av.	4	32.4	D	**36.0**	**E**	32.6	D	**36.1**	**E**
		Off-Ramp at Cedar Av.	5	23.6	C	25.5	C	23.6	C	25.5	C
		On-Ramp at Cedar Av.	4	29.7	D	32.6	D	29.8	D	32.7	D
		East of Cedar Av.	4	30.8	D	35.0	D	30.8	D	**35.1**	**E**
SR-60	Westbound	West of Rubidoux Bl.	3	24.3	C	**41.5**	**F**	24.4	C	**41.8**	**F**
		On-Ramp at Rubidoux Bl.	3	28.8	D	**37.4**	**F**	28.9	C	**37.6**	**F**
		Off-Ramp at Rubidoux Bl.	3	28.1	D	**38.9**	**F**	28.1	D	**38.7**	**F**
		Rubidoux Bl. to Market St.	3	21.9	C	**42.2**	**F**	21.9	C	**42.0**	**F**
		On-Ramp at Market St.	3	25.5	C	**37.9**	**F**	25.5	C	**37.8**	**F**
		Off-Ramp at Market St.	3	31.8	D	**40.3**	**F**	32.0	D	**40.3**	**F**
		East of Market St.	3	25.9	C	**45.0**	**F**	26.1	D	**45.0**	**F**
	Eastbound	West of Rubidoux Bl.	3	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**	**45.0**	**F**
		Off-Ramp at Rubidoux Bl.	3	**65.1**	**F**	**40.5**	**F**	**64.4**	**F**	**40.5**	**F**
		On-Ramp at Rubidoux Bl.	3	**62.3**	**F**	**32.8**	**F**	**61.6**	**F**	**32.8**	**F**
		Rubidoux Bl. to Market St.	3	**38.1**	**F**	**33.4**	**F**	**38.1**	**F**	**33.3**	**F**
		Off-Ramp at Market St.	3	**37.6**	**F**	**36.5**	**F**	**37.6**	**F**	**36.5**	**F**
		On-Ramp at Market St.	3	**62.0**	**F**	**31.3**	**F**	**62.1**	**F**	**31.7**	**F**
		East of Market St.	3	**38.1**	**F**	**29.2**	**F**	**38.1**	**F**	**29.5**	**F**

* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

8.8 HORIZON YEAR (2040) DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements. Based on the deficiency criteria discussed in Section 2.7 *Minimum Acceptable Levels of Service (LOS) and Intersection Deficiency Criteria*, the following intersections were found to be deficient. Improvements necessary to improve traffic deficiencies back to acceptable levels are also discussed below.

8.8.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvement strategies have been recommended at intersections that have been identified as deficient in an effort to reduce each location's peak hour delay and improve the associated LOS grade to acceptable LOS. The effectiveness of the recommended improvement strategies discussed below to address Horizon Year (2040) Without Project and With Project traffic deficiencies are presented in Table 8-4 and described below. The intersection operations analysis worksheets for Horizon Year (2040) Without Project and With Project traffic conditions, with improvements, are included in Appendices 8.9, and 8.10, respectively.

Recommended Improvement – Cedar Avenue & I-10 Westbound Ramps (#8) – The following improvements are consistent with the interchange improvement project and are necessary to bring the LOS back to acceptable levels:

- Add a 2nd northbound left turn lane.

Recommended Improvement – Cedar Avenue & I-10 Eastbound Ramps (#9) – The following improvements are consistent with the interchange improvement project and are necessary to bring the LOS back to acceptable levels:

- Add a 2nd southbound left turn lane.
- Add an eastbound right turn lane.

Recommended Improvement – Cedar Avenue & Slover Avenue (#11) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide two left turn lanes, one through lane, and one shared through-right turn lane.
- Add a southbound right turn lane.

Recommended Improvement – Cedar Avenue & Jurupa Avenue (#13) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide one left turn lane and one shared through-right turn lane.
- Restripe the westbound approach to provide one left turn lane and one shared through-right turn lane.

