Majestic Chino Heritage

TRAFFIC IMPACT ANALYSIS

CITY OF CHINO

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CAMUTCD	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
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
NP	No Project (or Without Project)
PCE	Passenger Car Equivalents
PeMS	Performance Measurement System
PHF	Peak Hour Factor
Project	Majestic Chino Heritage
RivTAM	Riverside Traffic 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
SCS	Sustainable Communities Strategy
sf	Square Feet
SHS	State Highway System
SR	State Route
TIA	Traffic Impact Analysis
v/c	Volume to Capacity Ratio
vphgpl	Vehicles Per Hour Green Per Lane
WP	With Project

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1 SUMMARY OF FINDINGS

This report presents the results of the traffic impact analysis (TIA) for the proposed Majestic Chino Heritage ("Project"), which is located on the southeast corner of Mountain Avenue and Bickmore Avenue in the City of Chino, 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, and where necessary recommend improvements to achieve acceptable operations consistent with General Plan level of service goals and policies. This traffic study has been prepared in accordance with the San Bernardino County Congestion Management Program (CMP) Guidelines for CMP Traffic Impact Analysis Reports (Appendix B, 2016 Update), the California Department of Transportation (Caltrans) Guide for the Preparation of Traffic Impact Studies (December 2002), and consultation with City staff during the traffic study scoping process. (1) (2) The City approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

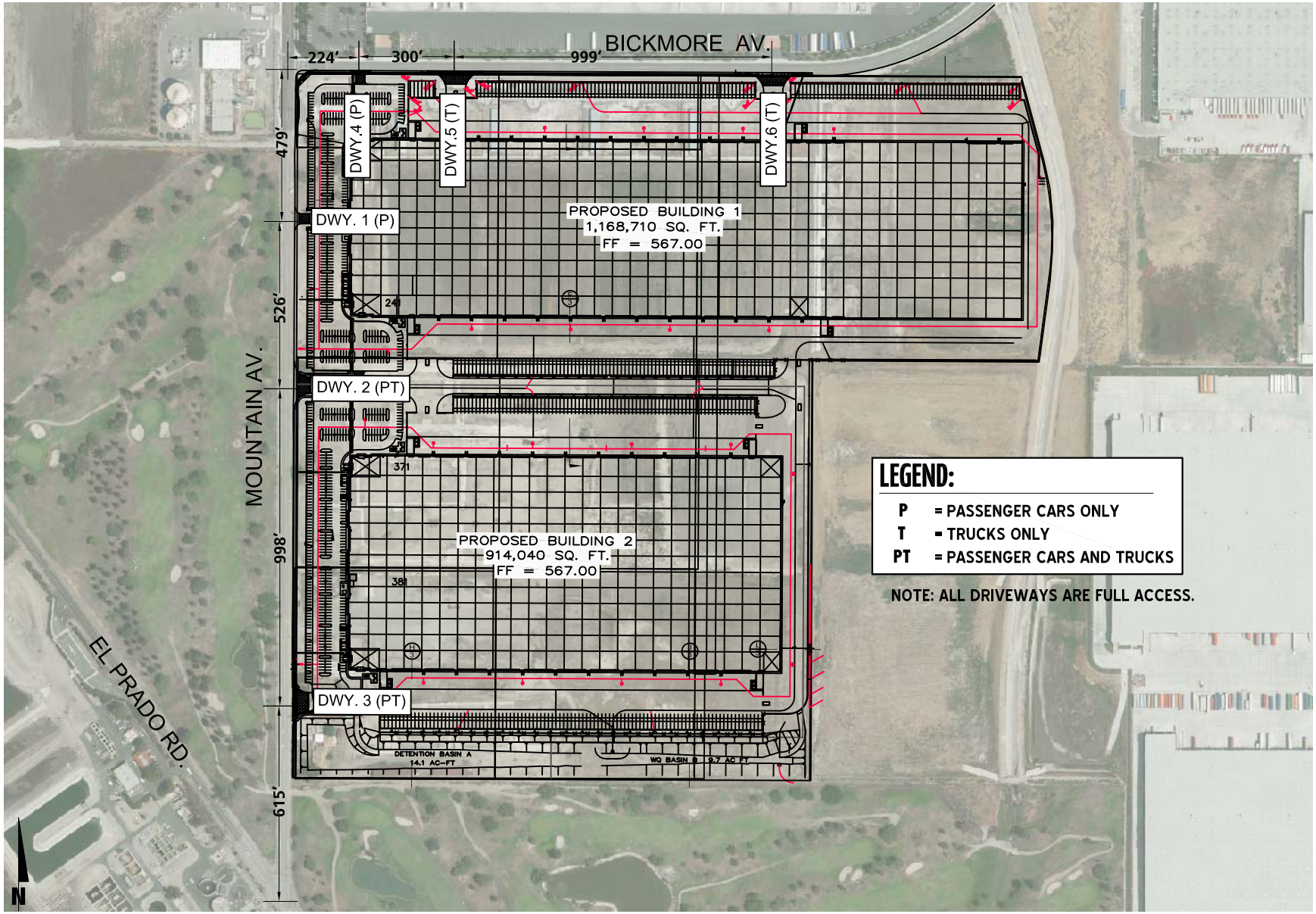
1.1 PROJECT OVERVIEW

Exhibit 1-1 illustrates the preliminary Project site plan. As indicated on Exhibit 1-1, the total development is proposed to consist of up to 2,082,750 square feet of industrial uses. For purposes of scoping the TIA, the following land uses are assumed:

- Building 1: 1,168,710 square feet of High-Cube Fulfillment Center Warehouse use
- Building 2: 814,040 square feet of High-Cube Fulfillment Center Warehouse use
- Remainder of Building 2: 100,000 square feet of High-Cube Warehouse with Cold Storage use
- **Total of 2,082,750 square feet**

The Project's anticipated Opening Year is 2022. 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 DRAFT Transportation Uniform Mitigation Fee (TUMF) High-Cube Warehouse Trip Generation Study (WSP, January 29, 2019). (3) (4) The Project is estimated to generate a net total of 4,440 trip-ends per day (actual vehicles) on a typical weekday with approximately 252 net AM peak hour trips and 338 net 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.

EXHIBIT 1-1: PRELIMINARY SITE PLAN



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1.2 ANALYSIS SCENARIOS

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

- Existing (2019)
- Existing plus Project (E+P)
    - E+P (Building 1)
    - E+P (Project Buildout)
- Opening Year Cumulative (2022) Without Project
- Opening Year Cumulative (2022) With Project
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

1.2.1 EXISTING (2019) CONDITIONS

Information for Existing (2019) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.2.2 EXISTING PLUS PROJECT CONDITIONS

The Existing plus Project (E+P) analysis determines significant traffic impacts that would occur on the existing roadway system with the addition of Project traffic. E+P traffic conditions have been evaluated for Building 1 only and Project Buildout (Building 1 & Building 2) in order to determine any potential off-site improvements that may be applicable to Building 1 only. Building 1 and Building 2 have been evaluated independently as the Project is contemplating constructing Building 1 first. However, constructing Building 2 prior to Building 1 would not result in any additional or different traffic deficiencies or improvement needs.

1.2.3 OPENING YEAR CUMULATIVE (2022) CONDITIONS

The Opening Year Cumulative 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 from Existing conditions of 2% per year (compounded annually) are included for Opening Year Cumulative (2022) traffic conditions. This comprehensive list was compiled from information provided by the City of Chino and other near-by agencies.

1.2.4 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year (2040) with Project conditions were derived from the San Bernardino Transportation Analysis Model (SBTAM) modified to represent buildout of the City of Chino. The Horizon Year (2040) conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the City's Development Impact Fee (DIF) program, or other approved funding mechanisms can accommodate the long-

range cumulative traffic at the target level of service (LOS) identified by the City of Chino (lead agency). It should be noted that the City of Chino has updated their DIF program to also include appropriate contributions towards regionally significant improvements that have been identified via the San Bernardino County CMP regional fee program study. If the planned and funded improvements can provide the target LOS, then the Project's payment into established fee programs will be considered as cumulative mitigation. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-DIF facilities) are identified as such.

1.3 STUDY AREA

To ensure that this TIA satisfies the City of Chino'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 43 study area intersections shown on Exhibit 1-2 and listed on Table 1-1 were selected for this TIA based on consultation with City of Chino staff.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

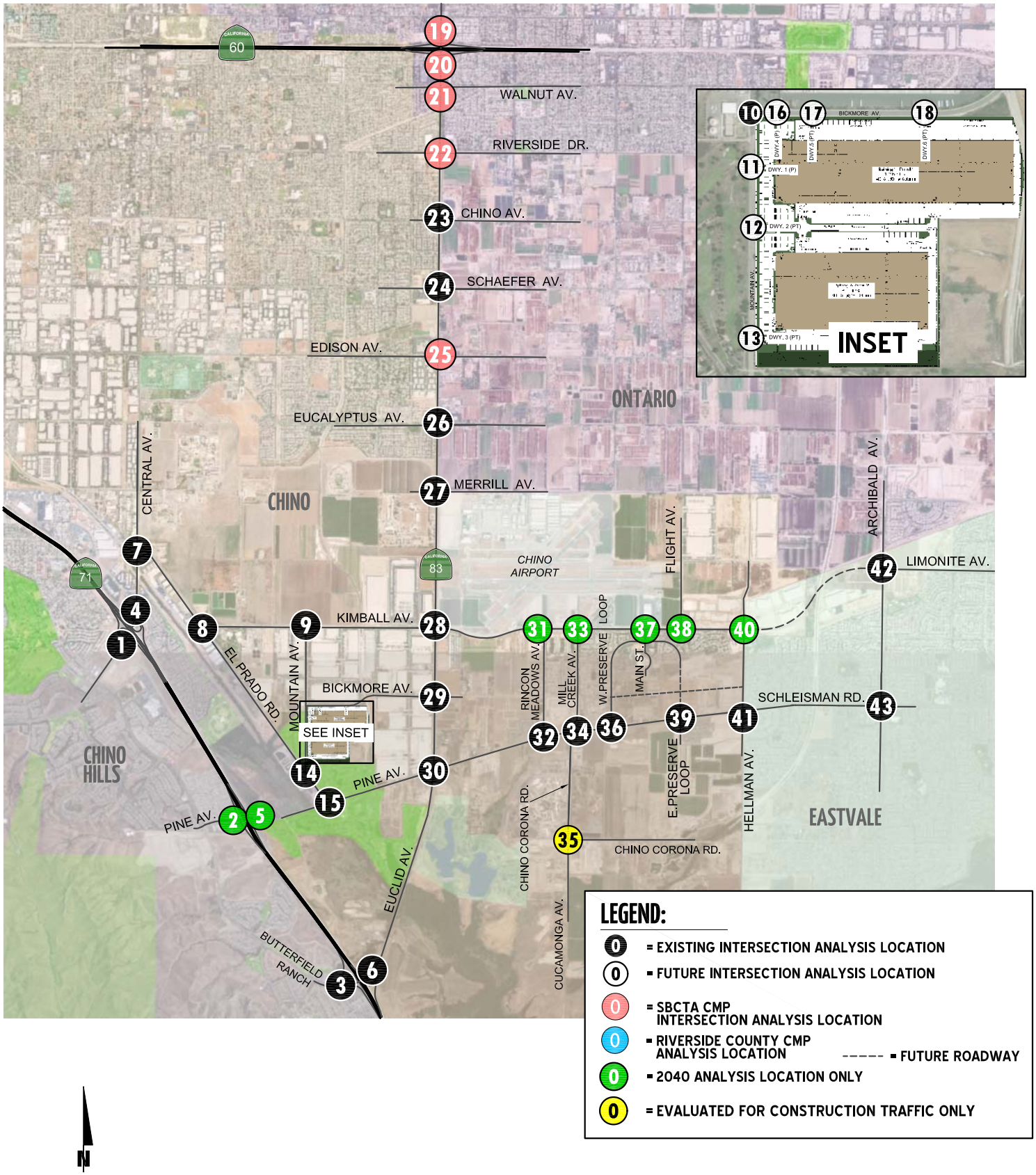
ID	Intersection Location	Jurisdiction	CMP?
1	SR-71 SB Ramps & Soquel Canyon Rd.	Chino Hills, Caltrans	No
2	SR-71 SB Ramps & Pine Av. – 2040 Analysis Location Only	Chino Hills, Caltrans	No
3	SR-71 SB Ramps & Butterfield Ranch Rd.	Chino Hills, Caltrans	No
4	SR-71 NB Ramps & Central Av.	Chino Hills, Caltrans	No
5	SR-71 NB Ramps & Pine Av. – 2040 Analysis Location Only	Chino Hills, Caltrans	No
6	SR-71 NB Ramps & Euclid Av. (SR-83)	Chino, Caltrans	No
7	Central Av. & El Prado Rd.	Chino	No
8	El Prado Rd. & Kimball Av.	Chino	No
9	Mountain Av. & Kimball Av.	Chino	No
10	Mountain Av. & Bickmore Av.	Chino	No
11	Mountain Av. & Driveway 1 – Future Intersection	Chino	No
12	Mountain Av. & Driveway 2 – Future Intersection	Chino	No
13	Mountain Av. & Driveway 3 – Future Intersection	Chino	No
14	El Prado Rd. & Mountain Av.	Chino	No
15	El Prado Rd. & Pine Av.	Chino	No
16	Driveway 4 & Bickmore Avenue – Future Intersection	Chino	No
17	Driveway 5 & Bickmore Avenue – Future Intersection	Chino	No
18	Driveway 6 & Bickmore Avenue – Future Intersection	Chino	No
19	Euclid Av. (SR-83) & SR-60 WB Ramps	Ontario, Caltrans	Yes
20	Euclid Av. (SR-83) & SR-60 EB Ramps	Ontario, Caltrans	Yes

ID	Intersection Location	Jurisdiction	CMP?
21	Euclid Av. (SR-83) & Walnut Av.	Ontario	Yes
22	Euclid Av. (SR-83) & Riverside Dr.	Caltrans, Chino, Ontario	Yes
23	Euclid Av. (SR-83) & Chino Av.	Caltrans, Chino, Ontario	No
24	Euclid Av. (SR-83) & Schaefer Av.	Caltrans, Chino, Ontario	No
25	Euclid Av. (SR-83) & Edison Av.	Caltrans, Chino, Ontario	Yes
26	Euclid Av. (SR-83) & Eucalyptus Av.	Caltrans, Chino, Ontario	No
27	Euclid Av. (SR-83) & Merrill Av.	Caltrans, Chino, Ontario	No
28	Euclid Av. (SR-83) & Kimball Av.	Caltrans, Chino	No
29	Euclid Av. (SR-83) & Bickmore Av.	Caltrans, Chino	No
30	Euclid Av. (SR-83) & Pine Av.	Caltrans, Chino	No
31	Rincon Meadows Av. & Kimball Av. – 2040 Analysis Location Only	Chino	No
32	Rincon Meadows Av. & Pine Av.	Chino	No
33	Mill Creek Av. & Kimball Av. – 2040 Analysis Location Only	Chino	No
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	Chino	No
35	Cucamonga Av. & Chino-Corona Rd. – Construction Only	Chino	No
36	W. Preserve Loop & Pine Av.	Chino	No
37	Main St. & Kimball Av. – 2040 Analysis Location Only	Chino	No
38	Flight Av. & Kimball Av. – 2040 Analysis Location Only	Chino	No
39	E. Preserve Loop & Pine Av.	Chino	No
40	Hellman Av. & Kimball Av. – 2040 Analysis Location Only	Chino, Eastvale	No
41	Hellman Av. & Pine Av./Schleisman Rd.	Chino, Eastvale	No
42	Archibald Av. & Limonite Av.	Eastvale	No
43	Archibald Av. & Schleisman Rd.	Eastvale	No

The “50 peak hour trip” criterion utilized by the City of Chino is consistent with the methodology employed by the County of San Bernardino, 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 Riverside, including the City of Eastvale. Other intersections within the adjacent cities were not selected for evaluation as the Project is anticipated to contribute less than 50 peak hour trips at these non-Chino intersections.

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. Counties within California have developed CMPs with varying methods and strategies to meet the intent of the CMP legislation. Study area intersections that are identified as CMP facilities in the County of San Bernardino per the San Bernardino County Transportation Authority (SBCTA) CMP are indicated in Table 1-1. (1)

EXHIBIT 1-2: LOCATION MAP



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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 impacts 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. As such, this study conservatively evaluates the following freeway segments adjacent to the point of entry to the SHS, even where the Project is anticipated to contribute less than 50 one-way peak hour trips (see Table 1-2 and Exhibit 1-3):

TABLE 1-2: FREEWAY FACILITY ANALYSIS LOCATIONS

ID	Freeway Mainline Segments
1	SR-71 Southbound, North of Central Av.
2	SR-71 Southbound, Central Av. Off-Ramp
3	SR-71 Southbound, Central Av. Loop On-Ramp
4	SR-71 Southbound, Central Av. On-Ramp
5	SR-71 Southbound, Central Av. to Pine Av.
6	SR-71 Southbound, Pine Av. Off-Ramp
7	SR-71 Southbound, Pine Av. On-Ramp
8	SR-71 Southbound, Pine Av. to Euclid Av. (SR-83)
9	SR-71 Southbound, Euclid Av. (SR-83) Off-Ramp
10	SR-71 Southbound, Euclid Av. (SR-83) Loop On-Ramp
11	SR-71 Southbound, Euclid Av. (SR-83) On-Ramp
12	SR-71 Southbound, South of Euclid Av. (SR-83)
13	SR-71 Northbound, North of Central Av.
14	SR-71 Northbound, Central Av. On-Ramp
15	SR-71 Northbound, Central Av. Loop On-Ramp
16	SR-71 Northbound, Central Av. Off-Ramp
17	SR-71 Northbound, Central Av. to Pine Av.
18	SR-71 Northbound, Pine Av. On-Ramp
19	SR-71 Northbound, Pine Av. Off-Ramp
20	SR-71 Northbound, Pine Av. to Euclid Av. (SR-83)
21	SR-71 Northbound, Euclid Av. (SR-83) On-Ramp
22	SR-71 Northbound, Euclid Av. (SR-83) Off-Ramp
23	SR-71 Northbound, South of Euclid Av. (SR-83)
24	SR-60 Westbound, West of Euclid Av. (SR-83)
25	SR-60 Westbound, Euclid Av. (SR-83) On-Ramp
26	SR-60 Westbound, Euclid Av. (SR-83) Off-Ramp
27	SR-60 Westbound, East of Euclid Av. (SR-83)
28	SR-60 Eastbound, West of Euclid Av. (SR-83)
29	SR-60 Eastbound, Euclid Av. (SR-83) Off-Ramp

ID	Freeway Mainline Segments
30	SR-60 Eastbound, Euclid Av. (SR-83) On-Ramp
31	SR-60 Eastbound, East of Euclid Av. (SR-83)

1.4 PROJECT IMPACTS

This section provides a summary of Project impacts. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 6 *E+P Traffic Analysis*, Opening Year Cumulative (2022), Horizon Year (2040) traffic conditions includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Exhibit 1-4.

E+P (Building 1) Conditions:

Based on a comparison of Existing to E+P traffic conditions, the addition of Building 1 traffic is anticipated to contribute to an existing deficiency and would worsen the LOS at the following intersections.

Central Avenue & El Prado Road (#7) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

El Prado Road & Kimball Avenue (#8) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

Euclid Avenue (SR-83) & Pine Avenue (#30) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

EXHIBIT 1-3: FREEWAY FACILITY LOCATION MAP

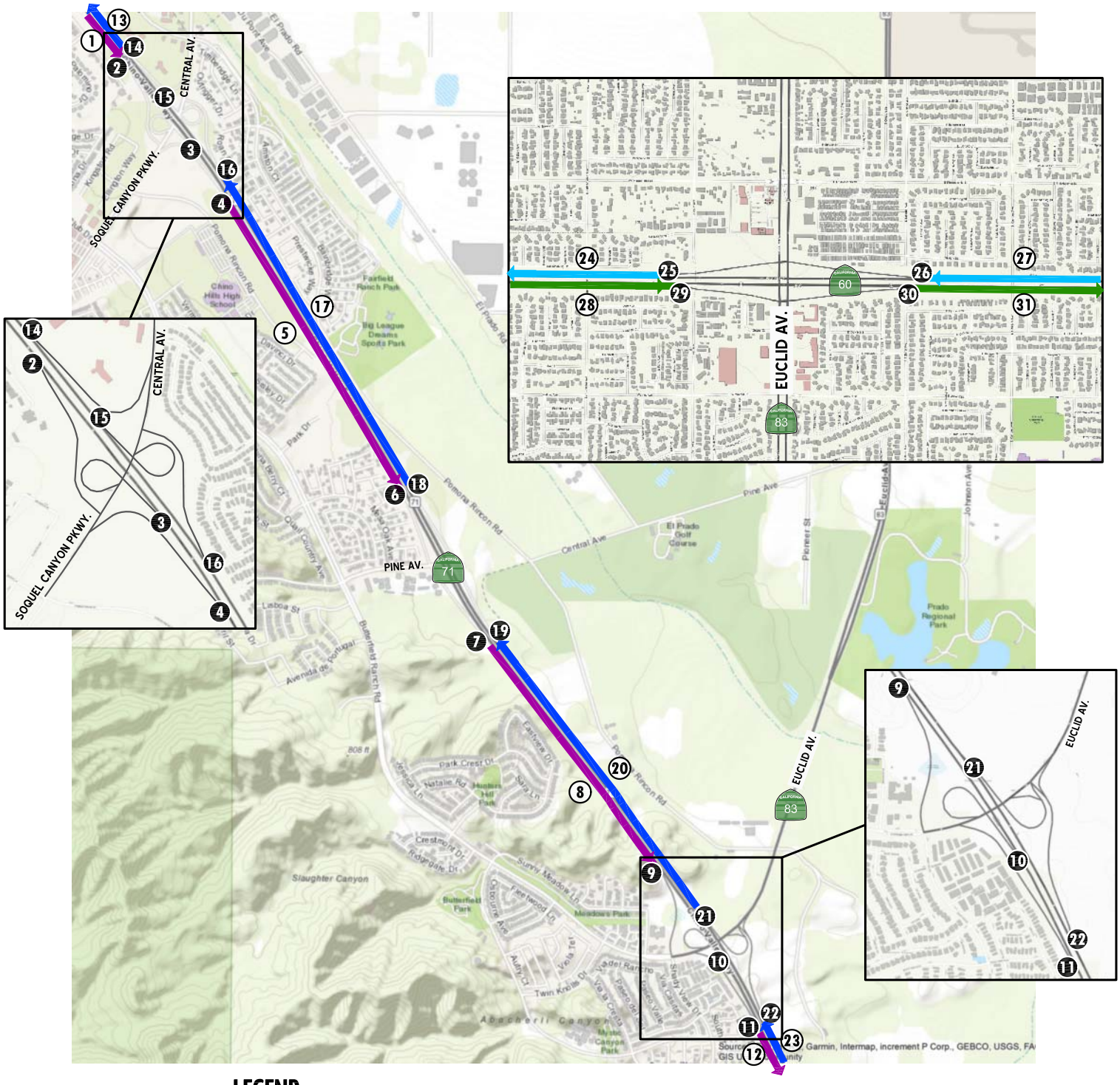

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EXHIBIT 1-4 (1OF2): SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P (Building 1)	E+P (Project Buildout)	Opening Year Cumulative (2022) Without Project	Opening Year Cumulative (2022) With Project	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
1	SR-71 SB Ramps & Soquel Canyon Rd.							
2	SR-71 SB Ramps & Pine Av.		NA	NA	NA	NA		
3	SR-71 SB Ramps & Butterfield Ranch Rd.							
4	SR-71 NB Ramps & Central Av.							
5	SR-71 NB Ramps & Pine Av.		NA	NA	NA	NA		
6	SR-71 NB Ramps & Euclid Av. (SR-83)							
7	Central Av. & El Prado Rd.							
8	El Prado Rd. & Kimball Av.							
9	Mountain Av. & Kimball Av.							
10	Mountain Av. & Bickmore Av.							
11	Mountain Av. & Dwy. 1	NA			NA		NA	
12	Mountain Av. & Dwy. 2	NA			NA		NA	
13	Mountain Av. & Dwy. 3	NA	NA		NA		NA	
14	El Prado Rd. & Mountian Av.							
15	El Prado Rd. & Pine Av.							
16	Dwy. 4 & Bickmore Av.	NA			NA		NA	
17	Dwy. 5 & Bickmore Av.	NA			NA		NA	
18	Dwy. 6 & Bickmore Av.	NA			NA		NA	
19	Euclid Av. (SR-83) & SR-60 WB Ramps							
20	Euclid Av. (SR-83) & SR-60 EB Ramps							
21	Euclid Av. (SR-83) & Walnut Av.							
22	Euclid Av. (SR-83) & Riverside Dr.							