Table 8-4

Intersection Analysis for Horizon Year (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
8	Cedar Av. & I-10 WB Ramps																	
	- Without Project[4]	TS	**2**	2	0	0	3	1	0	0	0	0	1	1	33.5	33.9	C	C
	- With Project[4]	TS	**2**	2	0	0	3	1	0	0	0	0	1	1	35.3	34.9	D	C
9	Cedar Av. & I-10 EB Ramps																	
	- Without Project[4]	TS	0	3	1	**2**	2	0	1	1	**1**	0	0	0	53.7	46.3	D	D
	- With Project[4]	TS	0	3	1	**2**	2	0	1	1	**1**	0	0	0	53.7	47.8	D	D
11	Cedar Av. & Slover Av.																	
	- Without Project	TS	1	2	0	1	2	**1**	**2**	2	**0**	1	2	0	54.5	53.6	D	D
	- With Project	TS	1	2	0	1	2	**1**	**2**	2	**0**	1	2	0	54.7	54.7	D	D
13	Cedar Av. & Jurupa Av.																	
	- Without Project	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	39.0	54.8	D	D
	- With Project	TS	1	2	0	1	2	0	**1**	1	**0**	**1**	1	**0**	39.6	54.8	D	D
16	Rubidoux Bl. & 20th St./Market St.																	
	- Without Project[5]	TS	1	2	1	**2**	2	1	1	**2**	**1>**	**2**	1	1>>	44.7	43.2	D	D
	- With Project[5]	TS	1	2	1	**2**	2	1	1	**2**	**1>**	**2**	1	1>>	46.8	48.3	D	D
17	Rubidoux Bl. & 24th St.																	
	- Without Project	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	14.6	14.2	B	B
	- With Project	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	14.9	14.2	B	B
18	Rubidoux Bl. & 26th St.																	
	- Without Project	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	7.2	7.8	A	A
	- With Project	**TS**	**1**	2	0	**1**	2	0	0	1	0	0	1	0	7.6	8.2	A	A
20	Rubidoux Bl. & SR-60 WB Off-Ramp																	
	- Without Project	TS	1	2	0	0	2	0	1	0	1	**1**	1	0	27.6	43.4	C	D
	- With Project	TS	1	2	0	0	2	0	1	0	1	**1**	1	0	32.8	43.9	C	D
21	Rubidoux Bl. & SR-60 WB On-Ramp																	
	- Without Project	**TS**	1	2	0	0	2	0	0	0	0	0	0	0	8.6	5.5	B	A
	- With Project	**TS**	1	2	0	0	2	0	0	0	0	0	0	0	8.6	5.5	A	A
22	Rubidoux Bl. & SR-60 EB Ramps																	
	- Without Project	TS	0	2	**1**	1	2	0	**1**	2	0	1	0	1	34.4	34.9	C	C
	- With Project	TS	0	2	**1**	1	2	0	**1**	2	0	1	0	1	34.8	35.0	C	C
25	Agua Mansa Rd. & Market St.																	
	- Without Project	TS	0	1	0	0	1	0	**2**	**1**	1	1	2	d	49.8	49.0	D	D
	- With Project	TS	0	1	0	0	1	0	**2**	**1**	1	1	2	d	51.8	50.7	D	D
28	Via Cerro/24th St. & Market St.																	
	- Without Project	TS	0	1	1	1	1	0	1	**2**	1	1	**2**	0	20.3	30.5	C	C
	- With Project	TS	0	1	1	1	1	0	1	**2**	1	1	**2**	0	20.5	31.0	C	C
33	Agua Mansa Rd. & El Rivino Rd.																	
	- Without Project	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	14.0	19.1	B	B
	- With Project	**TS**	1	1	0	0	1	0	0	1	0	0	0	0	14.6	20.3	B	C

Table 8-4

Intersection Analysis for Horizon Year (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
34	Riverside Dr. & Agua Mansa Rd.																	
	- Without Project	TS	1	**3**	0	1	**3**	**1**	**2**	**2**	1	1	**2**	1	47.7	52.1	D	D
	- With Project	TS	1	**3**	0	1	**3**	**1**	**2**	**2**	1	1	**2**	1	48.3	53.5	D	D

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

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

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

[3] CSS = Cross-street Stop; TS = Traffic Signal; **TS** = Improvement

[4] Improvements are consistent with the I-10 Freeway/Cedar Avenue interchange project.

[5] Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

Recommended Improvement – Rubidoux Boulevard & 20th Street/Market Street (#16) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.
- Add a 2nd southbound left turn lane.
- Add a 2nd eastbound through lane.
- Add an eastbound right turn lane.
- Add a 2nd westbound left turn lane.
- Modify the traffic signal to protect the eastbound and westbound left turns and to implement overlap phasing for the eastbound right turn lane.