LEGEND:

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

EXHIBIT 1-4 (2OF2): SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing (2019)	E+P (Building 1)	E+P (Project Buildout)	Opening Year Cumulative (2022) Without Project	Opening Year Cumulative (2022) With Project	Horizon Year (2040) Without Project	Horizon Year (2040) With Project
23	Euclid Av. (SR-83) & Chino Av.							
24	Euclid Av. (SR-83) & Schaefer Av.							
25	Euclid Av. (SR-83) & Edison Av.							
26	Euclid Av. (SR-83) & Eucalyptus Av.							
27	Euclid Av. (SR-83) & Merrill Av.							
28	Euclid Av. (SR-83) & Kimball Av.							
29	Euclid Av. (SR-83) & Bickmore Av.							
30	Euclid Av. (SR-83) & Pine Av.							
31	Rincon Meadows Av. & Kimball Av.		NA	NA	NA	NA		
32	Rincon Meadows Av. & Pine Av.	NA	NA	NA				
33	Mill Creek Av. & Kimball Av.		NA	NA	NA	NA		
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.							
35	Cucamonga Av. & Chino-Corona Rd.		NA	NA	NA	NA	NA	NA
36	W. Preserve Loop & Pine Av.							
37	Main St. & Kimball Av.		NA	NA	NA	NA		
38	Flight Av. & Kimball Av.		NA	NA	NA	NA		
39	E. Preserve Loop & Pine Av.							
40	Hellman Av. & Kimball Av.		NA	NA	NA	NA		
41	Hellman Av. & Pine Av./Schleisman Rd.							
42	Archibald Av. & Limonite Av.							
43	Archibald Av. & Schleisman Rd.							

LEGEND:

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

E+P (Project Buildout) Conditions:

Based on a comparison of Existing to E+P traffic conditions, the addition of Project Buildout traffic is anticipated to contribute to an existing deficiency and would worsen the LOS at the following intersections.

Central Avenue & El Prado Road (#7) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

El Prado Road & Kimball Avenue (#8) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

Euclid Avenue (SR-83) & Riverside Drive (#22) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

Euclid Avenue (SR-83) & Pine Avenue (#30) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

Archibald Avenue & Schleisman Road (#43) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

Opening Year Cumulative (2022) Conditions:

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours for Opening Year Cumulative (2022) Without Project traffic conditions. The Project is anticipated to contribute to these deficiencies by adding traffic (as measured by 50 or more peak hours trips) to already deficient intersections resulting in an increase to peak hour delays. Cumulative impacts are deficiencies that would not be directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities along with other cumulative development projects, resulting in a cumulatively considerable impact.

- Central Avenue & El Prado Road (#7) – LOS F PM peak hour only
- El Prado Road & Kimball Avenue (#8) – LOS F PM peak hour only

- Euclid Avenue (SR-83) & Riverside Drive (#22) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Edison Avenue (#25) – LOS E PM peak hour only
- Euclid Avenue (SR-83) & Merrill Avenue (#27) – LOS E PM peak hour only
- Euclid Avenue (SR-83) & Pine Avenue (#30) – LOS F PM peak hour only
- Archibald Avenue & Limonite Avenue (#42) – LOS E AM and PM peak hour
- Archibald Avenue & Schleisman Road (#43) – LOS F AM peak hour; LOS E PM peak hour

The following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Opening Year Cumulative (2022) With Project traffic conditions with the addition of Project traffic, in addition to the locations identified above for Opening Year Cumulative (2022) Without Project traffic conditions.

- Euclid Avenue (SR-83) & Kimball Avenue (#28) – LOS E PM peak hour only

Horizon Year (2040) Conditions:

The following study area intersections are anticipated to operate at a deficient LOS during one or both peak hours for Horizon Year (2040) Without Project traffic conditions. The Project is anticipated to contribute to these deficiencies by adding traffic (as measured by 50 or more peak hours trips) to already deficient intersections resulting in an incase to peak hour delays. Cumulative impacts are deficiencies that would not be directly caused by the Project. The Project would, however, contribute traffic to these deficient facilities along with other cumulative development projects, resulting in a cumulatively considerable impact.

- SR-71 Southbound Ramps & Pine Avenue (#2) – LOS F AM peak hour only
- SR-71 Northbound Ramps & Pine Avenue (#5) – LOS F AM and PM peak hours
- El Prado Road & Pine Avenue (#15) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & SR-60 Eastbound Ramps (#20) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Riverside Drive (#22) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Chino Avenue (#23) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Schaefer Avenue (#24) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Edison Avenue (#25) – LOS F AM and PM peak ours
- Euclid Avenue (SR-83) & Eucalyptus Avenue (#26) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Merrill Avenue (#27) – LOS F AM and PM peak hours
- Euclid Avenue (SR-830 & Kimball Avenue (#28) – LOS F AM and PM peak hours
- Flight Avenue & Kimball Avenue (#38) – LOS F AM and PM peak hours
- Helman Avenue & Kimball Avenue (#40) – LOS F PM peak hour only
- Archibald Avenue & Limonite Avenue (#42) – LOS F AM and PM peak hours

The following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Horizon Year (2040) With Project traffic conditions with the addition of Project traffic, in addition to the locations identified above for Horizon Year (2040) Without Project traffic conditions.

- El Prado Road & Mountain Avenue (#14) – LOS F PM peak hour only

1.5 RECOMMENDED IMPROVEMENTS TO ADDRESS CIRCULATION DEFICIENCIES

Table 1-3 lists the incremental improvements that are required for each analysis scenario from Existing to Horizon Year (2040) traffic conditions to alleviate circulation system deficiencies. The regional and local transportation impact fee programs have each been reviewed and compared to the recommended improvements for each impacted facility. Recommended improvements already identified and included in the City of Chino DIF are clearly denoted. If an impacted facility was found to require improvements to transportation facilities not identified in the fee program, the Project would be required to contribute to the associated intersection or roadway a fair-share percentage toward the costs of the recommended improvements. The fair-share calculations presented on Table 1-3 indicate that the Project contributes 0.5% to 9.6% of new vehicle trips to these intersections. The construction of facilities by the Project Applicant would be eligible for DIF credit and reimbursement (if the costs of construction exceed the Project's fair share contribution or amount of DIF payment), as identified on Table 1-3. These fees (both to the City of Chino, and as determined, to surrounding agencies as fair-share contributions) are collected as part of a funding mechanism aimed at ensuring that regional highways and arterial expansions keep pace with the projected vehicle trip increases.

The improvements listed on Table 1-3 comprise lane additions/modifications, installation of signals and signal modifications. As noted, the identified improvements are covered either by the City of Chino DIF Program or as a fair-share contribution, if not covered by a fee program. Depending on the width of the existing pavement and right-of-way, these improvements may involve only striping modifications, or they may involve construction of additional pavement width. Additional discussion of the relevant pre-existing transportation impact fee programs is provided below.

Table 1-3 also summarizes the applicable cost associated with each of the recommended improvements based on the preliminary construction cost estimates found in Appendix G of the San Bernardino County CMP in conjunction with a cost escalation factor of 1.484 to reflect current (2019) costs. A rough order of magnitude cost has been prepared to determine the appropriate contribution value based upon the Project's fair share of traffic as part of the project approval process. Based on the Project fair share percentages, the Project's fair share cost is estimated at $139,596. These estimates are a rough order of magnitude only as they are intended only for disclosure purposes and do not imply any legal responsibility or formula for contributions or mitigation.

Table 1-3

Summary of Improvements Recommended to Meet City of Chino or Surrounding Agency LOS Requirements

#	Intersection Location	Jurisdiction	Existing (2019)	E+P (Building 1)	E+P (Project Buildout)	2022 Without Project	2022 With Project	2040 Without/With Project	Improvements in City DIF?[1]	DIF Project #	Project Responsibility[7]	Total Cost[2,3,4]	Fair Share %[4]	Fair Share Cost[5]
2	SR-71 SB Ramps & Pine Av.	Chino Hills, Caltrans	None	None	None	None	None	Restripe the EB approach to provide one through lane and one shared through-right turn lane	No		Fair Share	$37,100	7.579%	$2,812
								Restripe the SB approach to provide one through lane and one shared through-right turn lane	No		Fair Share	$37,100		$2,812
											Total	**$74,200**		**$5,623**
5	SR-71 NB Ramps & Pine Av.	Chino Hills, Caltrans	None	None	None	None	None	Install a traffic signal	No		Fair Share	$250,000	6.784%	$16,960
								Restripe the NB approach to provide one left-through and one right turn lane	No		Fair Share	$37,100		$2,517
								2nd EB left turn lane	No		Fair Share	$74,200		$5,034
								2nd WB through lane	Yes	TR-035	Fees	$0		$0
											Total	**$361,300**		**$24,511**
7	Central Av. & El Prado Rd.	Chino	2nd SB left turn lane	Same	Same	Same	Same	Same	Yes	TR-31	Fees	$0	--	$0
											Total	**$0**		**$0**
8	El Prado Rd. & Kimball Av.	Chino, Chino Hills	Restripe the SB approach to provide dual left turns and one shared through-right turn lane	Same	Same	Same	Same	Same	No		Fair Share	$37,100	9.585%	$3,556
											Total	**$37,100**		**$3,556**
14	El Prado Rd. & Mountain Av.	Chino	None	None	None	None	None	Install a traffic signal	Yes	TR-023	Fees	$0	--	$0
											Total	**$0**		**$0**
15	El Prado Rd. & Pine Av.	Chino, Chino Hills	None	None	None	None	None	Install a traffic signal	Yes	TR-124	Fees	$0	--	$0
											Total	**$0**		**$0**
20	Euclid Av. (SR-83) & SR-60 EB Ramps	Ontario, Caltrans	None	None	None	None	None	Add EB right turn lane	Yes	TR-039	Fees	$0	--	$0
								Add 2nd SB left turn lane	Yes	TR-039	Fees	$0		$0
											Total	**$0**		**$0**
22	Euclid Av. (SR-83) & Riverside Dr.	Caltrans, Chino, Ontario	EB right turn lane	Not Applicable	Same	Same	Same	Same	No		Fair Share	$74,200	3.611%	$2,679
						3rd NB through lane	Same	Same	No		Fair Share	$267,120		$9,646
						3rd SB through lane	Same	Same	Yes	TR-125	Fees	$0		$0
								2nd NB left turn lane	No		Fair Share	$74,200		$2,679
								2nd SB left turn lane	No		Fair Share	$74,200		$2,679
								2nd EB through lane	Yes	TR-042	Fees	$0		$0
								EB right turn lane	Yes	TR-042	Fees	$0		$0
											Total	**$489,720**		**$17,684**
23	Euclid Av. (SR-83) & Chino Av.	Caltrans, Chino, Ontario	None	None	None	None	None	3rd NB through lane	No		Fair Share	$267,120	4.108%	$10,974
								3rd SB through lane	No		Fair Share	$267,120		$10,974
								WB left turn lane	No		Fair Share	$74,200		$3,048
											Total	**$608,440**		**$24,996**
24	Euclid Av. (SR-83) & Schaefer Av.	Caltrans, Chino, Ontario	None	None	None	None	None	2nd NB left turn lane	No		Fair Share	$74,200	3.054%	$2,266
								3rd NB through lane	No		Fair Share	$267,120		$8,157
								2nd SB left turn lane	No		Fair Share	$111,300		$3,399
								3rd SB through lane	No		Fair Share	$267,120		$8,157
								2nd EB left turn lane	No		Fair Share	$267,120		$8,157
											Total	**$986,860**		**$30,137**

Table 1-3
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Summary of Improvements Recommended to Meet City of Chino or Surrounding Agency LOS Requirements

#	Intersection Location	Jurisdiction	Existing (2019)	E+P (Building 1)	E+P (Project Buildout)	2022 Without Project	2022 With Project	2040 Without/With Project	Improvements in City DIF?[1]	DIF Project #	Project Responsibility[7]	Total Cost[2,3,4]	Fair Share %[4]	Fair Share Cost[5]
25	Euclid Av. (SR-83) & Edison Av.	Caltrans, Chino, Ontario	None	None	None	3rd NB through lane	Same	Same	Yes	TR-126	Fees	$0	2.329%	$0
						3rd SB through lane	Same	Same	Yes	TR-126	Fees	$0		$0
								2nd NB left turn lane	No		Fair Share	$74,200		$1,728
								2nd SB left turn lane	Yes	TR-126	Fees	$0		$0
								2nd EB left turn lane	Yes	TR-126	Fees	$0		$0
								2nd EB through lane	Yes	TR-126	Fees	$0		$0
								3rd EB through lane	Yes	TR-126	Fees	$0		$0
								2nd WB left turn lane	No		Fair Share	$74,200		$1,728
								2nd WB through lane	No		Fair Share	$267,120		$6,222
								WB right turn lane	No		Fair Share	$74,200		$1,728
								Modify the traffic signal to implement overlap phasing for the WB and SB right turn lanes	No		Fair Share	$111,300		$2,592
											Total	**$601,020**		**$13,999**
26	Euclid Av. (SR-83) & Eucalyptus Av.	Caltrans, Chino, Ontario	None	None	None	None	None	3rd NB through lane	Yes	TR-166	Fees	$0	3.865%	$0
								3rd SB through lane	Yes	TR-028	Fees	$0		$0
								2nd WB left turn lane	No		Fair Share	$74,200		$2,868
								WB right turn lane	No		Fair Share	$74,200		$2,868
											Total	**$148,400**		**$5,736**
27	Euclid Av. (SR-83) & Merrill Av.	Caltrans, Chino, Ontario	None	None	None	3rd NB through lane	Same	Same	Yes	TR-166	Fees	$0	4.561%	$0
						3rd SB through lane	Same	Same	Yes	TR-028	Fees	$0		$0
								EB left turn lane	No		Fair Share	$74,200		$3,384
								2 WB left turn lanes	Yes	TR-028	Fees	$0		$0
								WB right turn lane	Yes	TR-028	Fees	$0		$0
								Modify the traffic signal to implement overlap phasing for the NB and WB right turn lanes	No		Fair Share	$111,300		$5,076
											Total	**$185,500**		**$8,460**
28	Euclid Av. (SR-83) & Kimball Av.	Caltrans, Chino	None	None	None	None	3rd NB through lane	Same	Yes	TR-166	Fees	$0	--	$0
							3rd SB through lane	Same	Yes	TR-166	Fees	$0		$0
								2nd WB left turn lane	Yes	TR-166	Fees	$0		$0
											Total	**$0**		**$0**
30	Euclid Av. (SR-83) & Pine Av.	Caltrans, Chino	NB free right turn lane	Same	Same	Same	Same	Same	Yes	TR-166	Fees	$0	--	$0
						3rd NB through lane	Same	Same	Yes	TR-166	Fees	$0		$0
						3rd SB through lane	Same	Same	Yes	TR-130	Fees	$0		$0
											Total	**$0**		**$0**
38	Flight Av. & Kimball Av.	Chino	None	None	None	None	None	Install a traffic signal	Yes	TR-148	Fees	$0	5.771%	$0
								SB left turn lane	Yes	TR-107	Fees	$0		$0
								2nd WB through lane	Yes	TR-121	Fees	$0		$0
								WB right turn lane	No		Fair Share	$74,200		$4,282
											Total	**$74,200**		**$4,282**
40	Hellman Av. & Kimball Av.	Chino, Eastvale	Operation of the traffic signal[6]	2040 Analysis Location	2040 Analysis Location	2040 Analysis Location	2040 Analysis Location	Same	Yes	TR-131	Fees	$0	--	$0
			2nd NB left turn lane					Same	Yes	TR-131	Fees	$0		$0
								SB left turn lane	Yes	TR-131	Fees	$0		$0
								2nd EB through lane	Yes	TR-121	Fees	$0		$0
								2 WB left turn lanes	Yes	TR-131	Fees	$0		$0
								2 WB through lanes	Yes	TR-131	Fees	$0		$0
								WB right turn lane	Yes	TR-131	Fees	$0		$0
											Total	**$0**		**$0**

Table 1-3
Page 3 of 3

Summary of Improvements Recommended to Meet City of Chino or Surrounding Agency LOS Requirements

#	Intersection Location	Jurisdiction	Existing (2019)	E+P (Building 1)	E+P (Project Buildout)	2022 Without Project	2022 With Project	2040 Without/With Project	Improvements in City DIF?[1]	DIF Project #	Project Responsibility[7]	Total Cost[2,3,4]	Fair Share %[4]	Fair Share Cost[5]
42	Archibald Av. & Limonite Av.	Eastvale	None	None	None	2nd NB through lane	Same	Same	Yes	TR-304	Fees	$0	--	$0
								NB left turn lane	Yes	TR-304	Fees	$0		$0
								3rd NB through lane	Yes	TR-304	Fees	$0		$0
								2nd SB left turn lane	Yes	TR-304	Fees	$0		$0
								2nd SB through lane	Yes	TR-304	Fees	$0		$0
								3rd SB through lane	Yes	TR-304	Fees	$0		$0
								2nd EB left turn lane	Yes	TR-304	Fees	$0		$0
								2nd EB through lane	Yes	TR-304	Fees	$0		$0
								2nd WB left turn lane	Yes	TR-304	Fees	$0		$0
								2nd WB through lane	Yes	TR-304	Fees	$0		$0
											Total	**$0**		**$0**
43	Archibald Av. & Schleisman Rd.	Eastvale	Modify the traffic signal to extend the cycle length to 130 seconds	Not Applicable	Same	Same	Same	Same	No		Fair Share	$111,300	0.549%	$612
											Total	**$111,300**		**$612**
Total Costs for Horizon Year (2040) Improvements												**$3,678,040**		**$139,596**
Total Project Fair Share Contribution to the City of Chino (non-DIF/other)[8]												**$48,909**		
Total Project Fair Share Contribution to the City of Ontario[9]												**$59,941**		
Total Project Fair Share Contribution to the City of Chino Hills[10]												**$24,805**		
Total Project Fair Share Contribution to the City of Eastvale[11]												**$612**		
Total Project Fair Share Contribution to Caltrans[12]												**$5,329**		

[1] Improvements included in City of Chino DIF program for local, regional and specific plan components (City of Chino Development Impact Fee Nexus and Calculation Report, December 28, 2017).

[2] Costs have been estimated using the data provided in Appendix "G" of the CMP (2003 Update) for preliminary construction costs.

[3] Appendix "G" costs escalated by a factor of 1.484 per City direction except Traffic Signals.

[4] Program improvements constructed by project may be eligible for fee credit, at discretion of City. See Table 1-5 for Fair Share Calculations.

[5] Rough order of magnitude cost estimate.

[6] Traffic signal is currently flashing red. As such, an all-way stop controlled intersection was assumed for Existing traffic conditions only.

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

[8] Total project fair share contribution consists of the improvements which are not already included in the City-wide DIF for those intersections wholly or partially within the City of Chino.

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

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

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

[12] Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within Caltrans' jurisdiction.

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1.6 MITIGATION MEASURES

The following mitigation measures are based on the improvements needed under Opening Year Cumulative (2022) and Horizon Year (2040) traffic conditions. The improvements needed to address Opening Year Cumulative deficiencies are typically a sub-set of those improvements recommended under Horizon Year (2040) traffic conditions.

Mitigation Measure 1.1 – Prior to the issuance of each building's certificate of occupancy, the Project Applicant shall participate in the City's city-wide DIF program by paying the requisite DIF fee on a per building basis for Building 1 and Building 2, DIF fees may be reduced or off-set based on the cost DIF eligible facilities constructed by the Project Applicant.

Mitigation Measure 2.1 – Prior to the issuance of each building's certificate of occupancy, the Project Applicant shall pay the Project's fair share amount of $27,445 for Building 1 and $21,464 for Building 2 (total of $48,909) for the improvements identified on Table 1-3 at intersections located within the City of Chino.

Mitigation Measure 3.1 – Table 1-3 of the TIA includes intersections that either share a mutual border with or are wholly located within the City of Ontario, City of Chino Hills and City of Eastvale, or are subject to the jurisdiction of Caltrans that have recommended improvements which are not covered by DIF. Because the City of Chino does not have plenary control over intersections that share a border with these other agencies, the City cannot guarantee that such improvements will be constructed. Thus, the following additional mitigation measure is required: The City of Chino shall participate in a multi-jurisdictional effort with the City of Ontario, City of Chino Hills, City of Eastvale, and Caltrans to develop a study to identify fair share contribution funding sources attributable to and paid from private and public development to supplement other regional and State funding sources necessary to implement the improvements identified on Table 1-3 of the TIA, that are located in these other jurisdictions. The study shall include fair-share contributions related to private and or public development based on nexus requirements contained in the Mitigation Fee Act (Govt. Code § 66000 et seq.) and 14 Cal. Code of Regs. § 15126.4(a)(4) and, to this end, the study shall recognize that impacts attributable to the City of Ontario, City of Chino Hills, City of Eastvale, and Caltrans facilities that are not attributable to development located within the City of Chino are not paying in excess of such developments' fair share obligations. The fee study shall also be compliant with Government Code § 66001(g) and any other applicable provisions of law. The study shall set forth a timeline and other agreed-upon relevant criteria for implementation of the recommendations contained within the study to the extent the other agencies agree to participate in the fee study program. Because the City of Chino and these other agencies are responsible to implement this mitigation measure, Developer shall have no compliance obligations with respect to this Mitigation Measure.

Mitigation Measure 3.2 – The Developer's fair-share amount for the intersections that either share a mutual border with or are wholly located within the City of Ontario, City of Chino Hills, and the City of City of Eastvale or are subject to the jurisdiction of Caltrans that have recommended improvements which are not covered by DIF are as follows:

- City of Ontario: $33,635 for Building 1 and $26,306 for Building 2 (total of $59,941)
- City of Chino Hills: $13,919 for Building 1 and $10,886 for Building 2 (total of $24,805)
- City of Eastvale: $344 for Building 1 and $268 for Building 2 (total of $612)
- Caltrans: $2,991 for Building 1 and $2,338 for Building 2 (total of $5,329)

Developer shall be required to pay the amount shown above to the City of Chino prior to the issuance of the Project's final certificate of occupancy. The City of Chino shall hold Developer's Fair Share contribution in trust and shall apply Developer's Fair Share Contribution to any fee program adopted or agreed upon by the City of Chino and other agencies as a result of implementation of Mitigation Measure 3.1. If, within five years of the date of collection of Developer's Fair Share Contribution, the City of Chino and other agencies do not comply with Mitigation Measure 3.1, then Developer's Fair Share Contribution shall be returned to the Developer.

Mitigation Measure 4.1 – The Project Applicant will be required to develop and implement a City-approved Construction Traffic Management Plan addressing potential construction-related traffic detours and disruptions. In general, the Construction Traffic Management Plan would ensure that to the extent practical, construction traffic would access the Project site during off-peak hours or limited access during the peak hours; and that construction traffic would be routed to avoid travel through, or proximate to, sensitive land uses.

Mitigation Measure 5.1 – The delivery and removal of heavy equipment is recommended to minimize the heavy truck activity during the morning and evening peak periods (6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM) in order to have nominal impacts to traffic and circulation near the vicinity of the Project.

Mitigation Measure 6.1 – During the site grading, the Project shall limit soil import activity between the Project site and excess dirt fill sites during the hours of 6:00 AM – 9:00 AM (morning peak period) and 3:00 PM – 6:00 PM (evening peak period) to fewer than the equivalent of 50 passenger car equivalent (PCE) truck trips per hour. 50 PCE truck trips equates to approximately 16 total trucks (8 trucks in and 8 trucks out) during the peak periods specified above in order to limit the potential impacts of haul truck activity during these busy commute times:

50 PCE truck trips / 3.0 PCE factor = 16 total trucks during the peak hour

1.7 RECOMMENDED ON-SITE ROADWAY AND SITE ACCESS IMPROVEMENTS

This section summarizes Project site access and on-site circulation recommendations. The Project is proposed to have access on Mountain Avenue and Bickmore Avenue. All Project access points are assumed to allow full-access. Regional access to the Project site is provided via the SR-60 Freeway and the SR-71 Freeway. Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements are required to be in place prior to occupancy.

1.7.1 RECOMMENDED SITE ADJACENT ROADWAY IMPROVEMENTS

The recommended site-adjacent roadway improvements for the Project are described below. These improvements need to be incorporated into the Project description prior to Project approval or imposed as conditions of approval as part of the Project approval. Construction of on-site and site adjacent improvements are recommended to occur in conjunction with adjacent Project development activity or as needed for Project access purposes. Ultimate improvements along Mountain Avenue and Bickmore Avenue and the intersection of Mountain Avenue at Bickmore Avenue are consistent with the City of Chino General Plan and are shown on Exhibit 1-5.

Mountain Avenue – Mountain Avenue is a north-south oriented roadway located along the Project's western boundary. Construct Mountain Avenue from Bickmore Avenue to the southern Project boundary at its ultimate half-section width as an urban industrial collector (66-foot ultimate right-of-way) in compliance with the circulation recommendations found in City of Chino General Plan.

Bickmore Avenue – Bickmore Avenue is an east-west oriented roadway located along the Project's northern boundary. Bickmore Avenue from Mountain Avenue to the eastern Project boundary is currently constructed to its ultimate full-section width as an urban industrial collector (66-foot ultimate right-of-way), consistent with the circulation recommendations found in the City of Chino General Plan. However, the Project should modify the curb and gutter and sidewalk improvements along the Project's frontage to accommodate the proposed Project driveways.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Chino sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

1.7.2 RECOMMENDED SITE ACCESS IMPROVEMENTS

Exhibit 1-5 also shows the site access improvements at each applicable Project driveway. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes. The two driveways serving trucks (Driveway 5 and Driveway 6) on Bickmore Avenue should be signed prohibiting trucks from turning left onto Bickmore Avenue.

A queuing analysis was conducted along the site adjacent roadways of Mountain Avenue and Bickmore Avenue for Horizon Year (2040) traffic conditions to determine the turn pocket lengths necessary to accommodate near term 95th percentile queues. The analysis was conducted for the weekday AM and weekday PM peak hours. The storage length recommendations for the turning movements at the Project were shown previously on Exhibit 1-5. The Horizon Year (2040) queuing results are provided in Appendix 1.2 of this report.

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 Chino General Plan Circulation Element.

1.8 TRUCK ACCESS AND CIRCULATION

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway and site adjacent intersection 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 1-6). As shown, all driveways that would be utilized by heavy trucks are anticipated to accommodate the wide turning radius of the heavy trucks (WB-67).

At the request of City of Chino staff, Exhibit 1-6 identifies the interim and ultimate right-of-way needs at the intersection of El Prado Road and Mountain Avenue (see pages 3 and 4 of Exhibit 1-6). The Project Applicant will make a good-faith effort to obtain the necessary right-of-way shown on Exhibit 1-6 for the intersection of El Prado Road and Mountain Avenue. However, for purposes of this TIA, to provide a conservative analysis and full disclosure of impacts, acquisition of this right-of-way and improvement of this intersection is not assumed to be accomplished.

1.9 PEDESTRIAN AND BICYCLE ACCOMMODATIONS

The Project will construct its ultimate half-section of Mountain Avenue and Bickmore Avenue including curb and gutter and sidewalk improvements. Some of these sections will also include sidewalks. Consistent with the City's General Plan Circulation Element, Pine Avenue is proposed to have Class I off-street bike lanes in close proximity to the Project.

EXHIBIT 1-5 (1 OF 2): CONCEPT STRIPING PLAN

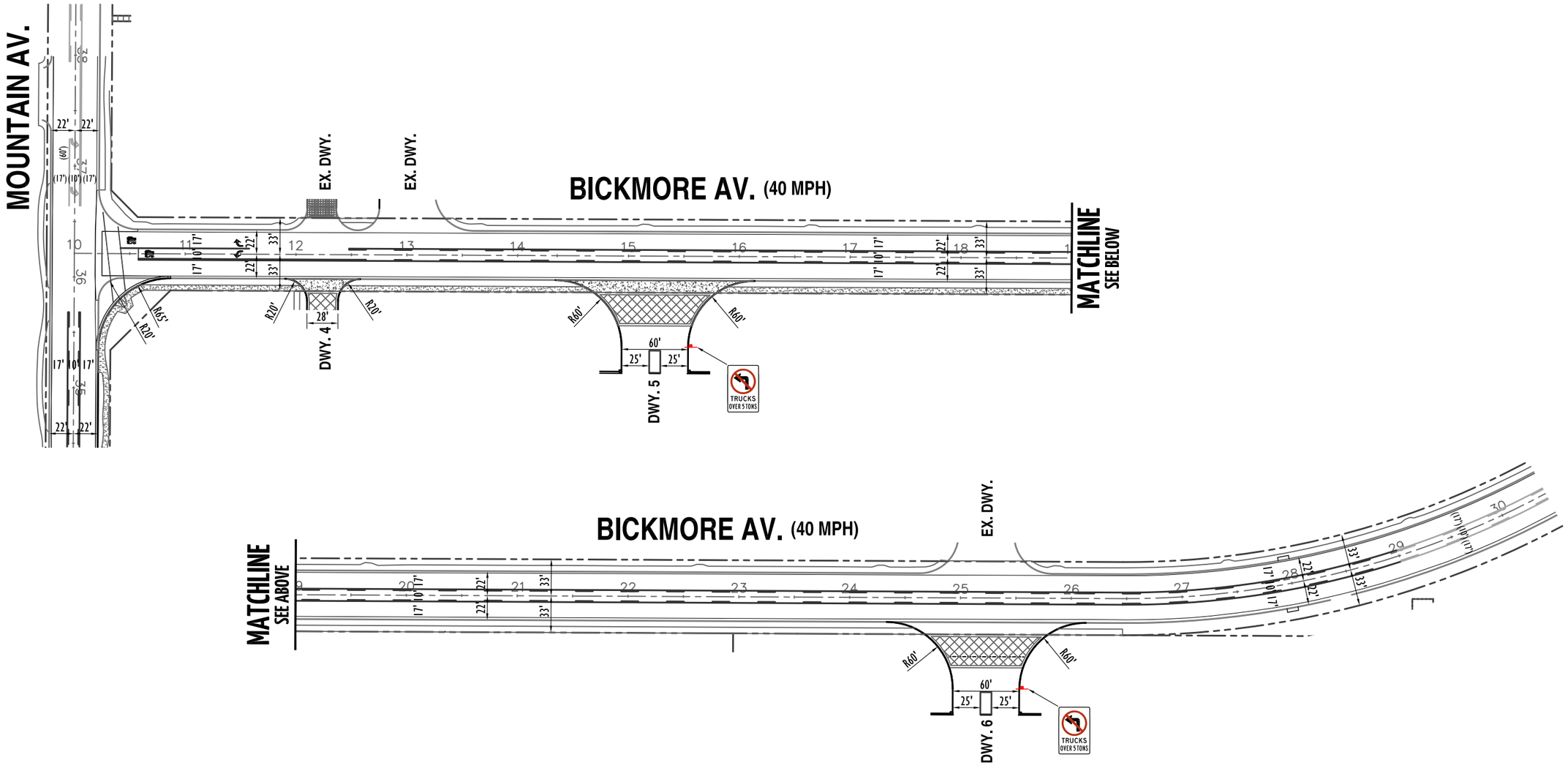
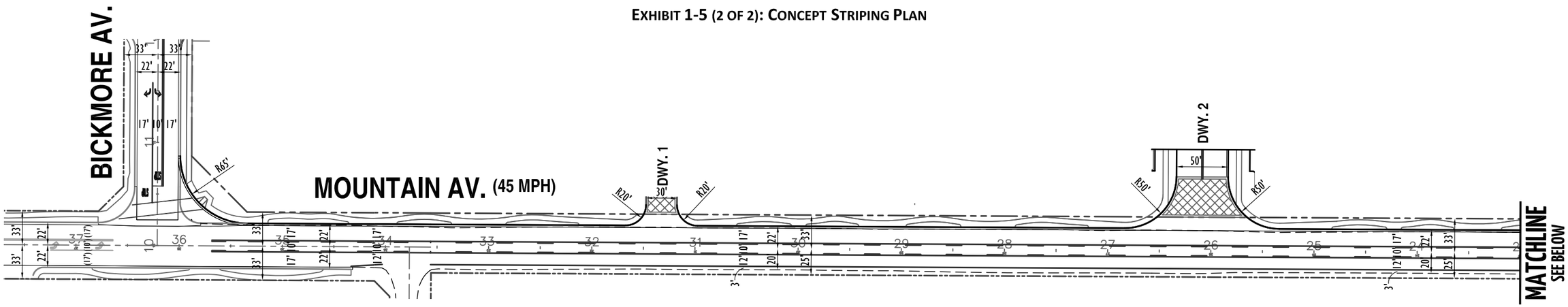


EXHIBIT 1-5 (2 OF 2): CONCEPT STRIPING PLAN



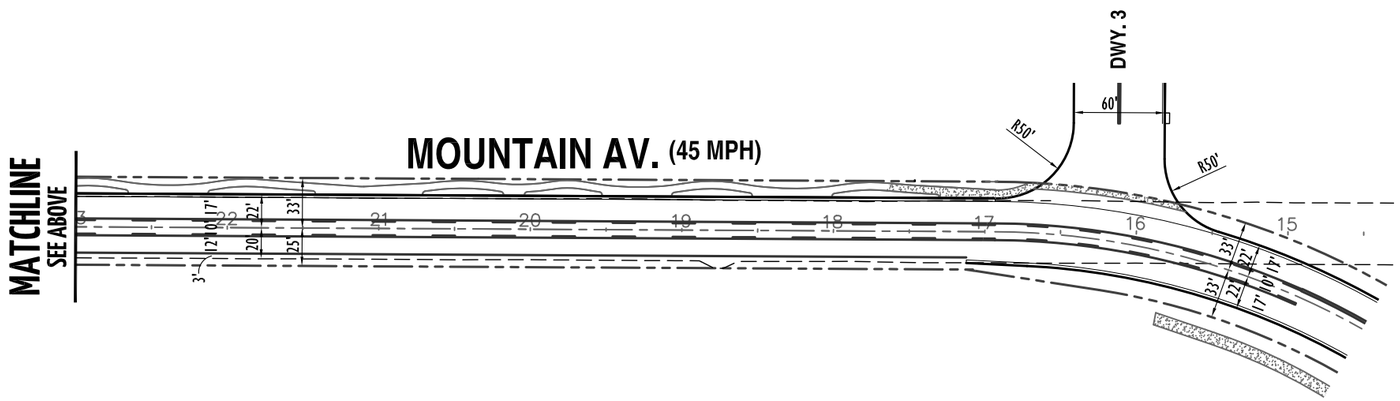


EXHIBIT 1-6 (1 OF 4): WB-67 TRUCK TURNING TEMPLATES

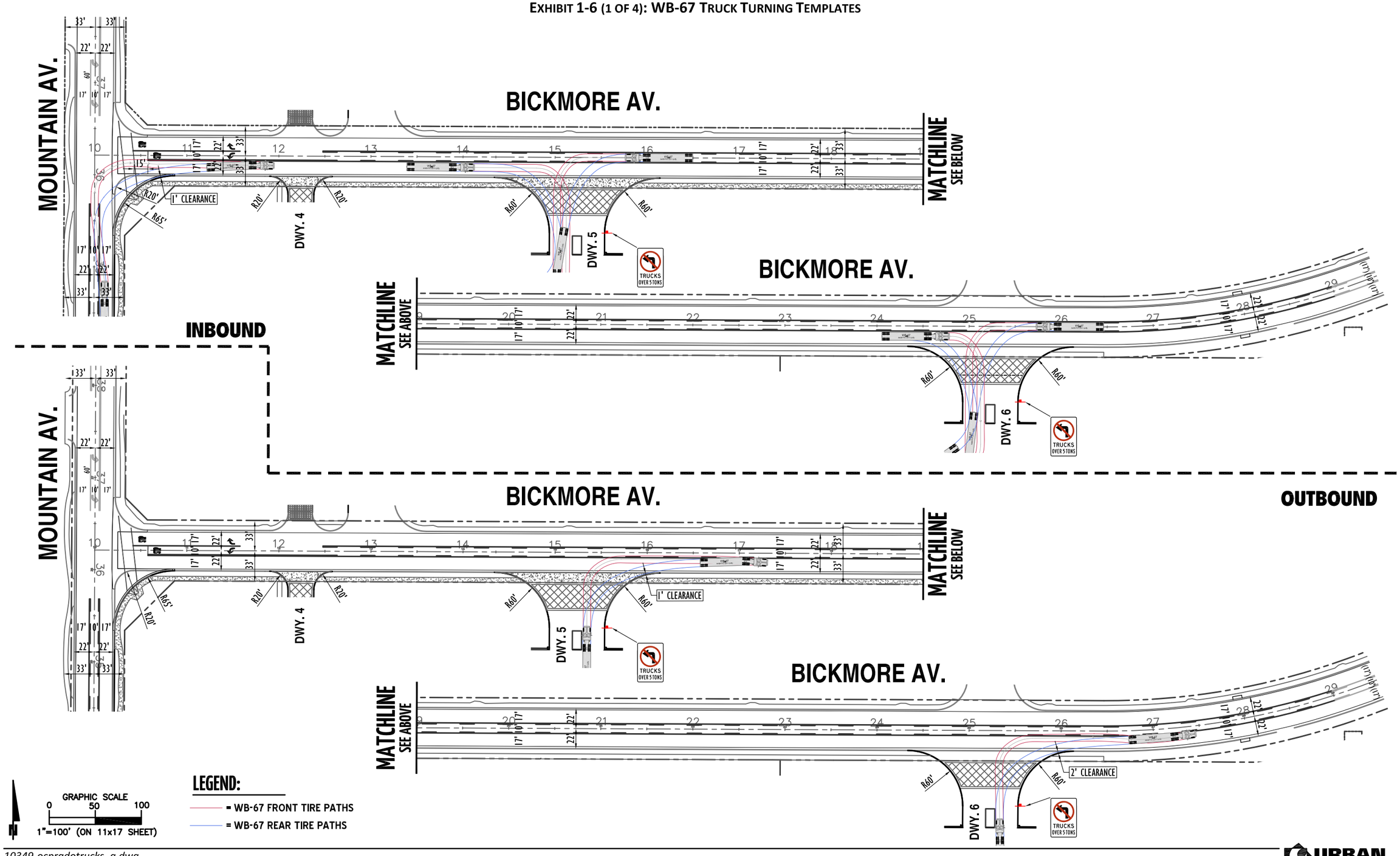
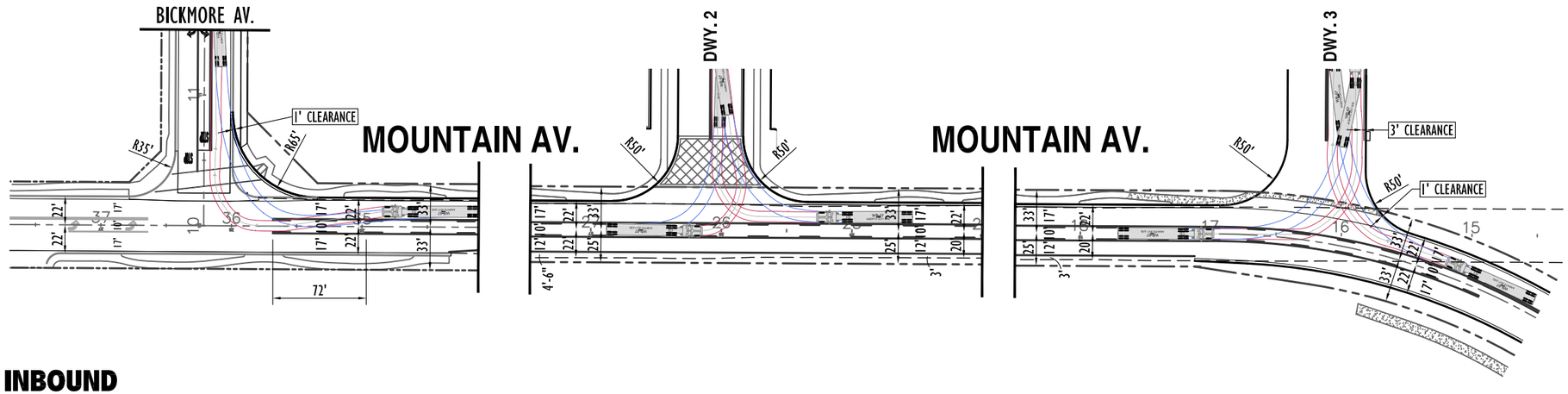


EXHIBIT 1-6 (2 OF 4): WB-67 TRUCK TURNING TEMPLATES



INBOUND

OUTBOUND

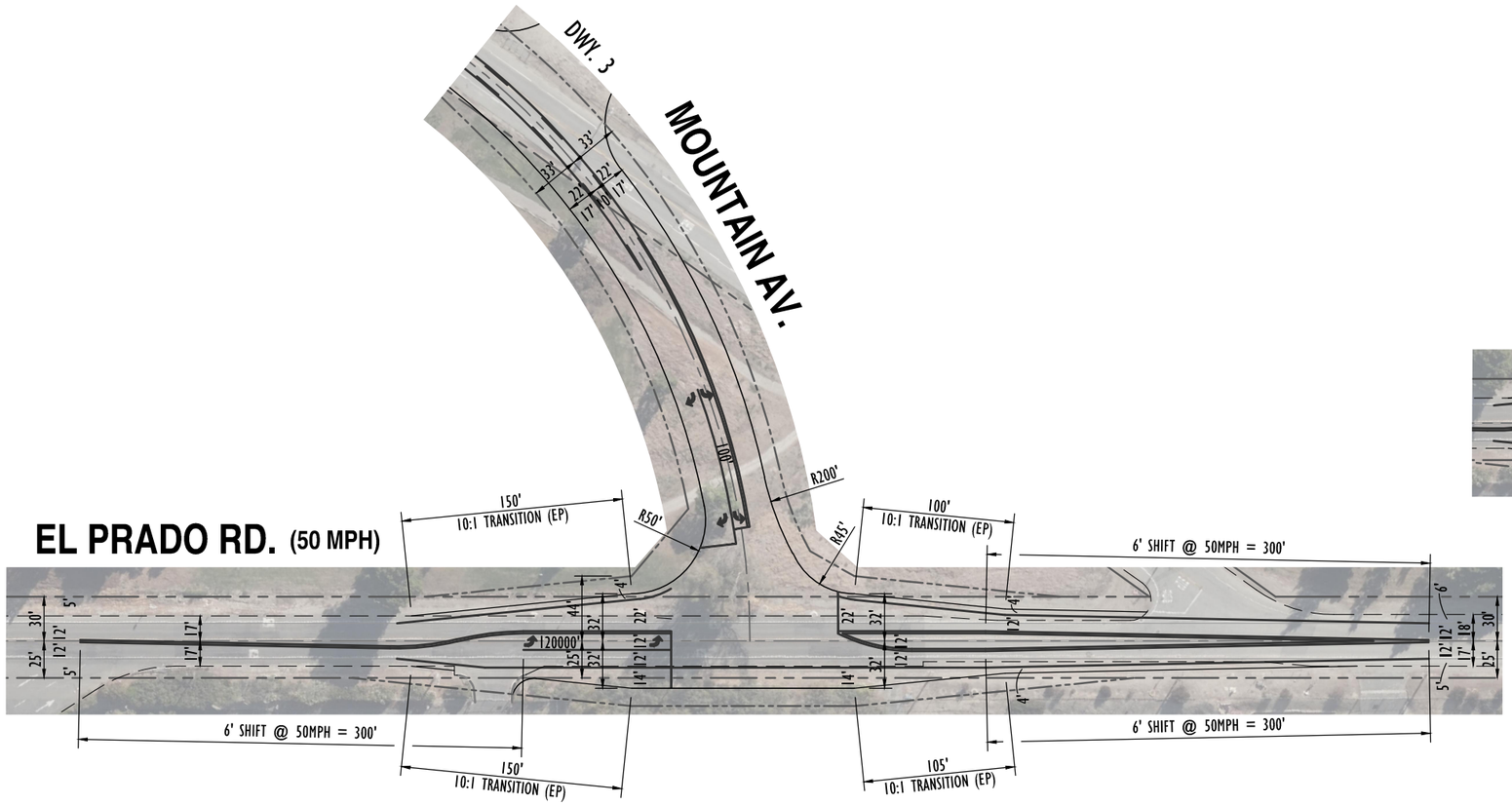
LEGEND:

= WB-67 FRONT TIRE PATHS

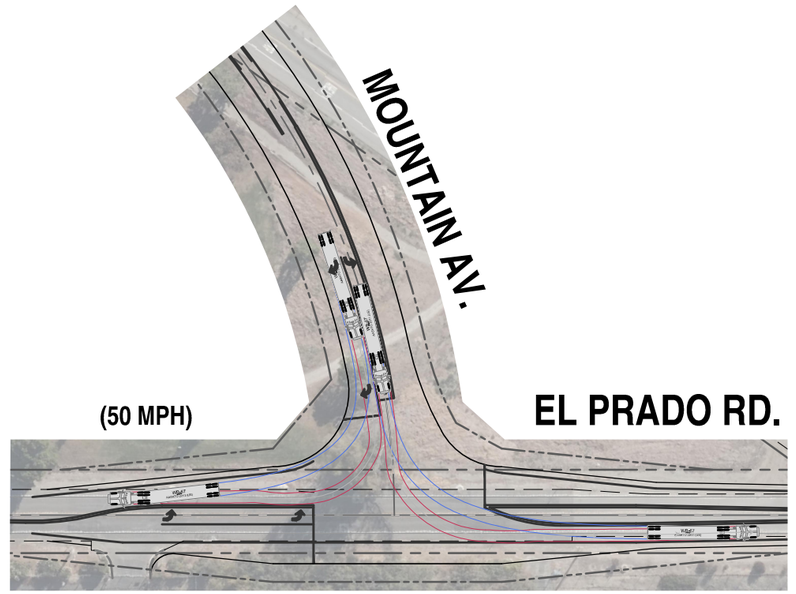
= WB-67 REAR TIRE PATHS

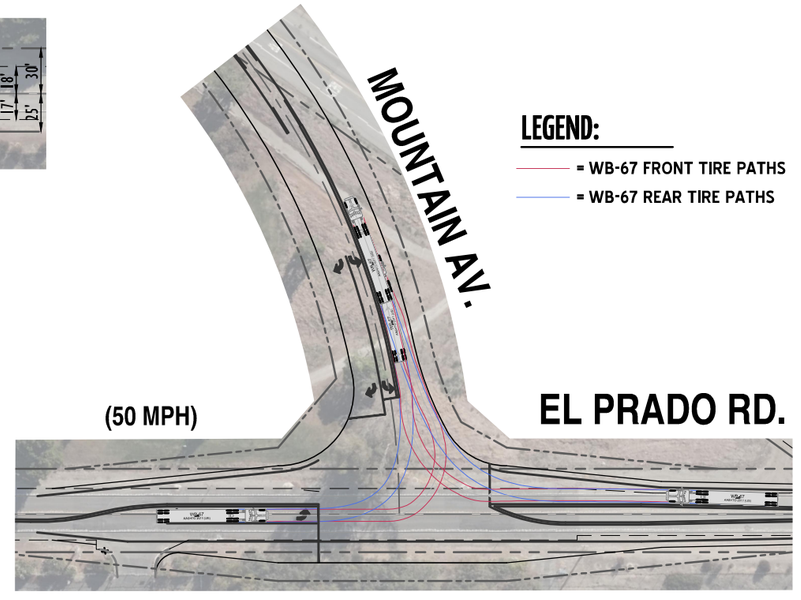
GRAPHIC SCALE
0 50 100
1"=100' (ON 11x17 SHEET)

EXHIBIT 1-6 (3 OF 4): WB-67 TRUCK TURNING TEMPLATES
MOUNTAIN AVE. / EL PRADO RD. INTERIM CONFIGURATION



INTERIM DESIGN CONCEPT





TRUCK TURNS

GRAPHIC SCALE
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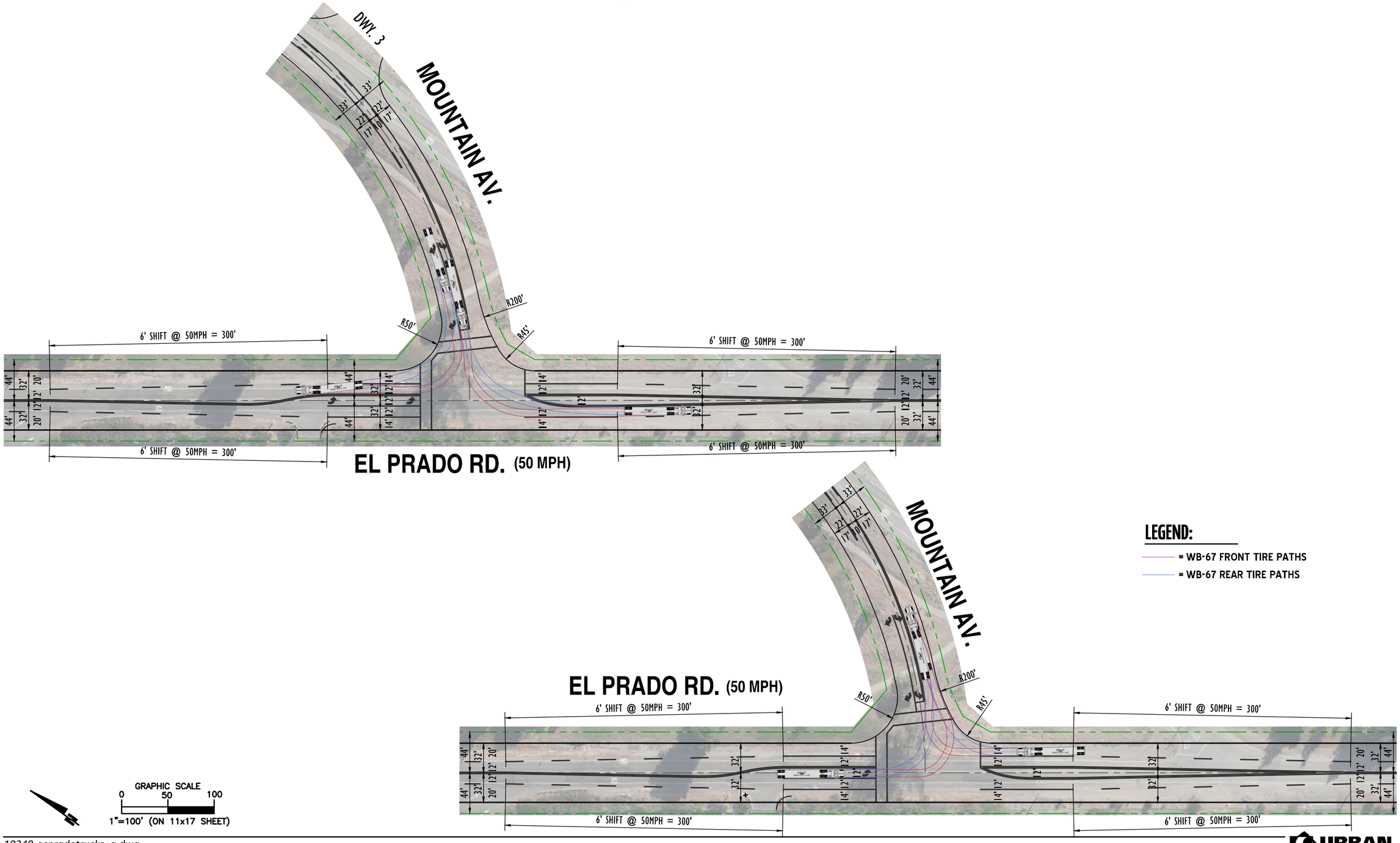
1"=100' (ON 11x17 SHEET)

EXHIBIT 1-6 (4 OF 4): WB-67 TRUCK TURNING TEMPLATES
MOUNTAIN AVE. / EL PRADO RD. ULTIMATE CONFIGURATION



10349-ocpradotrucks_g.dwg

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 Chino 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. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

City of Chino, City of Ontario, City of Eastvale, City of Chino Hills

The City of Chino, City of Ontario, City of Eastvale, and City of Chino Hills require signalized intersection operations analysis based on the methodology described in the HCM. (5) 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 on 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

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 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)

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:

Existing and Opening Year Cumulative 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 Traffic Conditions:

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

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

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

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 include interchange to arterial ramps (i.e. SR-60 Freeway ramps at Euclid Avenue (SR-83), SR-71 Freeway ramps at Central Avenue, SR-71 Freeway ramps at Pine Avenue, and SR-71 Freeway ramps at Euclid Avenue (SR-83)). (2) Signal timing for the freeway arterial-to-ramp 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 Chino, City of Ontario, City of Eastvale, and City of Chino Hills require the operations of unsignalized intersections be evaluated using the methodology described in the HCM (6th Edition). (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

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

Source: HCM (6th Edition)

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. 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 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. (6)

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. (6) Specifically, this TIA 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 because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

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

As shown on 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
5	SR-71 NB Ramps & Pine Av. – 2040 Analysis Location Only	Chino Hills, Caltrans
10	Mountain Av. & Bickmore Av.	Chino
11	Mountain Av. & Driveway 1 – Future Intersection	Chino
12	Mountain Av. & Driveway 2 – Future Intersection	Chino
13	Mountain Av. & Driveway 3 – Future Intersection	Chino
14	El Prado Rd. & Mountain Av.	Chino
15	El Prado Rd. & Pine Av.	Chino
16	Driveway 4 & Bickmore Avenue – Future Intersection	Chino
17	Driveway 5 & Bickmore Avenue – Future Intersection	Chino
18	Driveway 6 & Bickmore Avenue – Future Intersection	Chino
32	Rincon Meadows Av. & Pine Av.	Chino
38	Flight Av. & Kimball Av. – 2040 Analysis Location Only	Chino

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 6 *E+P Traffic Analysis,* Section 7 *Opening Year Cumulative (2022) Traffic Analysis,* and Section 8 *Horizon Year (2040) Traffic Analysis* 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

The study area for this TIA includes the freeway-to-arterial interchanges of the SR-71 Freeway at Central Avenue, SR-71 Freeway at Pine Avenue, SR-71 Freeway at Euclid Avenue (SR-83) off-ramps, and SR-60 Freeway at Euclid Avenue (SR-83) off-ramps. Consistent with Caltrans requirements, the 95th percentile queuing of vehicles has been assessed at the off-ramps to determine potential queuing impacts at the freeway ramp intersections on Central Avenue, Pine Avenue, and Euclid Avenue (SR-83). Specifically, the queuing analysis is utilized to identify any potential queuing and "spill back" onto the SR-71 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 impacts/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. There are two footnotes which appear on the Synchro outputs. One footnote indicates if the 95th percentile cycle exceeds capacity. Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays. The other footnote indicates whether or not the volume for the 95th percentile queue is metered by an upstream signal. In many cases, the 95th percentile queue will not be experienced and may potentially be less than the 50th percentile queue due to upstream metering. If the upstream intersection is at or near capacity, the 50th percentile queue represents the maximum queue experienced.

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 50th percentile maximum queue is the maximum back of queue on a typical cycle during the peak hour, while the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes during the peak hour. 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 and because impacts to freeway segments dissipate with distance from the point of SHS entry, quantitative study of freeway segments beyond those immediately adjacent to the point of entry is not required. The traffic study has conservatively evaluated the freeway segments along the SR-71 Freeway and SR-60 Freeway although the Project is anticipated to contribute less than 50 one-way peak hour trips (or 100 two-way peak hour trips), with the exception of the SR-71 Freeway Northbound, north of Central Avenue during the PM peak hour where the Project is anticipated to contribute 50 one-way peak hour trips.

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 (Highway Capacity Software, HCM 6th Edition). 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.

The number of lanes for existing baseline conditions has been obtained from field observations conducted by Urban Crossroads in March 2019. These existing freeway geometrics have been utilized for Existing, E+P, Opening Year Cumulative Without and With Project, and Horizon Year Without and With Project conditions.

The SR-71 Freeway and SR-60 Freeway mainline volume data were obtained from the Caltrans Performance Measurement System (PeMS) website for the segments of the SR-71 Freeway north of Central Avenue and SR-60 Freeway west of Euclid Avenue (SR-83). The data was obtained from January 2019. In an effort to conduct a conservative analysis, the maximum value observed within the three-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, has been utilized for the purposes of this analysis in an effort to not overstate traffic volumes and peak hour deficiencies. As such, actual vehicles (as opposed to passenger-car-equivalent volumes) have been utilized for the purposes of the basic freeway segment analysis. (7)

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)

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 resulting in two existing on and off ramp locations. 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 merge/diverge analysis is based on the HCM Ramps and Ramp Junctions analysis method and performed using HCS7 software. 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.

Similar to the basic freeway segment analysis, the SR-71 and SR-60 Freeway mainline volume data were obtained from the Caltrans PeMS website for the segments of the SR-71 Freeway north of Central Avenue and SR-60 Freeway west of Euclid Avenue (SR-83). The ramp data (per the count data presented in Appendix 3.1) were then utilized to flow conserve the mainline volumes to determine the remaining SR-71 and SR-60 Freeway mainline segment volumes. Flow conservation checks ensure that traffic flows from east to west and north to south (and vice versa) of the interchange area with no unexplained loss of vehicles. The data was obtained from January 2019. In an effort to conduct a conservative analysis, the maximum value observed within the three-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, has been utilized for the purposes of this analysis in an effort to not overstate traffic volumes and peak hour deficiencies. (7) As such, actual vehicles (as opposed to passenger-car-equivalent volumes) have been utilized for the purposes of the freeway ramp junction (merge/diverge) 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)

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 CHINO

According to the City of Chino, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, where feasible. Therefore, any intersection operating at LOS E or F is considered deficient. A higher LOS standard of LOS C has been applied to the Project driveways.

2.7.2 CITY OF ONTARIO

The City of Ontario utilizes a minimum acceptable LOS of LOS E, where feasible.

2.7.3 CITY OF EASTVALE

The City of Eastvale General Plan Policy C-10 sets a standard of LOS C with LOS D as acceptable in commercial and employment areas and at intersections of any combination of major highways, urban arterials, secondary highways, or freeway ramps. Based on this criterion, where feasible, LOS D is the minimum acceptable LOS at each of the study intersections within the City of Eastvale.

2.7.4 CITY OF CHINO HILLS

The Traffic Impact Study Guidelines for Development Projects in the City of Chino Hills (dated October 15, 2001) indicates LOS D shall be the minimum acceptable LOS to be used for all City of Chino Hills roadways and intersections. Therefore, any intersection operating at LOS E or LOS F will be considered deficient.

2.7.5 CMP

The CMP definition of deficiency is based on maintaining a level of service standard of LOS E or better, where feasible, 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, unless the intersection is located in the City of Ontario (which uses LOS E).

2.7.6 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 and intersections is LOS D. Consistent with the City of Chino LOS threshold of LOS D and in excess of the City of Ontario stated LOS threshold of LOS E, 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

To determine whether the addition of project traffic (as defined through the comparison of Existing traffic conditions to E+P traffic conditions) at a study intersection would result in a project-specific traffic impact, the following will be utilized:

- When the pre-Project condition is at or better than LOS D (or LOS E for CMP intersections and intersections located in the City of Ontario) (i.e., acceptable LOS), and project-generated traffic, as measured by 50 or more peak hour trips, causes deterioration below LOS D/LOS E (i.e., unacceptable LOS), a deficiency is deemed to occur.

However, when the pre-Project condition is already below LOS D/LOS E (i.e., unacceptable LOS), the Project will be responsible for mitigating its impact to a level of service equal to or better than it was without the Project for intersections that receive 50 or more peak hour project-related trips. This is a standard protocol in many urban jurisdictions because to require a Project to mitigate to LOS D/LOS E or better would in effect force the Project to mitigate beyond its Project impacts, which is prohibited under California law. Thus, for intersections currently operating at unacceptable LOS during either the AM and/or PM peak hour under Existing traffic conditions, improvements have been identified to mitigate the impacts of the Project to an intersection LOS that is equal to or better than pre-Project conditions (see Table 2-6).

Cumulative traffic impacts are created as a result of a combination of the proposed Project together with other future developments contributing to the overall traffic impacts requiring additional improvements to maintain acceptable level of service operations with or without the

Project. A Project's contribution to a significant cumulative impact can be reduced to less than significant if the Project is required to implement or fund its fair share of improvements designed to alleviate its cumulatively considerable contribution to the impact. Cumulatively considerable is defined as the addition of 50 or more peak hour trips, and all facilities that would receive 50 or more peak hour trips from the Project are evaluated in this report.

In the event that an intersection is operating at or is forecast to operate at a deficient LOS, the CMP guidelines have defined a series of steps to be completed to determine the Project's contribution to the deficiency of intersections, which has been applied to both CMP and non-CMP study area intersections. The steps are as follows:

- Determine the mitigation measures necessary to achieve an acceptable service level,
- Calculate the Project's share in the future traffic volume projections for the peak hours,
- Estimate the cost to implement recommended mitigation measures, and
- Calculate the Project's fair-share contribution to mitigate the Project's traffic impacts

TABLE 2-6: THRESHOLD OF SIGNIFICANCE

Pre-Project Level of Service	Level of Service with 50 or more Project trips	Significant Impact?	Mitigation Required?
City of Chino, City of Eastvale, City of Chino Hills, City of Jurupa Valley, CMP			
A	A-D	No	No
B	B-D	No	No
C	C-D	No	No
D	D	No	No
A-D	E or F	Yes	Yes, bring LOS to D or better
E	E	Yes	Yes, bring LOS to D or better
E	F	Yes	Yes, bring LOS to D or better
F	F	Yes	Yes, bring LOS to D or better
City of Ontario, CMP (in Ontario)			
A	A-D	No	No
B	B-D	No	No
C	C-D	No	No
D	D-E	No	No
E	E	No	No
A-E	F	Yes	Yes, bring LOS to E or better
F	F	Yes	Yes, bring LOS to E or better

2.8.2 CALTRANS FACILITIES

To determine whether the addition of project traffic to the SHS freeway segments would result in a 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.

2.9 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 cost of improvements is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future (Horizon Year) traffic less existing baseline traffic:

Project Fair Share % = Project (2040) AM/PM Traffic / (2040 With Project AM/PM Total Traffic – Existing AM/PM Traffic)

The project fair share percentage has been calculated for both the AM peak hour and PM peak hour and the highest of the two has been selected. The Project fair share contribution calculations are presented in Section 9 *Local and Regional Funding Mechanisms* of this TIA. The cost of implementing the improvements shown on Table 1-3 have been estimated based on the preliminary construction cost estimates found in Appendix G of the San Bernardino County CMP in conjunction with a total cost escalation factor of 1.484 to more closely approximate current (2019) costs. These cost estimates have been utilized in conjunction with the Project fair share percentages to determine the Project's fair share cost of the recommended cumulative improvements (see Table 9-2). These estimates are a rough order of magnitude only as they are intended only for discussion purposes and do not imply any legal responsibility or formula for contributions or mitigation.

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3 AREA CONDITIONS

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

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the agreement with City of Chino staff (Appendix 1.1), the study area includes a total of 43 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 CHINO GENERAL PLAN CIRCULATION ELEMENT

As noted previously, the Project site is located within the City of Chino. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on the City of Chino General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Chino General Plan Circulation Element and Exhibit 3-3 illustrates the City of Chino General Plan roadway cross-sections. The two streets adjacent to the Project (Merrill Avenue and Flight Avenue) have been identified in **bold** text.