Recommended Improvement – Rubidoux Boulevard & 24th Street (#17) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & 26th Street (#18) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.
- Add a northbound left turn lane.
- Add a southbound left turn lane.

It should be noted, the Project will construct the improvements at this intersection as part of the Project design features.

Recommended Improvement – Rubidoux Boulevard & SR-60 Westbound Off-Ramp (#20) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Add a westbound left turn lane.

Recommended Improvement – Rubidoux Boulevard & SR-60 Westbound On-Ramp (#21) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

Recommended Improvement – Rubidoux Boulevard & SR-60 Eastbound Ramps (#22) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a northbound right turn lane.
- Add an eastbound left turn lane.

Recommended Improvement – Agua Mansa Road & Market Street (#25) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Restripe the eastbound approach to provide two left turn lanes, one through lane, and one right turn lane.

Recommended Improvement – Via Cerro/24th Street & Market Street (#28) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a 2nd eastbound through lane.
- Add a 2nd westbound through lane.

Recommended Improvement – Agua Mansa Road & El Rivino Road (#33) – The following improvement is necessary to bring the LOS back to acceptable levels:

- Install a traffic signal.

Recommended Improvement – Riverside Drive & Agua Mansa Road (#34) – The following improvements are necessary to bring the LOS back to acceptable levels:

- Add a 2nd eastbound left turn lane.
- Add a 3rd northbound through lane.
- Add a 3rd southbound through lane.
- Add a 2nd eastbound through lane.
- Add a 2nd westbound through lane.

8.8.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously in Table 8-2, there are no anticipated peak hour queuing issues at the SR-60 Freeway at Rubidoux Boulevard and SR-60 Freeway at Market Street interchanges. At the I-10 Freeway at Cedar Avenue interchange, the 95th percentile queue is anticipated to exceed the available storage for the turn lanes, however the adjacent lane has sufficient storage to accommodate any spillover without spilling back and affecting the I-10 Freeway mainline. As such, no improvements have been recommended.

8.8.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

There are currently no future improvements planned for the SR-60 Freeway within the study area. However, there are 3 alternatives being considered by SBCTA for the I-10 Project: Alternative 1 is no build; Alternative 2 is the addition of a carpool or high occupancy vehicle (HOV) lane; and Alternative 3 includes 2 tolled express lanes in each direction of travel on the I-10 Freeway between Haven Avenue in the City of Ontario and Ford Street in the City of Redlands. (15) According to the website, the I-10 Project is a longer-term project, and is not anticipated for completion until Year 2024.

For the purposes of this analysis, Alternative 2 has been evaluated. Caltrans typically assumes a reduction of 14 percent to the freeway mainline through volumes in this region to account for vehicles utilizing the HOV lanes. The reduction to the I-10 Freeway mainline volumes has been applied to account for the proposed HOV lanes. The analysis has been performed assuming same

on and off-ramp configurations as existing baseline conditions at the I-10 Freeway/Cedar Avenue interchange.

As shown in Table 8-5, the I-10 Freeway mainline segment operations are anticipated to improve although the following freeway mainline segments or merge/diverge ramp junctions are anticipated to continue to operate at an unacceptable LOS during the peak hours:

- I-10 Freeway Westbound, West of Cedar Avenue (#1) – LOS F AM and PM peak hours
- I-10 Freeway Westbound, On-Ramp at Cedar Avenue (#2) – LOS F AM and PM peak hours
- I-10 Freeway Westbound, Off-Ramp at Cedar Avenue (#3) – LOS F AM and PM peak hours

Worksheets for Horizon Year (2040) Without and With Project conditions freeway mainline level of service analysis, with improvements, are provided in Appendices 8.11 and 8.12, respectively.

The Project is anticipated to have a cumulatively considerable impact to the identified freeway mainline segments and merge/diverge ramp junctions; however, no mitigation measures have been identified as no other improvements beyond those planned by the I-10 Project have been evaluated. Neither Caltrans or the State have adopted a fee program that can ensure that locally contributed impact fees will be tied to improvements to freeway mainlines, and only Caltrans has the jurisdiction over mainline improvements. Because Caltrans has exclusive control over state highway improvements, ensuring that fair share contributions to mainline improvements are actually part of a program tied to implementation is within the jurisdiction of Caltrans.

Table 8-5

Freeway Facility Analysis for Horizon Year (2040) Conditions With Improvements

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2040 Without Project				2040 With Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]	Density[2]	LOS[3]
I-10	Westbound	West of Cedar Av.	4	**38.4**	**F**	**38.4**	**F**	**38.4**	**F**	**38.8**	**F**
		On-Ramp at Cedar Av.	4	**40.5**	**F**	**40.4**	**F**	**40.6**	**F**	**35.7**	**F**
		Off-Ramp at Cedar Av.	5	**62.3**	**F**	**67.0**	**F**	**62.2**	**F**	**67.0**	**F**
		East of Cedar Av.	5	31.9	D	32.6	D	32.0	D	32.6	D
	Eastbound	West of Cedar Av.	4	26.4	D	28.8	D	26.7	D	28.9	D
		Off-Ramp at Cedar Av.	5	20.0	C	21.4	C	20.2	C	21.5	C
		On-Ramp at Cedar Av.	4	26.4	C	29.0	D	26.4	C	29.2	D
		East of Cedar Av.	4	25.2	C	27.6	D	25.2	C	28.2	D

* **BOLD** = Unacceptable Level of Service

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

[3] LOS = Level of Service

9 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. Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors.

9.1 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.

9.2 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. (6) 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.

9.3 FAIR SHARE CONTRIBUTION

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

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, has been provided in Table 9-1 for the applicable deficient study area intersections. These fees are collected with the proceeds solely used as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected population increases.

Table 9-1

Project Fair Share Calculations for Intersection

#	Intersection		Existing	Project	EAPC (2023) Volume	Total New Traffic	Project % of New Traffic
8	Cedar Av. & I-10 WB Ramps						
		AM:	4,344	31	5,404	1,060	2.92%
		PM:	4,146	49	5,329	1,183	**4.14%**
9	Cedar Av. & I-10 EB Ramps						
		AM:	3,835	64	5,288	1,453	4.40%
		PM:	3,645	82	5,329	1,684	**4.87%**
11	Cedar Av. & Slover Av.						
		AM:	2,685	72	4,306	1,621	4.44%
		PM:	2,762	92	4,755	1,993	**4.62%**
13	Cedar Av. & Jurupa Av.						
		AM:	2,079	81	3,503	1,424	5.69%
		PM:	2,124	104	3,901	1,777	**5.85%**
16	Rubidoux Bl. & 20th St./Market St.						
		AM:	2,354	217	4,039	1,685	12.88%
		PM:	2,791	270	4,801	2,010	**13.43%**
17	Rubidoux Bl. & 24th St.						
		AM:	1,465	76	2,553	1,088	**6.99%**
		PM:	1,816	87	3,066	1,250	6.96%
20	Rubidoux Bl. & SR-60 WB Off-Ramp						
		AM:	2,141	69	3,371	1,230	**5.61%**
		PM:	2,582	82	4,085	1,503	5.46%
21	Rubidoux Bl. & SR-60 WB On-Ramp						
		AM:	2,225	60	3,294	1,069	5.61%
		PM:	2,613	78	3,916	1,303	**5.99%**
22	Rubidoux Bl. & SR-60 EB Ramps						
		AM:	2,252	49	3,179	927	**5.29%**
		PM:	2,799	33	3,851	1,052	3.14%
25	Agua Mansa Rd. & Market St.						
		AM:	1,806	72	2,805	999	7.21%
		PM:	2,205	88	3,405	1,200	**7.33%**
33	Agua Mansa Rd. & El Rivino Rd.						
		AM:	913	23	1,424	511	4.50%
		PM:	1,354	28	1,971	617	**4.54%**
34	Riverside Av. & Agua Mansa Rd.						
		AM:	2,989	22	3,692	703	3.13%
		PM:	3,163	28	3,961	798	**3.51%**
34	Riverside Av. & Agua Mansa Rd.[1]						
		AM:	2,989	22	4,745	1,756	1.25%
		PM:	3,163	28	5,123	1,960	**1.43%**

BOLD = Denotes highest fair share percentage.

[1] Fair share based on future Horizon Year (2040) total traffic volumes is provided for those intersections with new 2040 recommended improvements (see Table 1-3 for 2040 improvements).

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