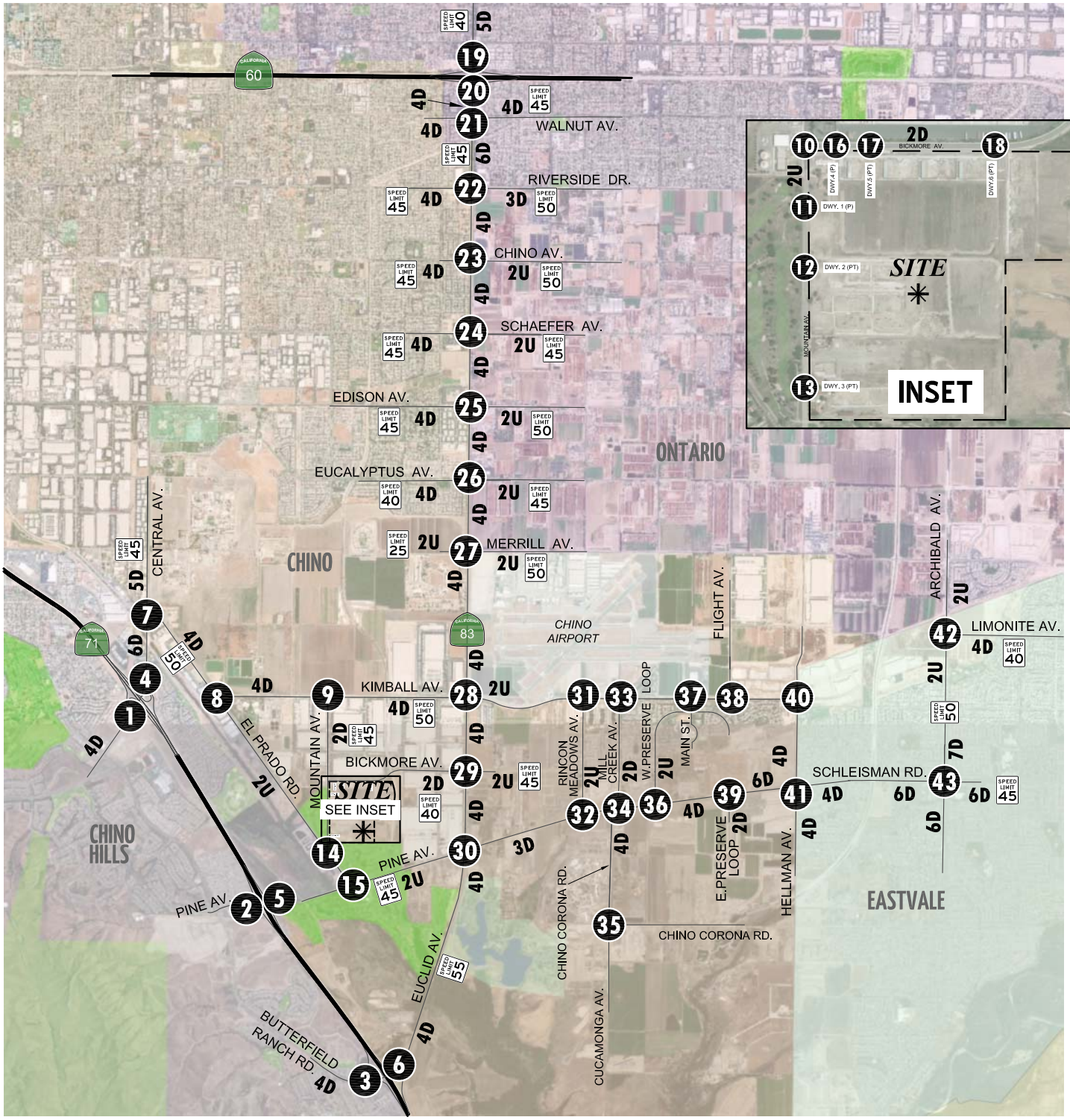
The study area roadway that is classified as an Expressway is identified as having a 142-foot right-of-way and 104-foot curb-to-curb measurement. Expressways include four lanes of travel in each direction and a 64-foot curbed and/or landscaped median. The following study area roadway within the City of Chino is classified as an Expressway:

- Euclid Avenue (SR-83) from SR-71 Freeway to Riverside Drive

The study area roadway that is classified as a Major Arterial is identified as having a 120-foot right-of-way and 100-foot curb-to-curb measurement. Major Arterials include three lanes of travel in each direction and a 14-foot curbed and/or landscaped median. The following study area roadway within the City of Chino is classified as a Major Arterial:

- Central Avenue from the City Limit to Phillips Boulevard
- Riverside Drive from Reservoir Street to Fern Avenue
- Edison Avenue from the City Limit to Euclid Avenue (SR-83)
- Pine Avenue from Euclid Avenue (SR-83) to Hellman Avenue

EXHIBIT 3-1 (1OF3): EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



LEGEND:

- 4 = NUMBER OF LANES
- D = DIVIDED
- U = UNDIVIDED
- SPEED LIMIT 25 = SPEED LIMIT (MPH)

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EXHIBIT 3-1 (2OF3): EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

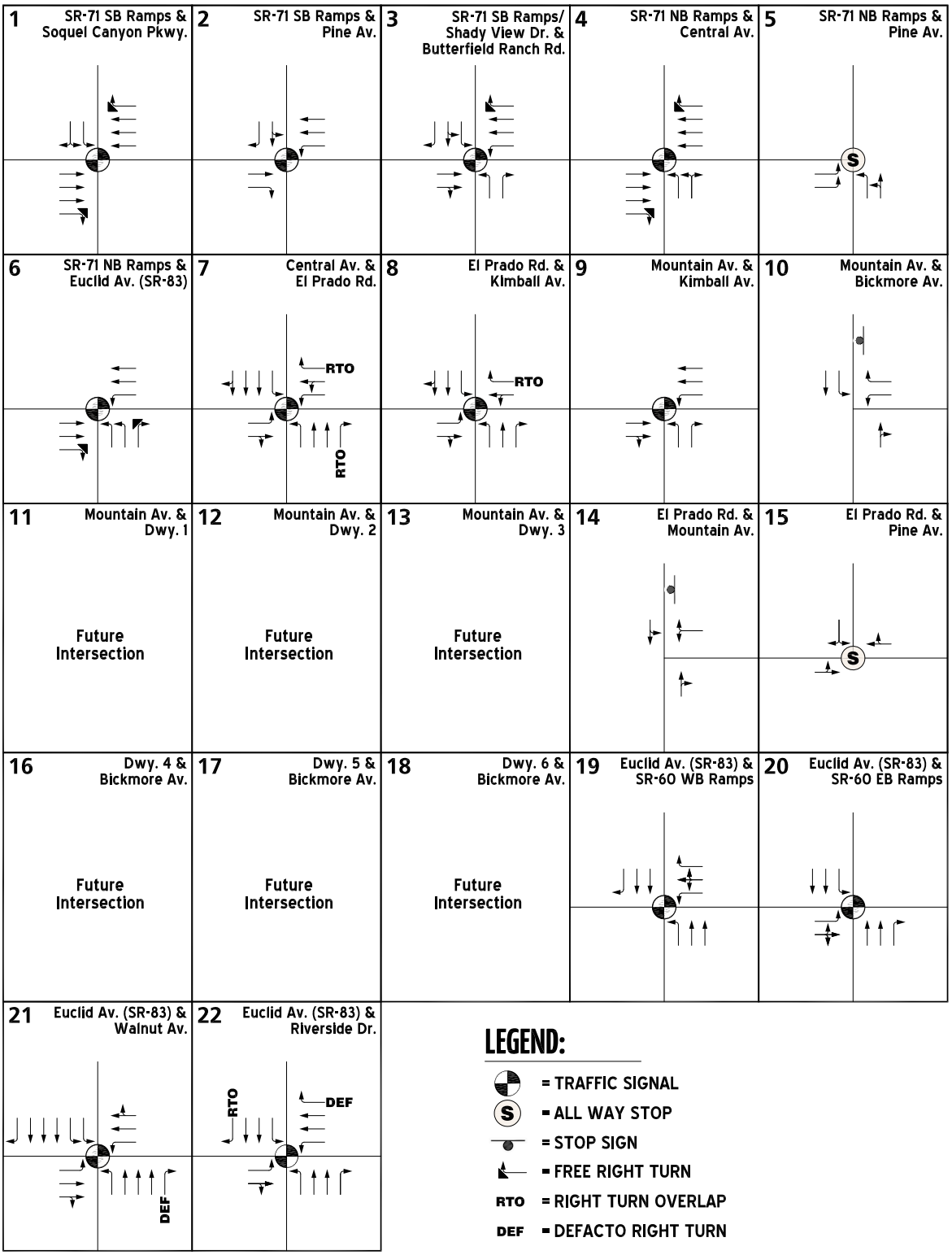


EXHIBIT 3-1 (3OF3): EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

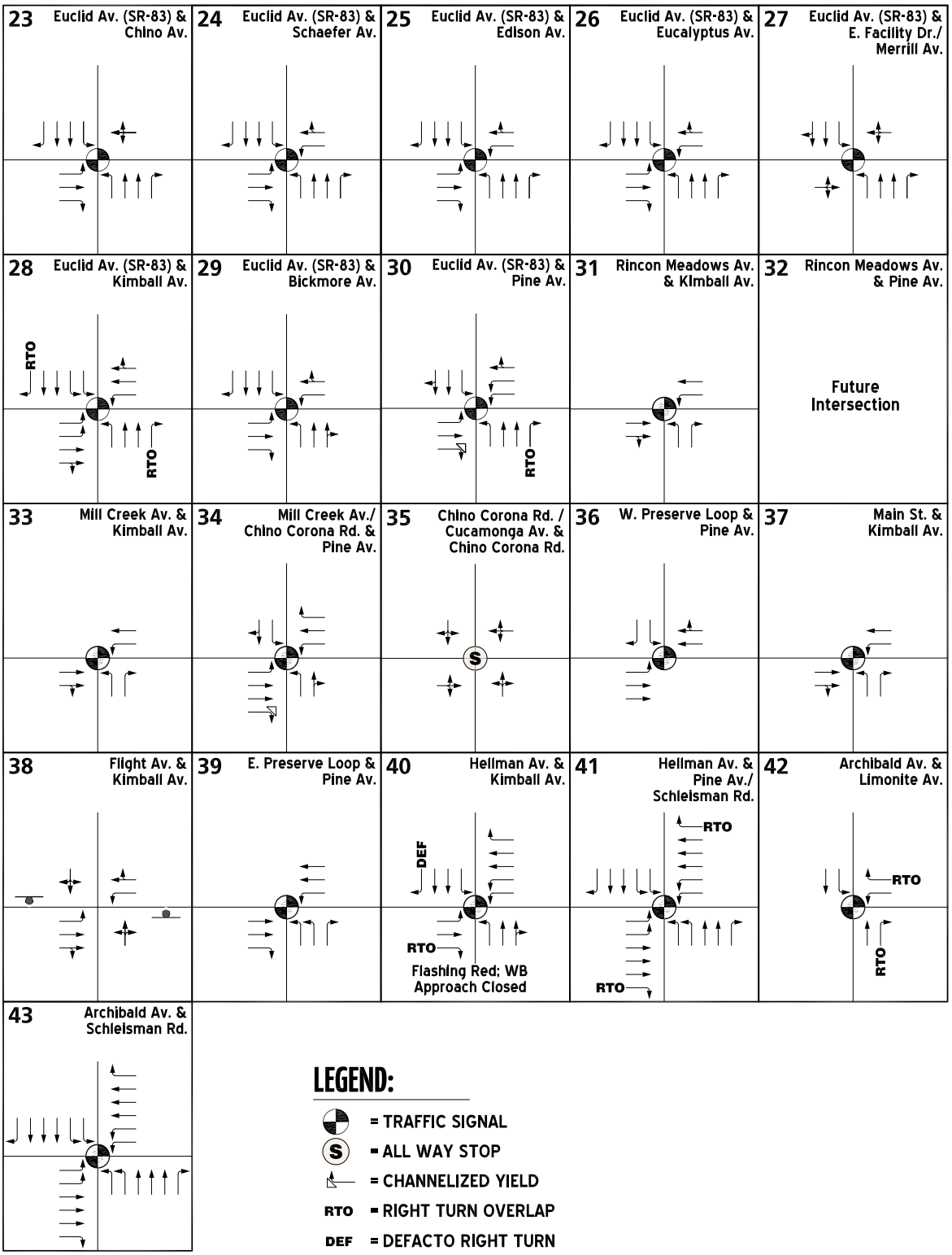


EXHIBIT 3-2: CITY OF CHINO GENERAL PLAN CIRCULATION ELEMENT

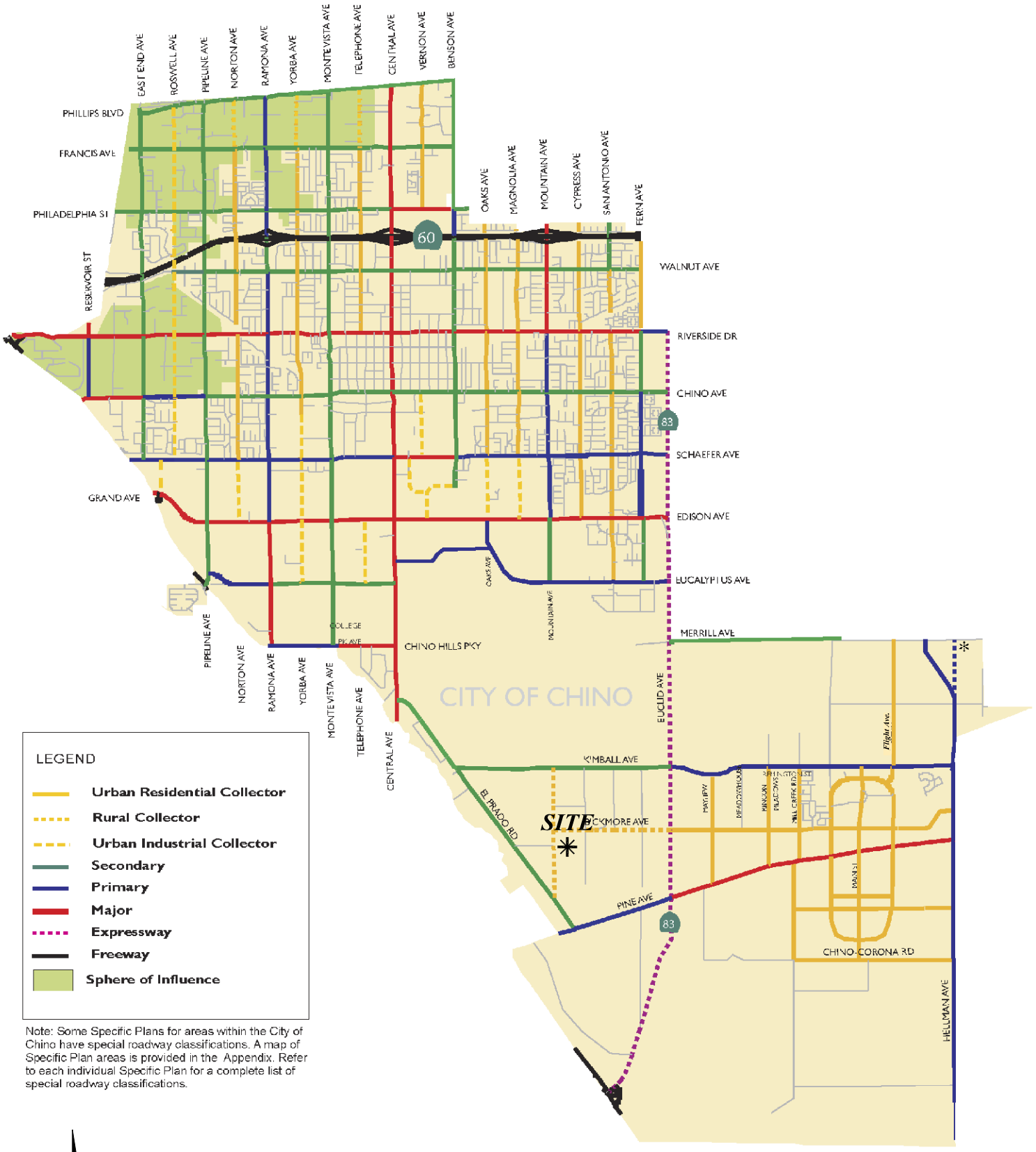
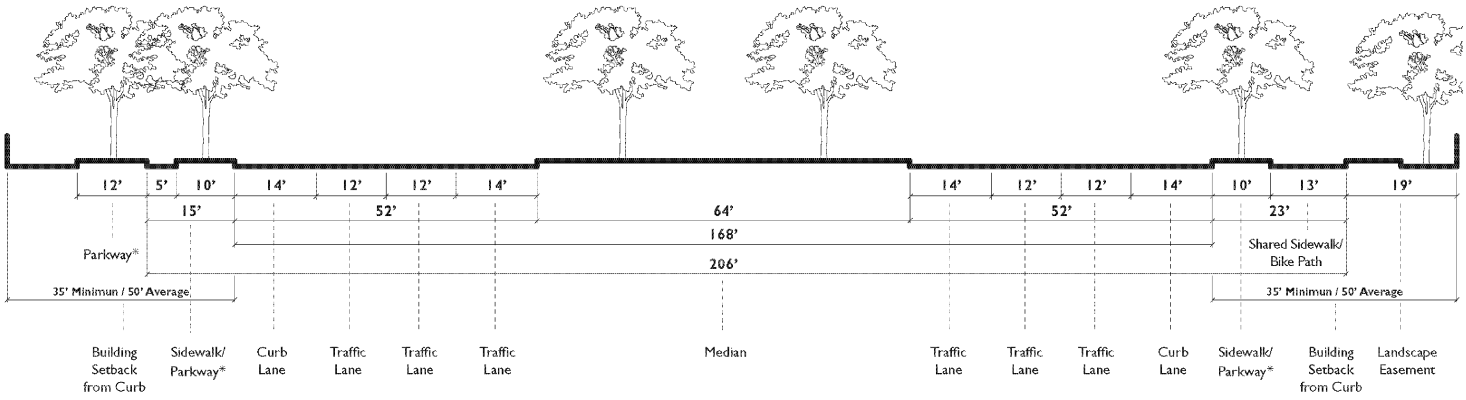
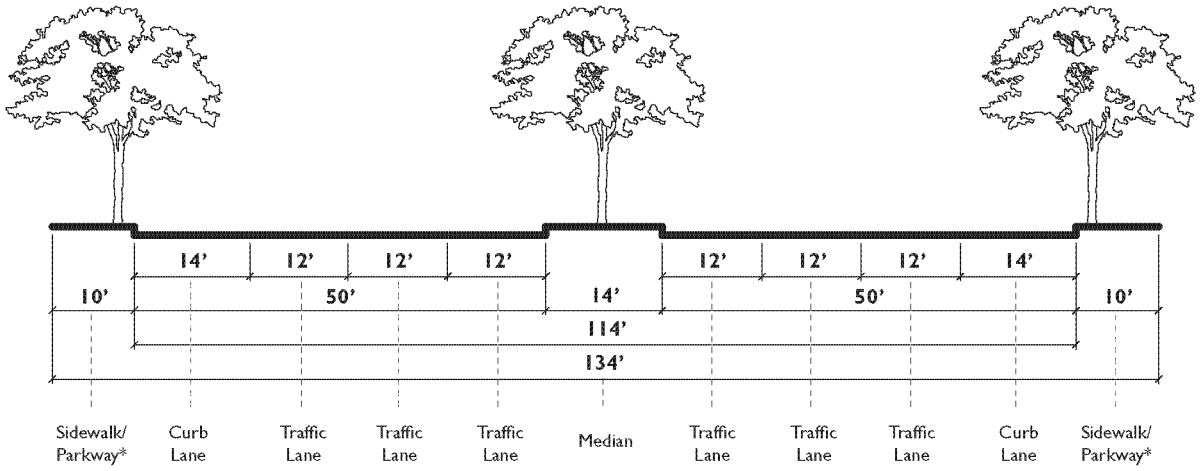


EXHIBIT 3-3 (1 of 2): CITY OF CHINO GENERAL PLAN ROADWAY CROSS-SECTIONS

Major Arterial (Expressway): Typical 8 Lane
Provides 8 traffic lanes and a wide median without parking



Major Arterial: Minimum 8 Lane
Provides 8 traffic lanes and 2 bicycle lanes separated by a median without parking



Major Arterial: Minimum 6 Lane
Provides 6 traffic lanes and 2 bicycle lanes separated by a median without parking

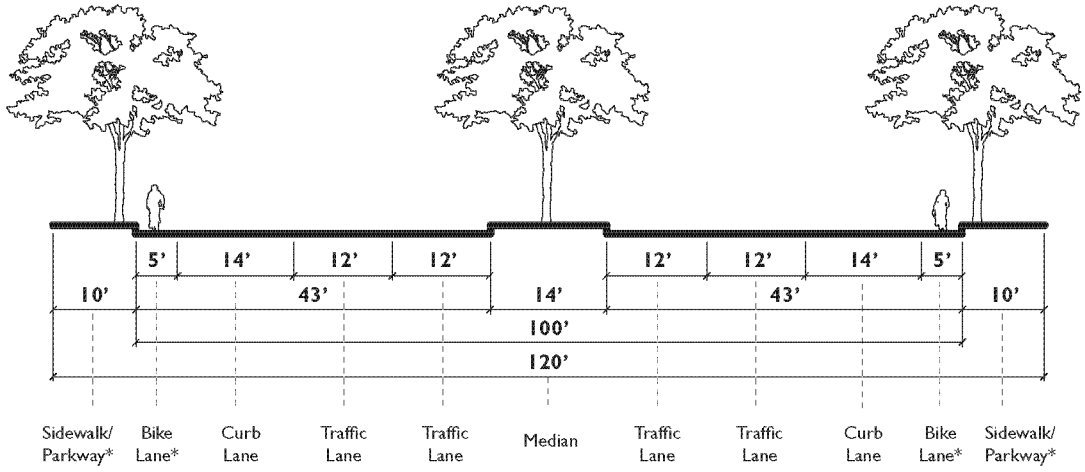
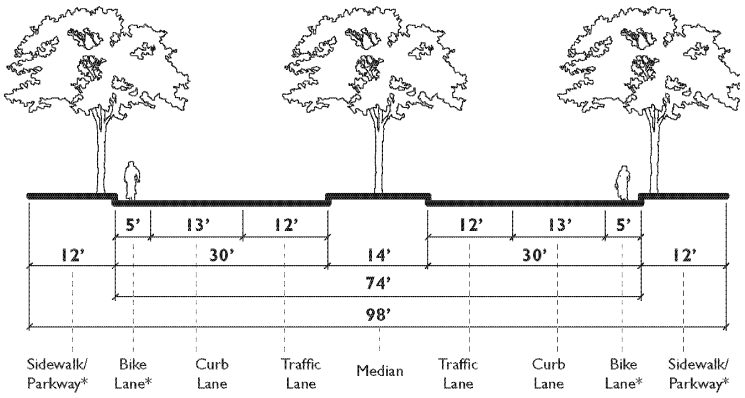
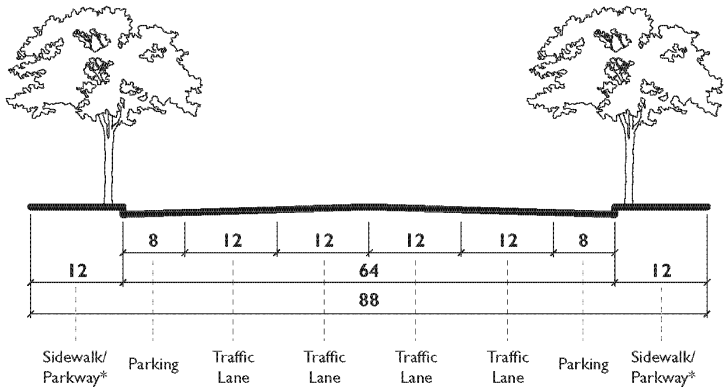


EXHIBIT 3-3 (2 of 2): CITY OF CHINO GENERAL PLAN ROADWAY CROSS-SECTIONS

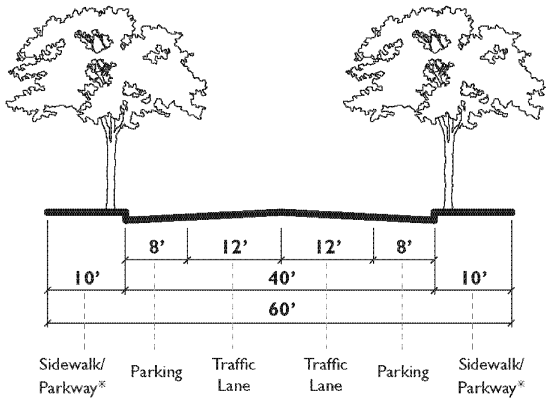
Primary Arterial: Typical 4 Lane
Provides 4 traffic lanes and 2 bicycle lanes separated by a median without parking



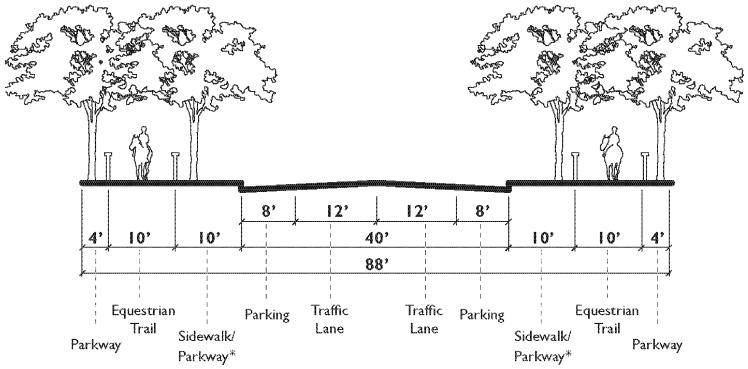
Secondary Arterial
Provides 4 traffic lanes with parking



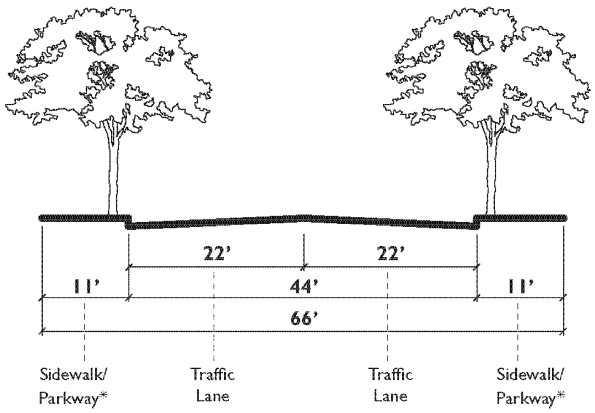
Urban Residential/Rural Collector
Provides 2 traffic lanes with parking and shared bicycle access



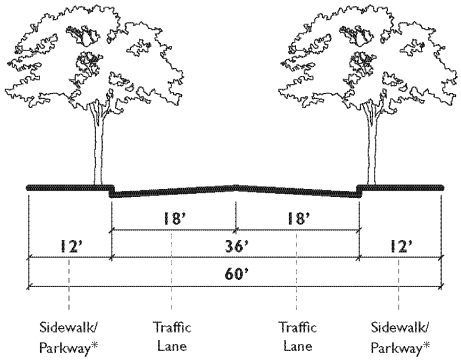
Urban Residential/Rural Collector with Equestrian Trails
Provides 2 traffic lanes and 2 equestrian trails with parking and shared bicycle access



Urban Industrial Collector
Provides 2 traffic lanes



Local Street
Provides 2 traffic lanes



The study area roadway that is classified as a Primary Arterial is identified as having a 98-foot right-of-way and 74-foot curb-to-curb measurement. Primary Arterials include two lanes of travel in each direction and a 14-foot curbed and/or landscaped median. The following study area roadways within the City of Chino are classified as a Primary Arterial:

- Riverside Drive from Fern Avenue to Euclid Avenue (SR-83)
- Schaefer Avenue from Benson Avenue to Euclid Avenue (SR-83)
- Eucalyptus Avenue from Central Avenue to Euclid Avenue (SR-83)
- Kimball Avenue from Euclid Avenue (SR-83) to Hellman Avenue
- Pine Avenue from the City Limit to Euclid Avenue (SR-83)
- Hellman Avenue south of Merrill Avenue

The study area roadway that is classified as a Secondary Arterial is identified as having an 88-foot right-of-way and 64-foot curb-to-curb measurement. Secondary Arterials include two lanes of travel in each direction and 8-feet of parking in both directions. The following study area roadways within the City of Chino are classified as a Secondary Arterial:

- El Prado Road from Central Avenue to Pine Avenue
- Chino Avenue from Pipeline Avenue to Euclid Avenue (SR-83)
- Merrill Avenue from Euclid Avenue (SR-83) to Flight Avenue
- Kimball Avenue from El Prado Road to Euclid Avenue (SR-83)

The study area roadway that is classified as an Urban Residential Collector, Rural Collector, or Urban Industrial Collector are identified as having a 60-66-foot right-of-way and 40-44-foot curb-to-curb measurement. Urban Residential Collector and Rural Collectors include one lane of travel in each direction and 8-feet of parking in both directions. Urban Industrial Collectors include a painted median that separates the two directions of travel. The following study area roadways within the City of Chino are classified as an Urban Residential Collector, Urban Industrial Collector, or Rural Collector:

- Mountain Avenue between Kimball Avenue to El Prado Road
- Bickmore Avenue from Mountain Avenue to Hellman Avenue
- Rincon Meadows Avenue from Kimball Avenue to Pine Avenue
- Mill Creek Road from Kimball Avenue to Pine Avenue
- West Preserve Loop
- Main Street from Kimball Avenue to Chino Corona Road
- East Preserve Loop
- Flight Avenue from Merrill Avenue to East Preserve Loop

3.3 CITY OF ONTARIO, CITY OF EASTVALE, CITY OF CHINO HILLS, AND CITY OF JURUPA VALLEY GENERAL PLAN CIRCULATION ELEMENT

Exhibits 3-4 and 3-5 show the City of Ontario General Plan Circulation Element and roadway cross-sections, respectively. Exhibits 3-6 and 3-7 show the City of Eastvale General Plan Circulation Element and roadway cross-sections, respectively. Exhibits 3-8 and 3-9 show the City of Chino Hills General Plan Circulation Element and roadway cross-sections, respectively. These classifications and cross-sections have been utilized for the purposes of determining the ultimate planned improvements along these study area roadways/intersections.

3.4 TRUCK ROUTES

The City of Chino designated truck route map is shown on Exhibit 3-10. There are State truck routes and other truck routes throughout the City of Chino. El Prado Road, Mountain Avenue, Bickmore Avenue, Riverside Drive, Kimball Avenue, Flight Avenue, Merrill Avenue, Hellman Avenue, and Pine Avenue are the designated City of Chino truck routes within the study area while Euclid Avenue (SR-83) is designated as a State Truck Route. Other large truck routes in the study area include Central Avenue and Edison Avenue. The designated truck route map has been utilized to route truck traffic from both the proposed Project and future cumulative development projects throughout the study area. The City of Ontario designated truck route map is shown on Exhibit 3-11. Euclid Avenue (SR-83), Edison Avenue/Ontario Ranch Road, Merrill Avenue, and Archibald Avenue are designated as a Truck Route in the City of Ontario. The designated truck route map has been utilized to route truck traffic from both the proposed Project and future cumulative development projects throughout the study area.

3.5 BICYCLE, EQUESTRIAN, & PEDESTRIAN FACILITIES

Field observations conducted in March 2019 indicate nominal pedestrian and bicycle activity within the study area. Exhibit 3-12 illustrates the City of Chino future planned bicycle facilities, which proposes Class I bike lanes along Pine Avenue in the vicinity of the Project site. Euclid Avenue (SR-83) is planned to have Class II bike lanes in the vicinity of the Project site.

Exhibit 3-13 illustrates the City of Ontario General Plan trails and bikeway systems. Euclid Avenue (SR-83) is identified as a bicycle corridor. Exhibit 3-14 illustrates the City of Eastvale trails and bikeway systems. Existing pedestrian facilities within the study area are shown on Exhibit 3-15.

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

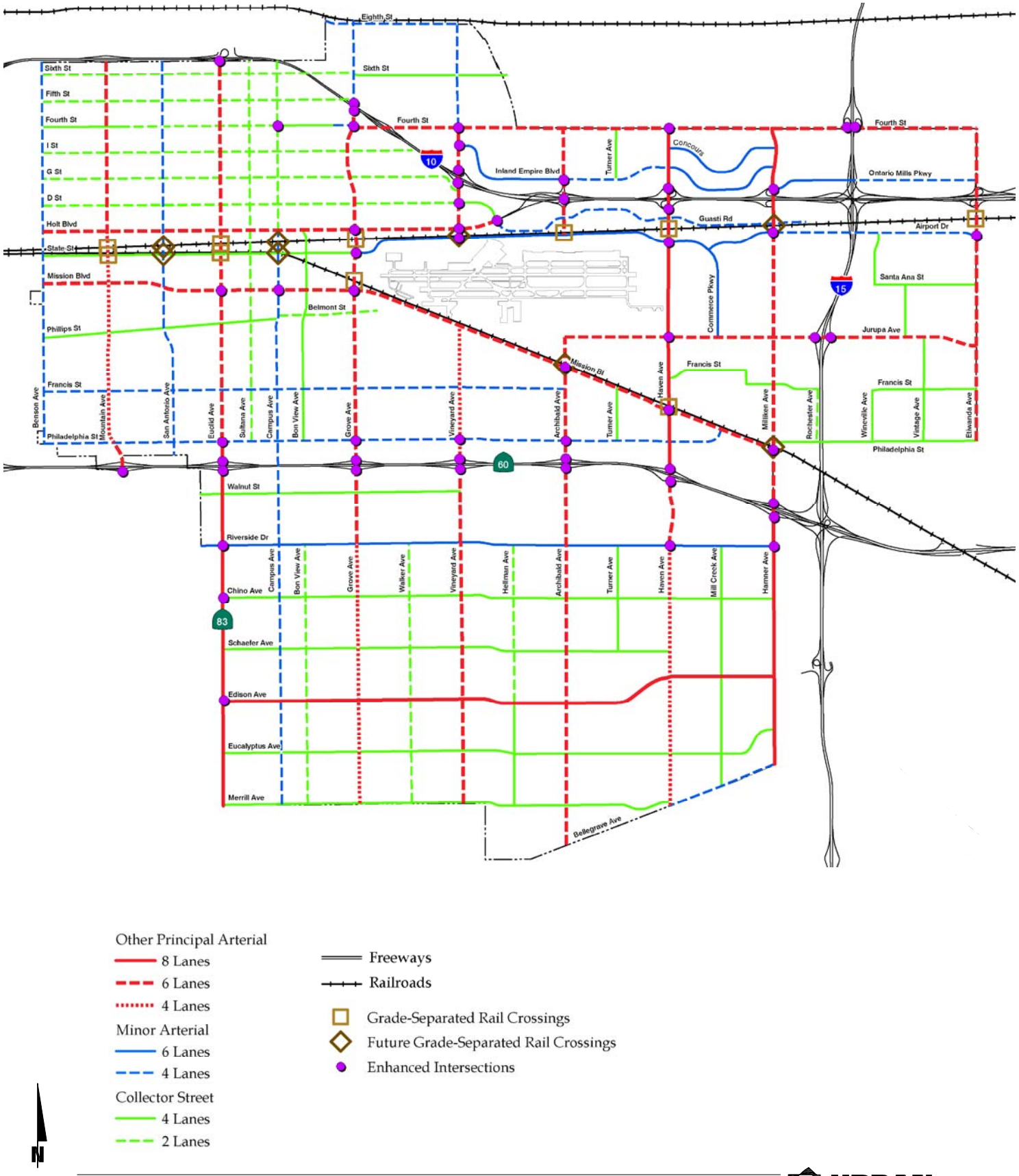
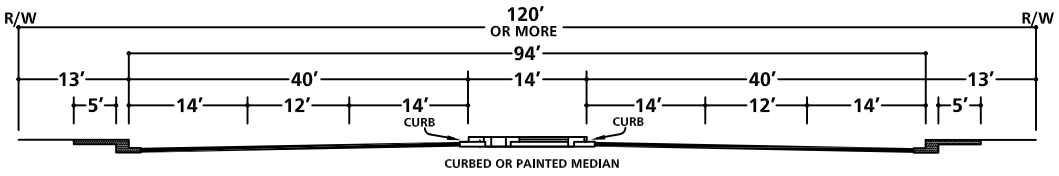
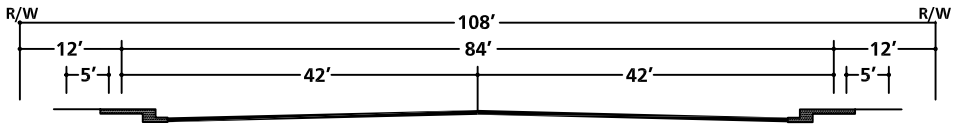


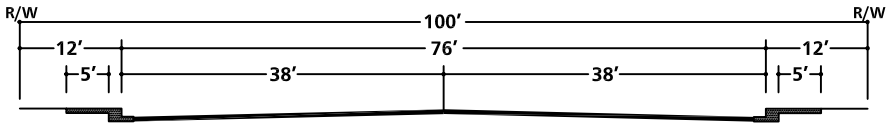
EXHIBIT 3-5: CITY OF ONTARIO GENERAL PLAN ROADWAY CROSS-SECTIONS



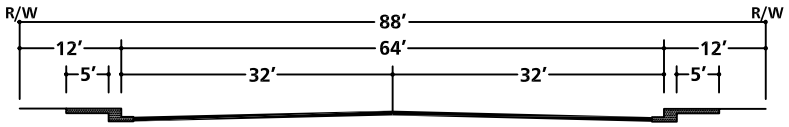
PRINCIPAL ARTERIAL



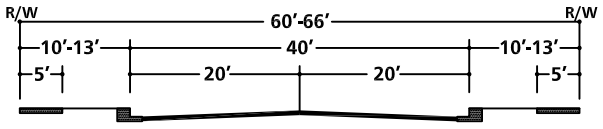
MINOR ARTERIAL



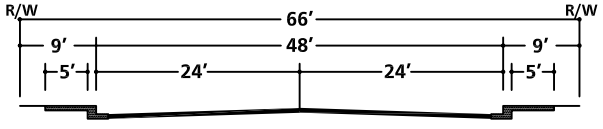
OTHER PRINCIPAL ARTERIAL



COLLECTOR STREET



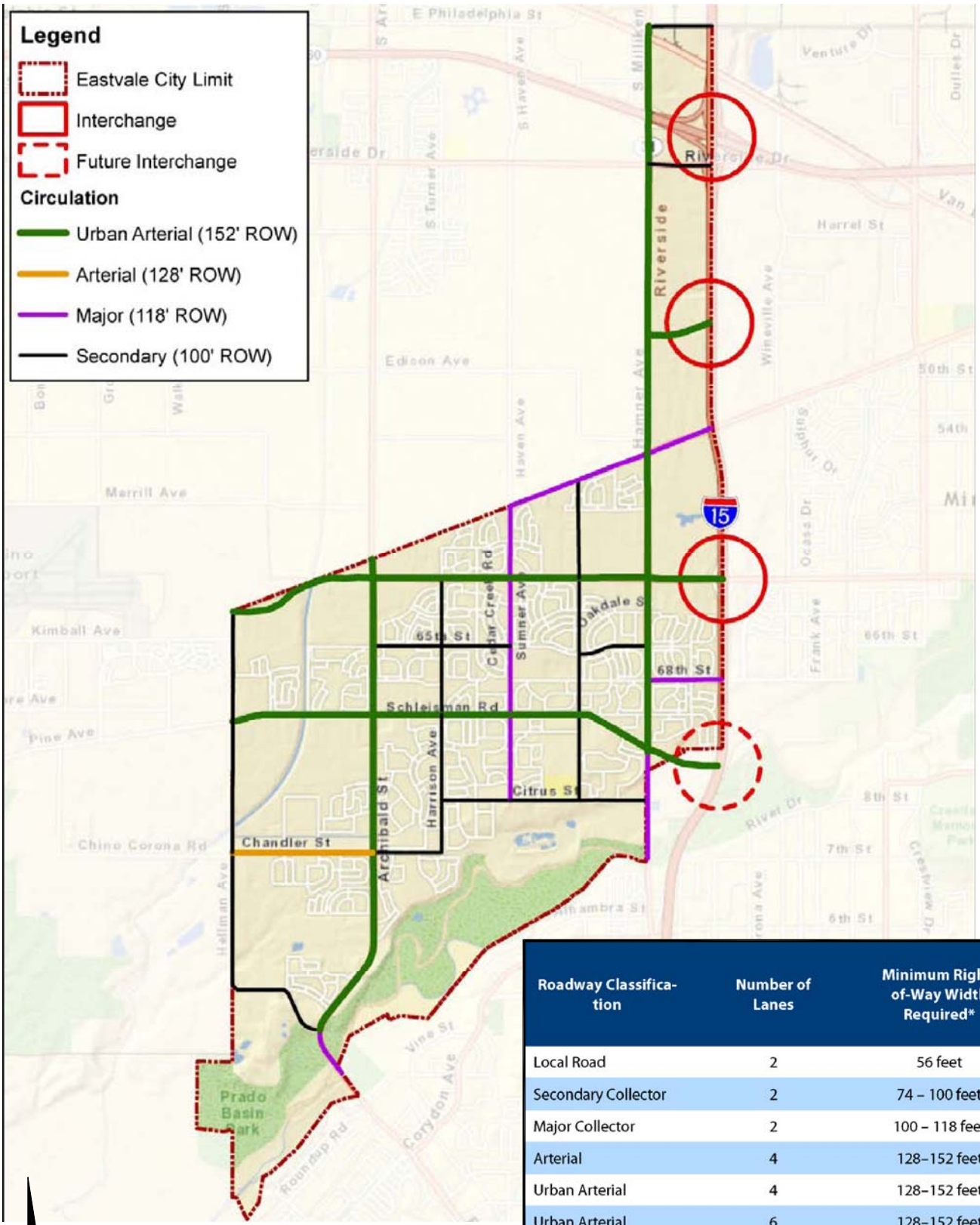
LOCAL STREET



LOCAL INDUSTRIAL STREET

SOURCE: CITY OF ONTARIO

EXHIBIT 3-6: CITY OF EASTVALE GENERAL PLAN CIRCULATION ELEMENT

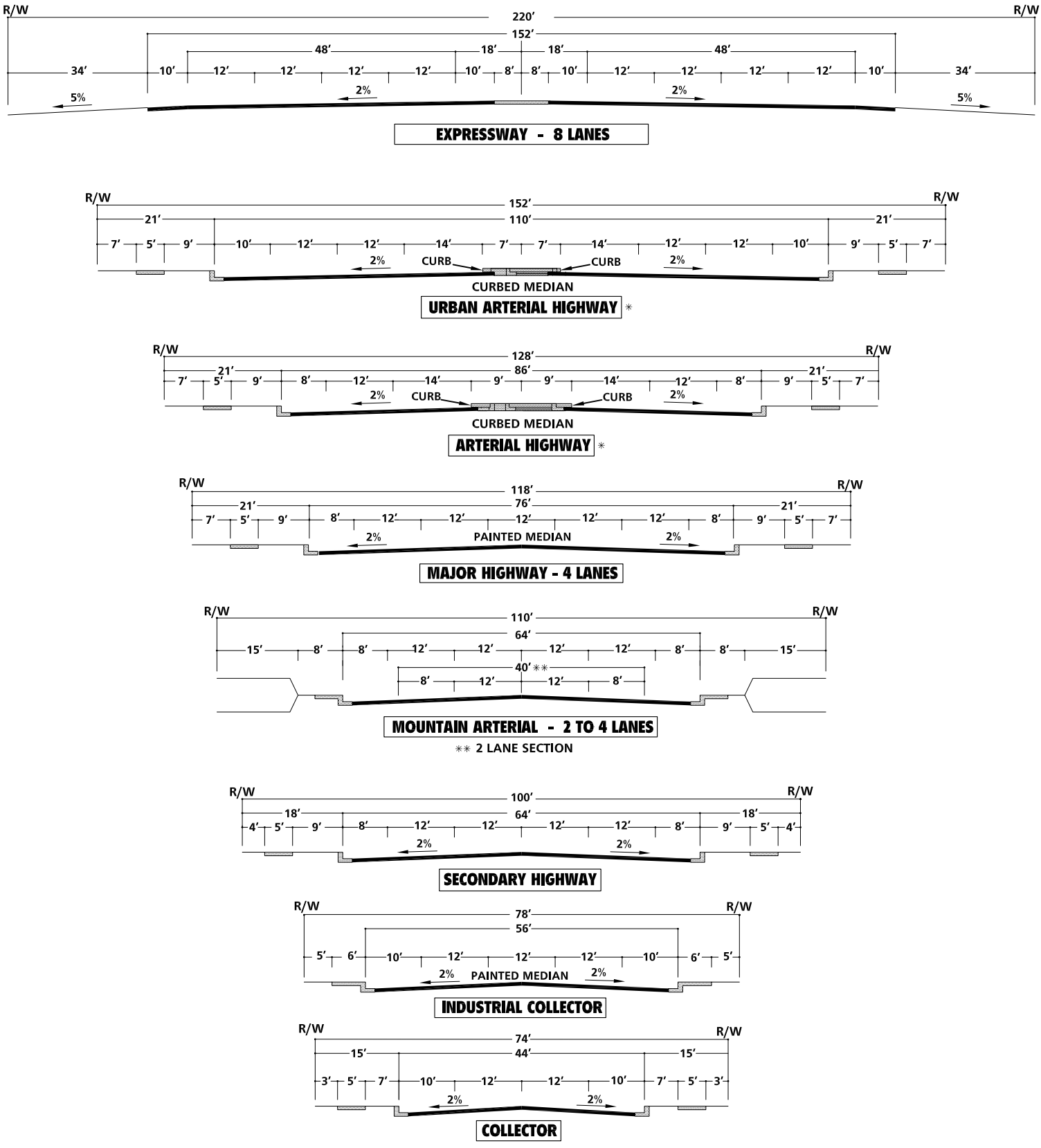


Roadway Classification	Number of Lanes	Minimum Right-of-Way Width Required*
Local Road	2	56 feet
Secondary Collector	2	74 – 100 feet
Major Collector	2	100 – 118 feet
Arterial	4	128–152 feet
Urban Arterial	4	128–152 feet
Urban Arterial	6	128–152 feet

SOURCE: CITY OF EASTVALE GENERAL PLAN
ADOPTED: JUNE 13, 2012

10349 - eastvale-gpce.dwg

EXHIBIT 3-7: CITY OF EASTVALE GENERAL PLAN ROADWAY CROSS-SECTIONS



* *IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.*

NOT TO SCALE

10349 - gprcs.dwg

EXHIBIT 3-8: CITY OF CHINO HILLS GENERAL PLAN ROADWAY SEGMENTS

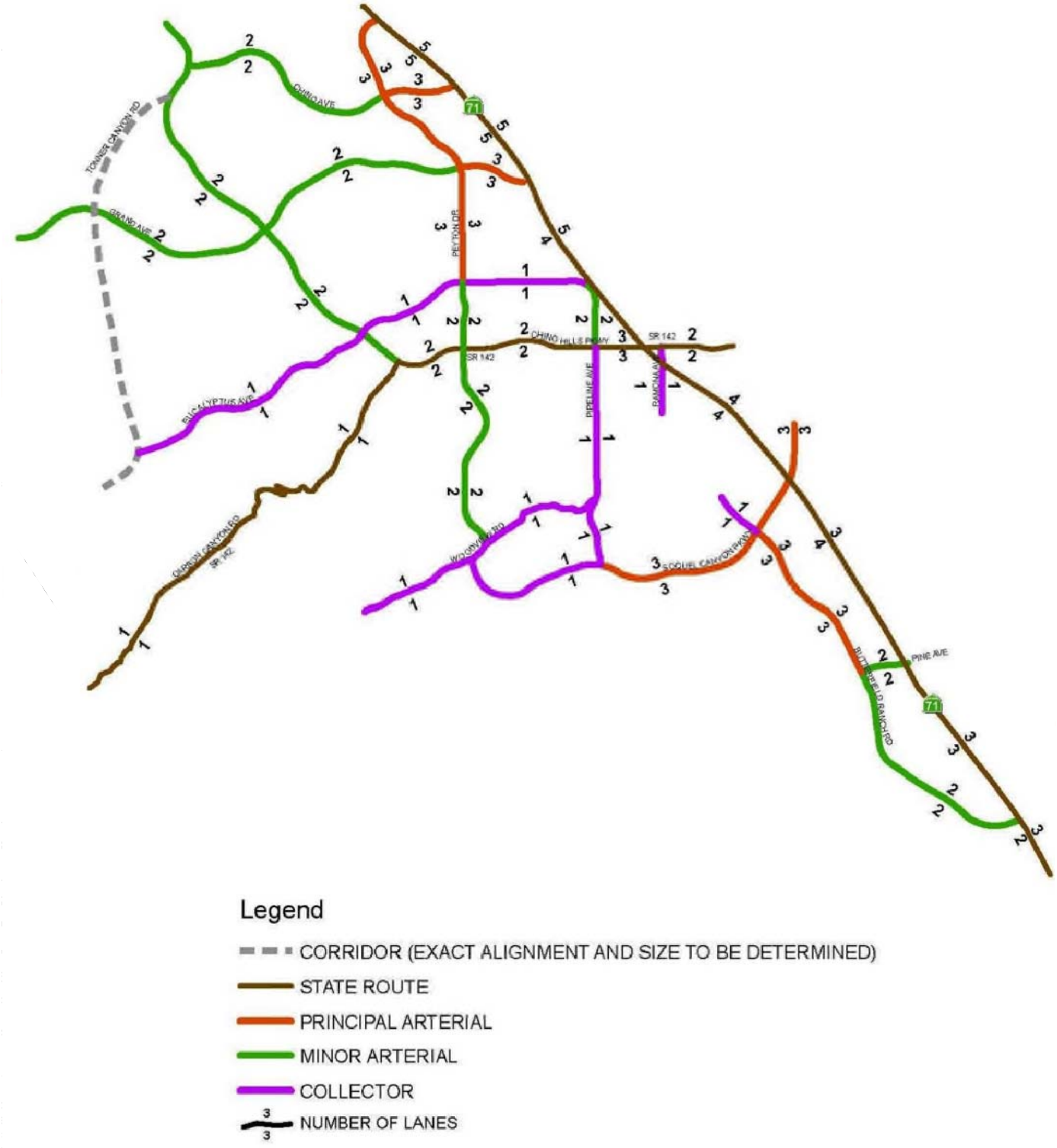
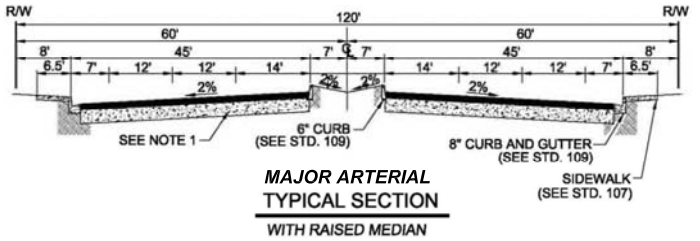
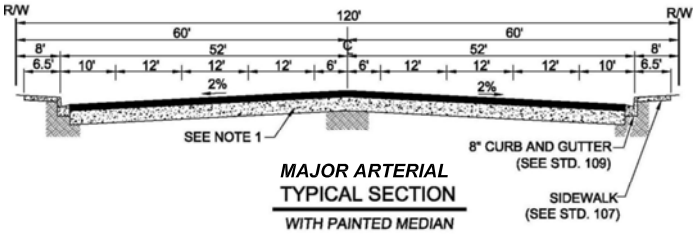
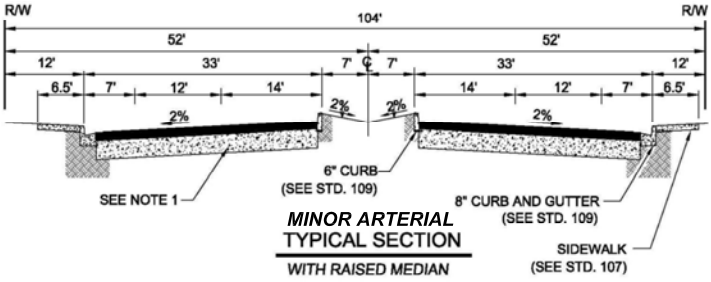
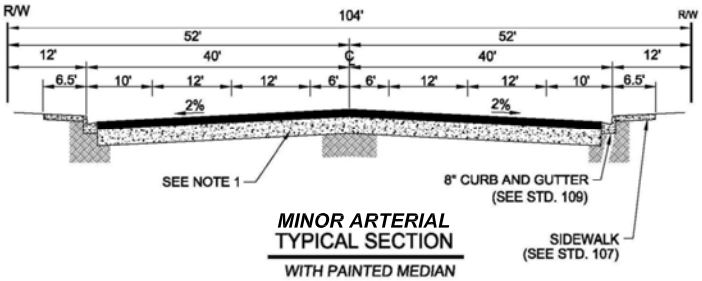


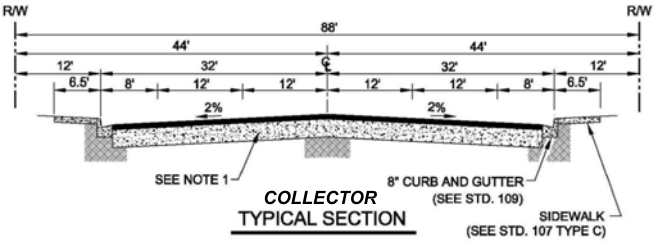
EXHIBIT 3-9: CITY OF CHINO HILLS GENERAL PLAN ROADWAY CROSS-SECTIONS











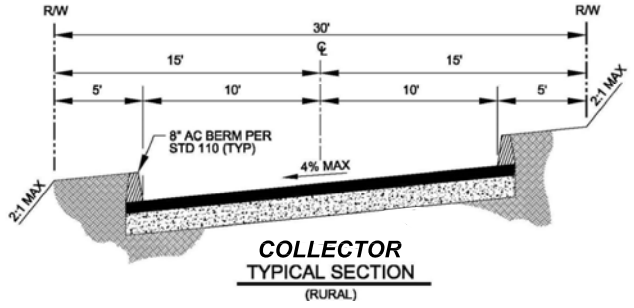
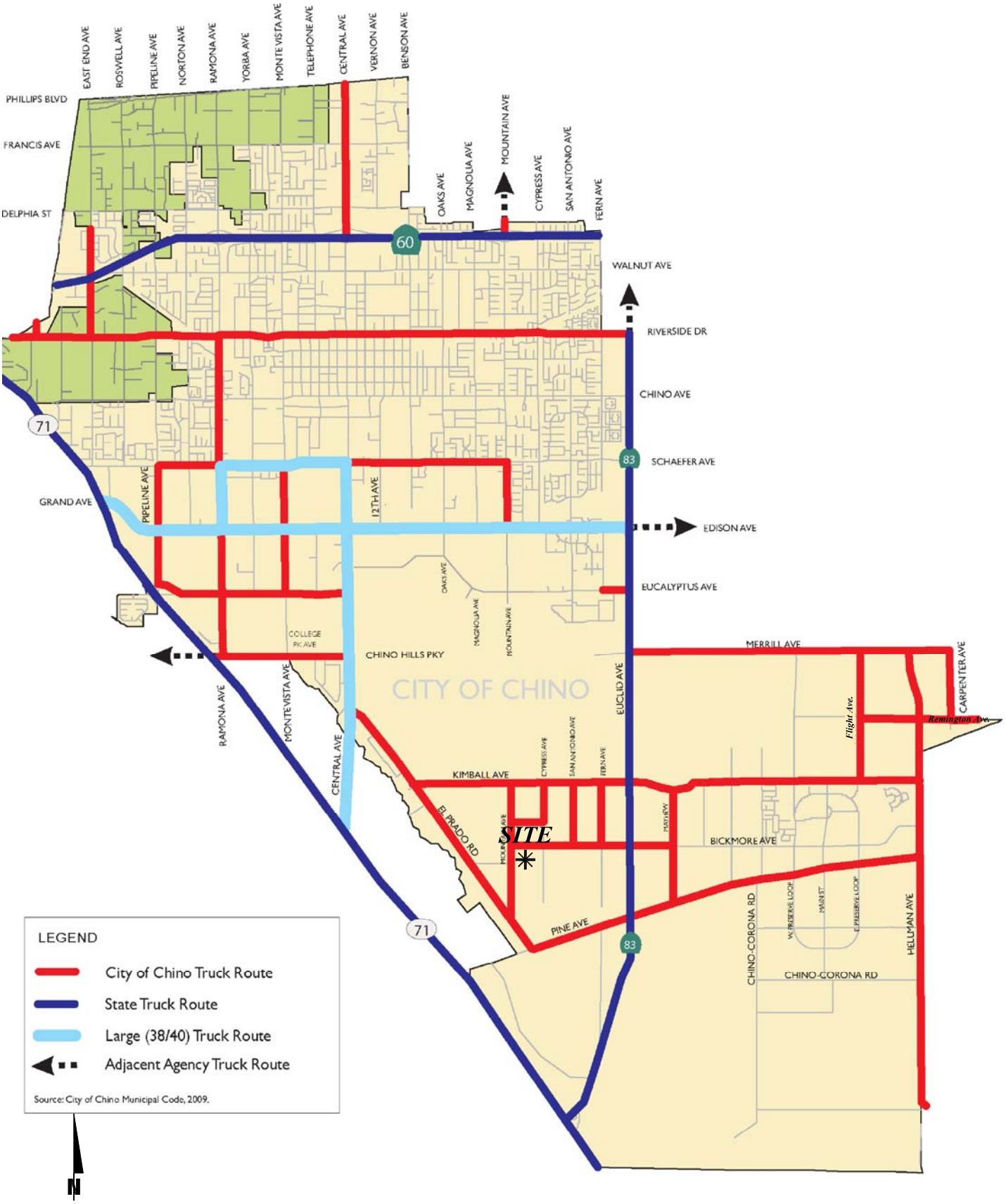


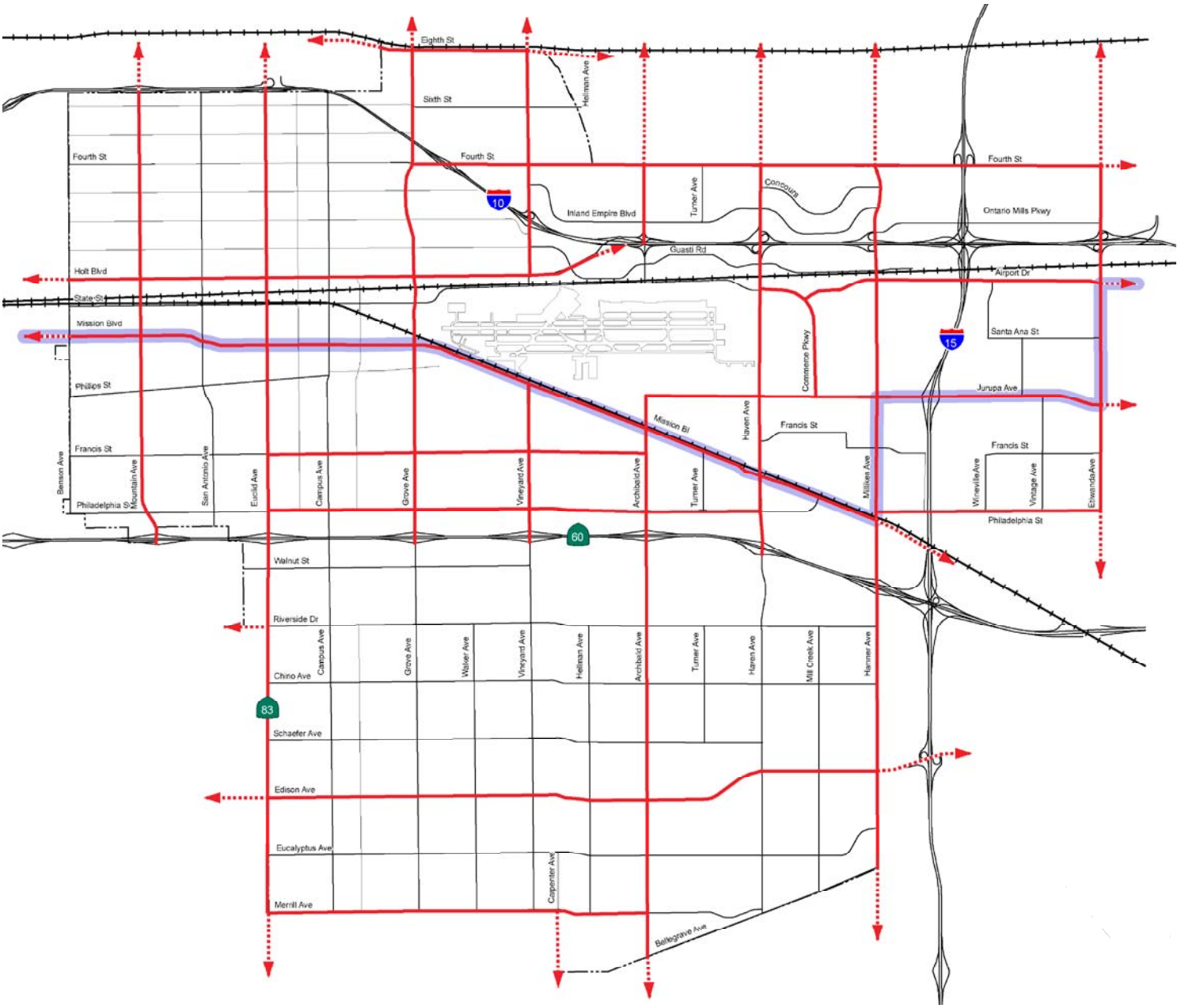
EXHIBIT 3-10: CITY OF CHINO TRUCK ROUTES



10349 - chino-trucks.dwg

URBAN CROSSROADS

EXHIBIT 3-11: CITY OF ONTARIO TRUCK ROUTES



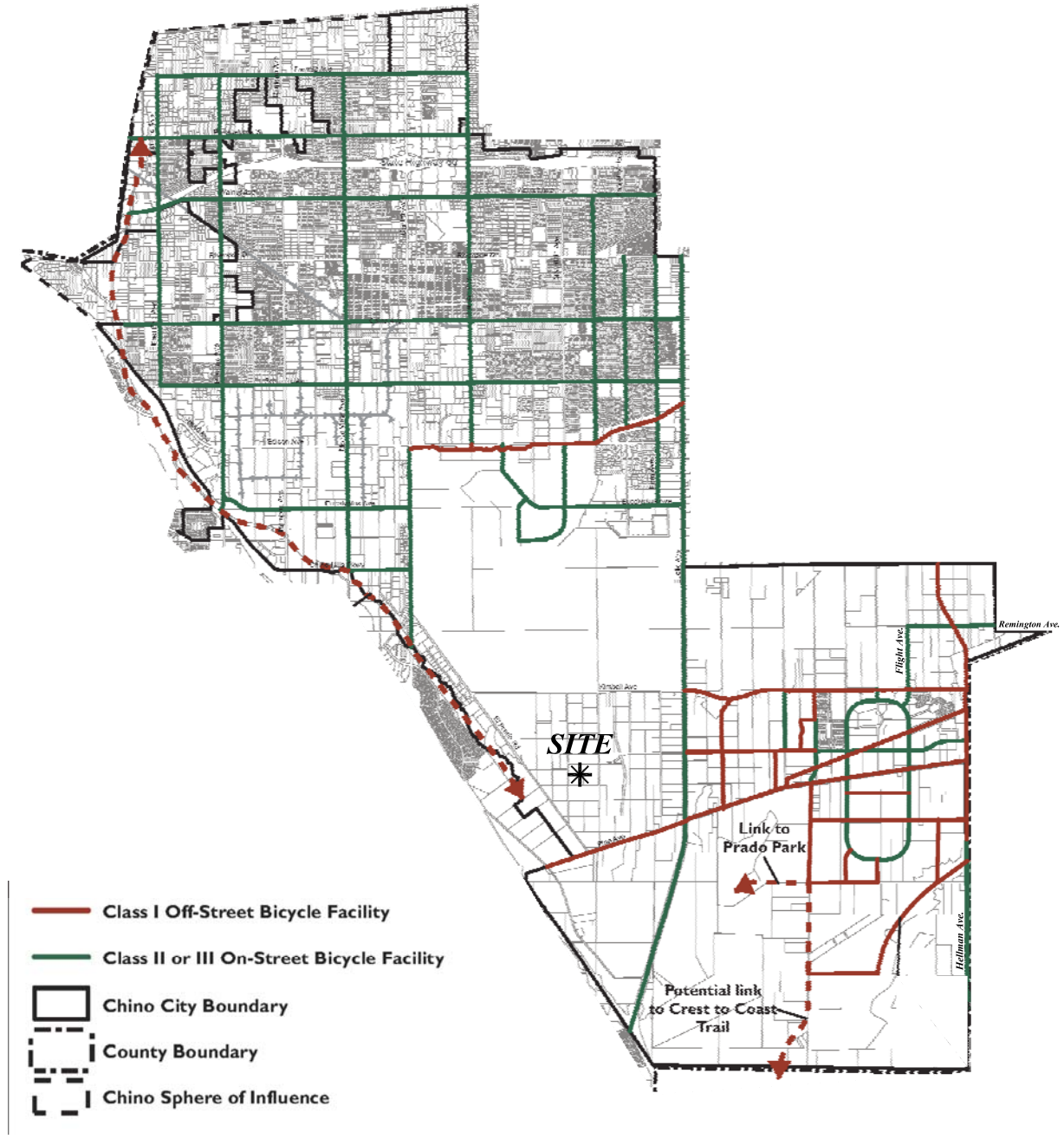
LEGEND:

- Truck Routes
- State of California DOT Extralegal Load Network
- Railroad
- Adjacent Agency Truck Route
- Exisitng Streets

N

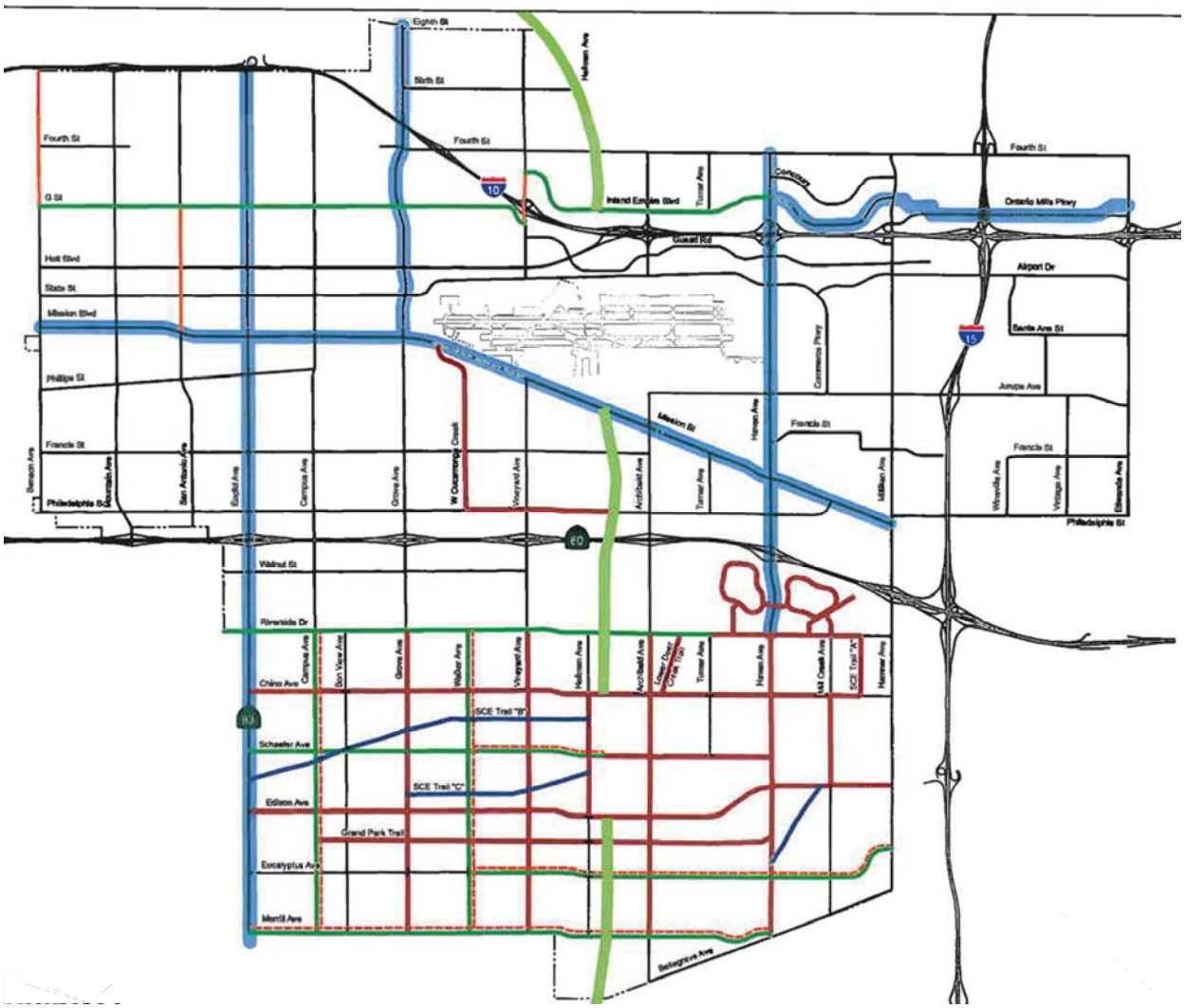
10349 - ontario truck routes.dwg

EXHIBIT 3-12: CITY OF CHINO FUTURE BICYCLE FACILITIES



10349 - chino-future-bike.dwg

EXHIBIT 3-13: CITY OF ONTARIO GENERAL PLAN TRAILS AND BIKEWAY SYSTEMS



LEGEND:

- Freeways
- Backbone Street System
- Multipurpose Trail
- Class II & Multipurpose Trail
- Class II
- Class III
- SCE Trails
- Cucamonga Creek Multipurpose Trail
- Bicycle Corridors

N

EXHIBIT 3-14: EASTVALE AREA TRAILS AND BIKEWAYS SYSTEM

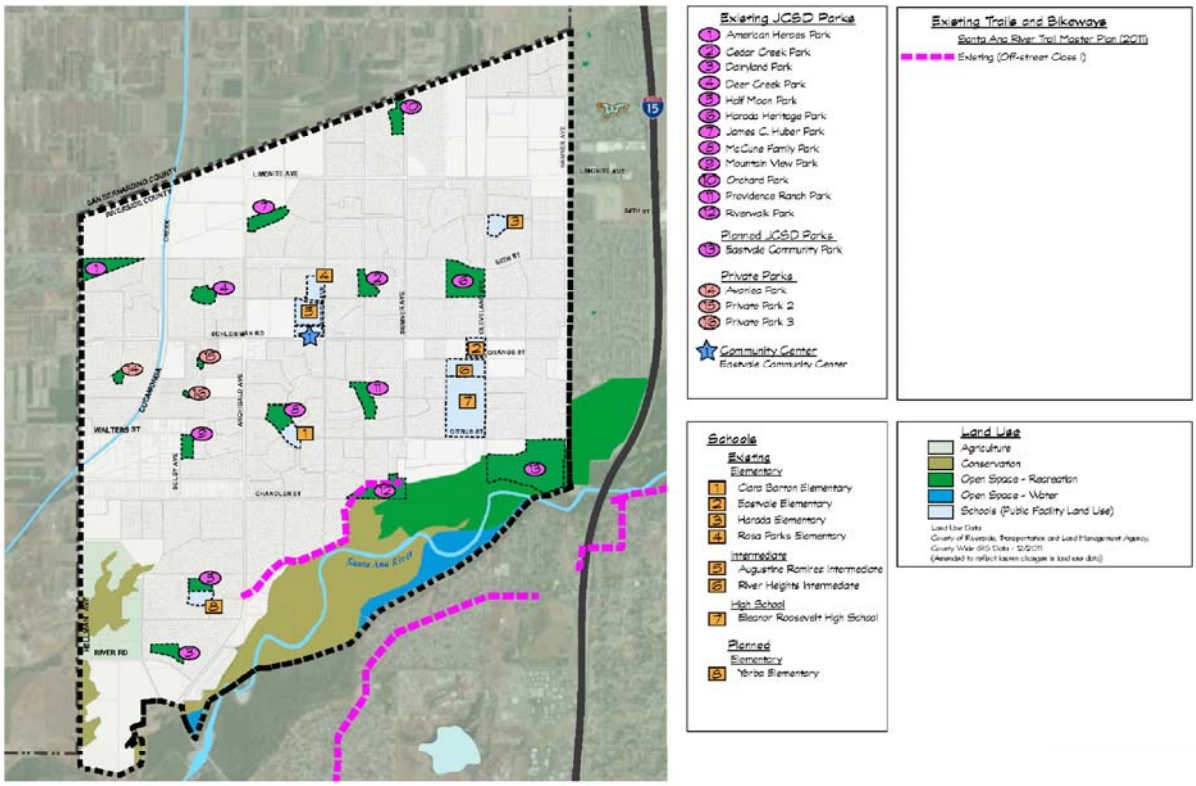


Exhibit 2.8-1 Existing Trails

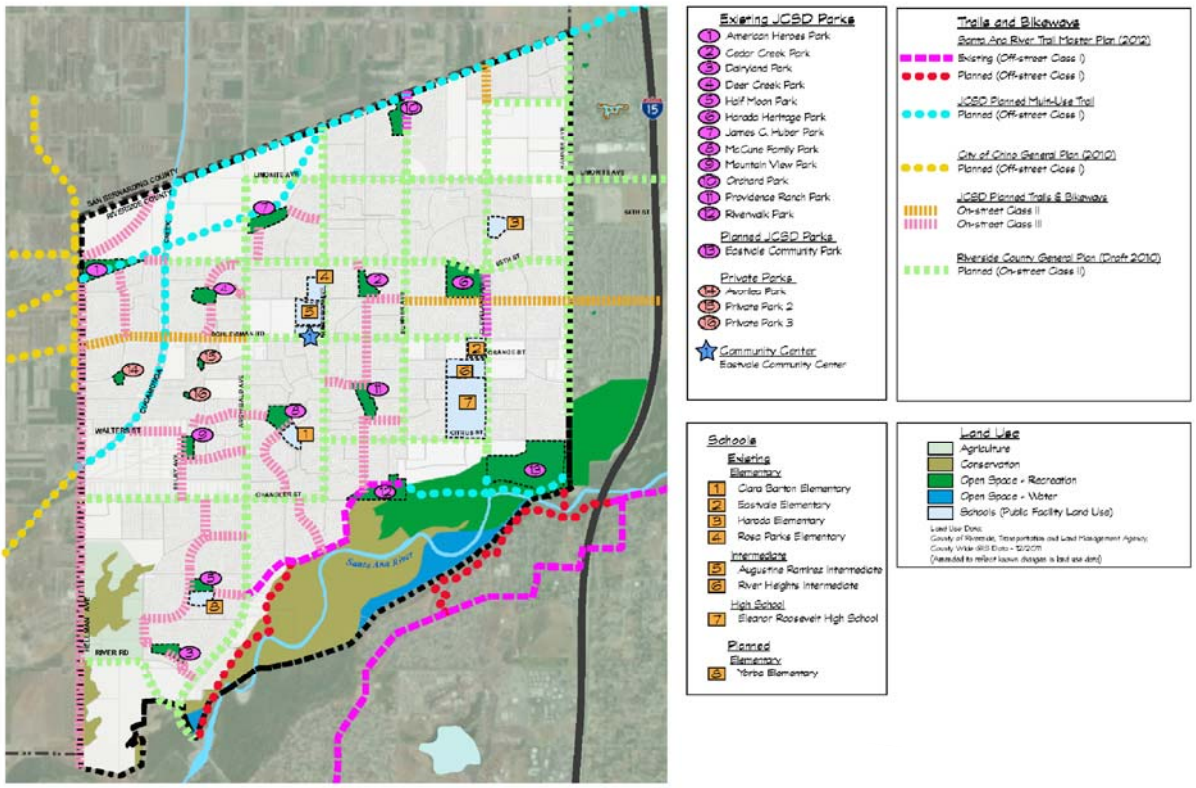
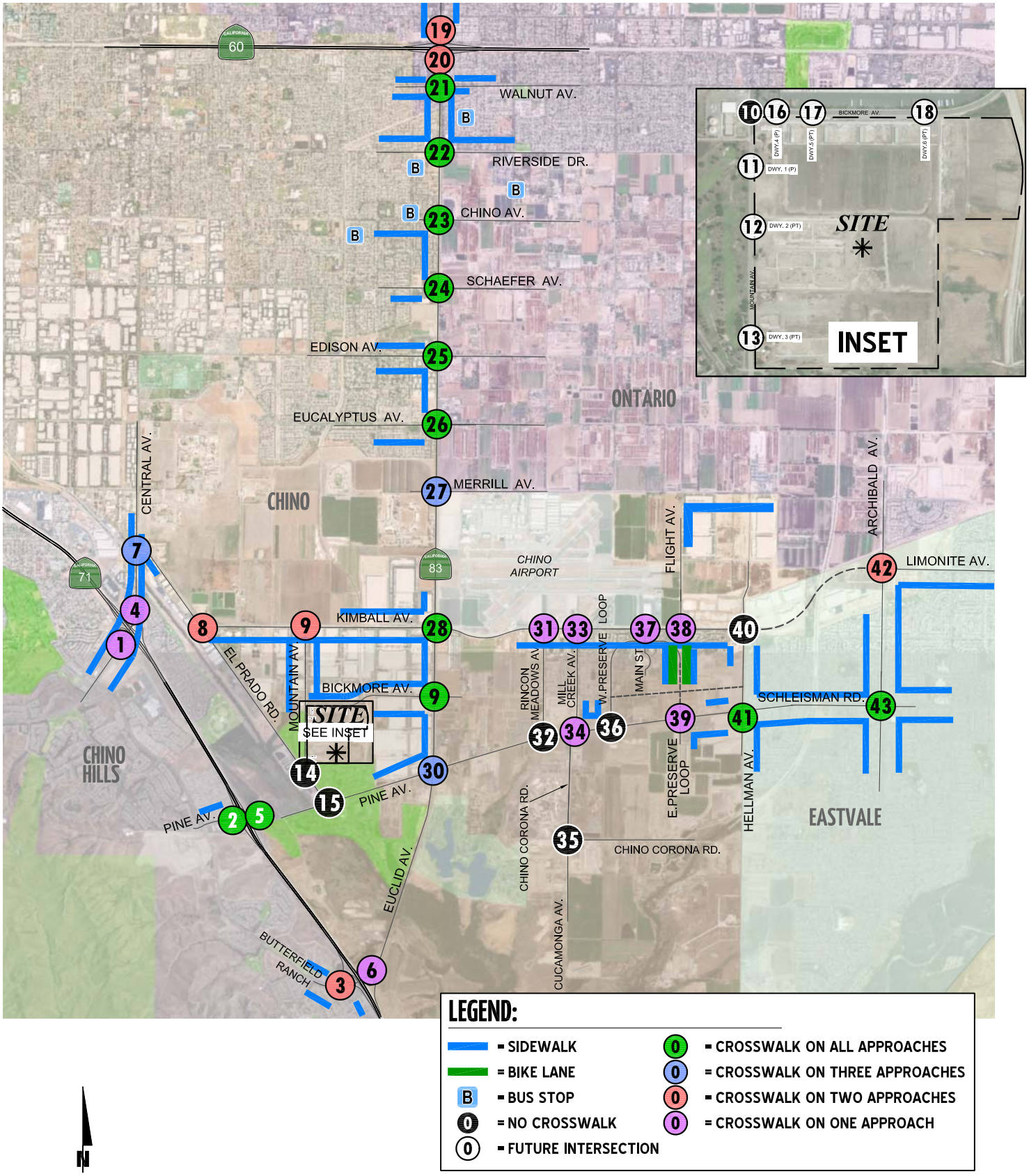


Exhibit 2.8-2 Planned Trails

EXHIBIT 3-15: EXISTING PEDESTRIAN FACILITIES



10349 - peds.dwg

3.6 TRANSIT SERVICE

The study area within the City of Chino is currently served by Omnitrans, a public transit agency serving various jurisdictions within San Bernardino County. Based on a review of the existing transit routes within the vicinity of the proposed Project, there are no existing Omnitrans routes that operate near the vicinity of the site. The Riverside Transit Authority (RTA) serves the City of Eastvale. However, transit service is reviewed and updated by Omnitrans periodically to address ridership, budget and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate. As such, it is recommended that the applicant work in conjunction with Omnitrans and RTA to potentially provide bus service to the site. Existing transit routes in the vicinity of the study area are illustrated on Exhibit 3-16.

The Project Applicant shall encourage vanpool, shuttle service, and carpool to maintain the parking demand, reduce trips, and potentially provide incentives for employees by designating near and "shaded" preferential parking spaces for high occupancy vehicles.

3.7 EXISTING (2019) TRAFFIC COUNTS

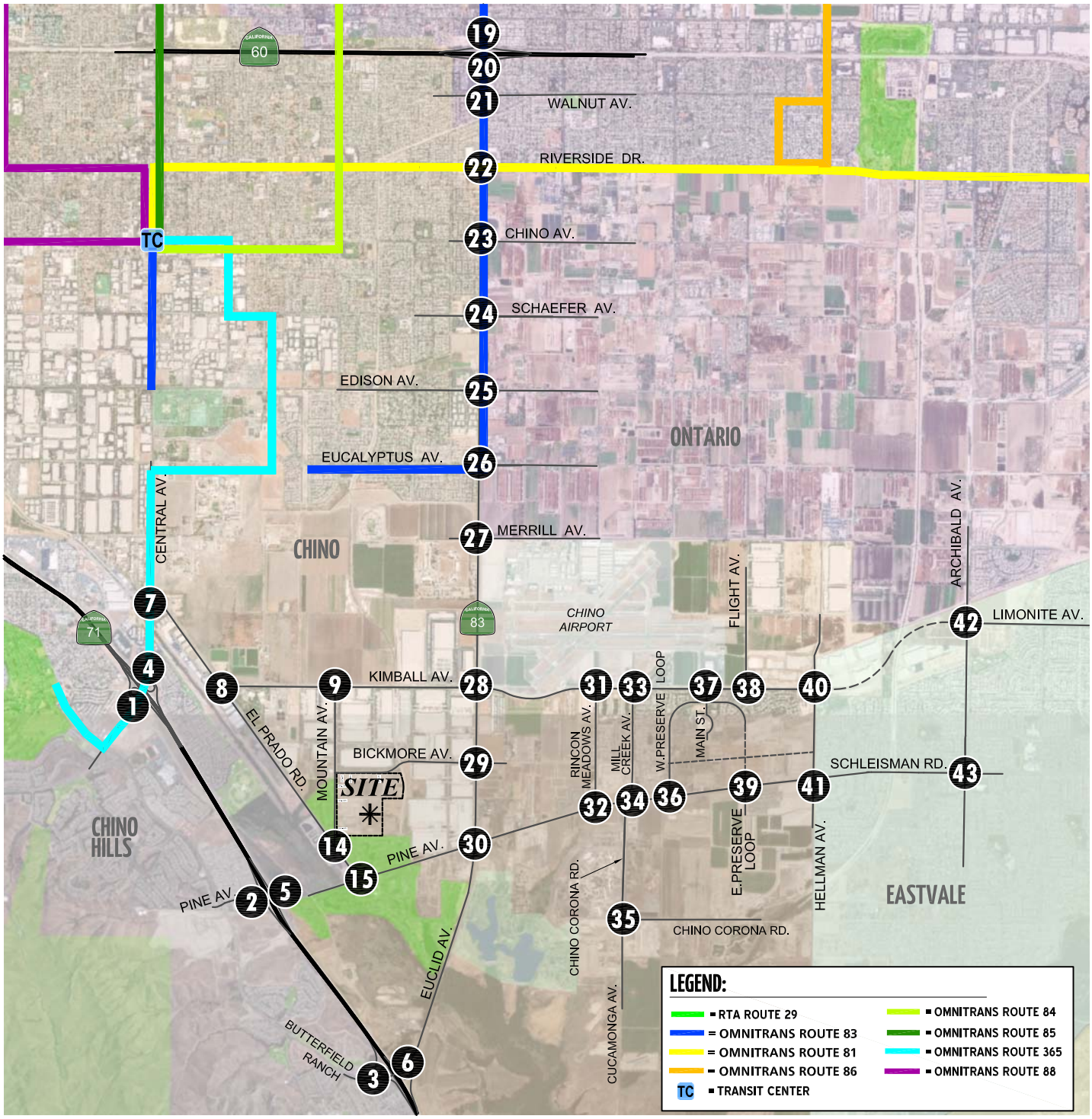
The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in January 2019. The following peak hours were selected for analysis:

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

The traffic counts collected in January 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. These factors are consistent with the values recommended for use in the CMP.

EXHIBIT 3-16: EXISTING TRANSIT ROUTES



10349 - transit.dwg

Consistent with standard engineering practice, the traffic counts were collected on either a typical Tuesday, Wednesday, or Thursday on a non-holiday. Traffic counts were also conducted when local schools were in session and operating on normal bell schedules. The purpose of this TIA is to evaluate the peak hour operations for the typical weekday peak hour. Existing weekday ADT volumes are shown on Exhibit 3-17. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12.55 = 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 7.97 percent. As such, the above equation utilizing a factor of 12.55 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.97 percent (i.e., 1/0.0797 = 12.55) and was assumed to sufficiently estimate average daily traffic (ADT) volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes (in PCE) are shown on Exhibit 3-18.

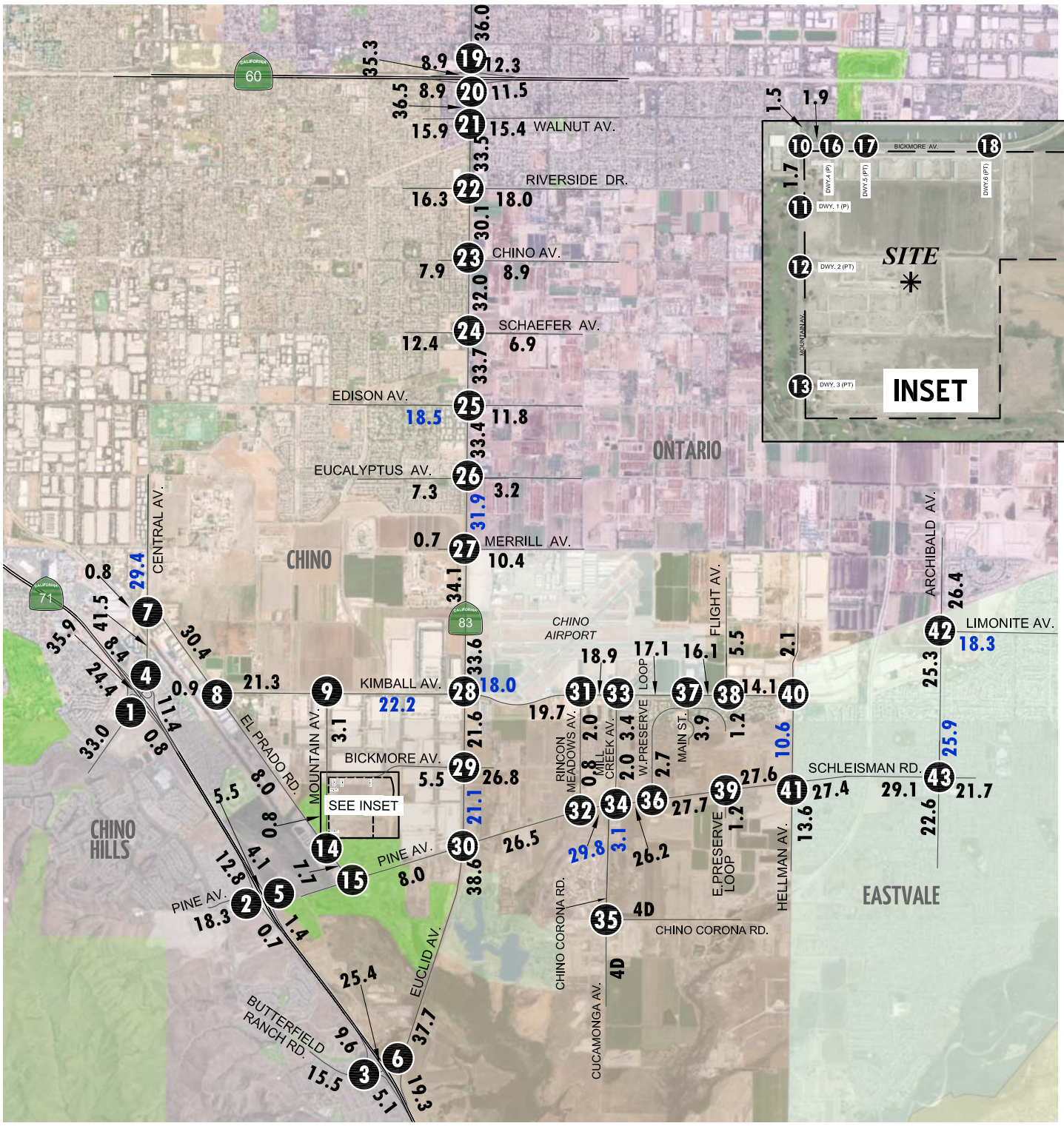
3.8 INTERSECTION OPERATIONS ANALYSIS

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 on Table 3-1, which indicates that all existing study area intersections are currently operating at an acceptable LOS during the peak hours with exception to the following:

- Central Avenue & El Prado Road (#7) – LOS E PM peak hour only
- El Prado Road & Kimball Avenue (#8) – LOS F PM peak hour only
- Euclid Avenue (SR-83) & Riverside Drive (#22) – LOS E PM peak hour only
- Euclid Avenue (SR-83) & Pine Avenue (#30) – LOS E PM peak hour only
- Hellman Avenue & Kimball Avenue (#40) – LOS F AM and PM peak hours
- Archibald Avenue & Schleisman Road (#43) – LOS F AM peak hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing conditions are shown on Exhibit 3-19. The intersection operations analysis worksheets are included in Appendix 3.2 of this TIA.

EXHIBIT 3-17: EXISTING (2019) 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)

N

10349 - adt.dwg

EXHIBIT 3-18 (1OF2): EXISTING (2019) TRAFFIC VOLUMES (IN PCE)

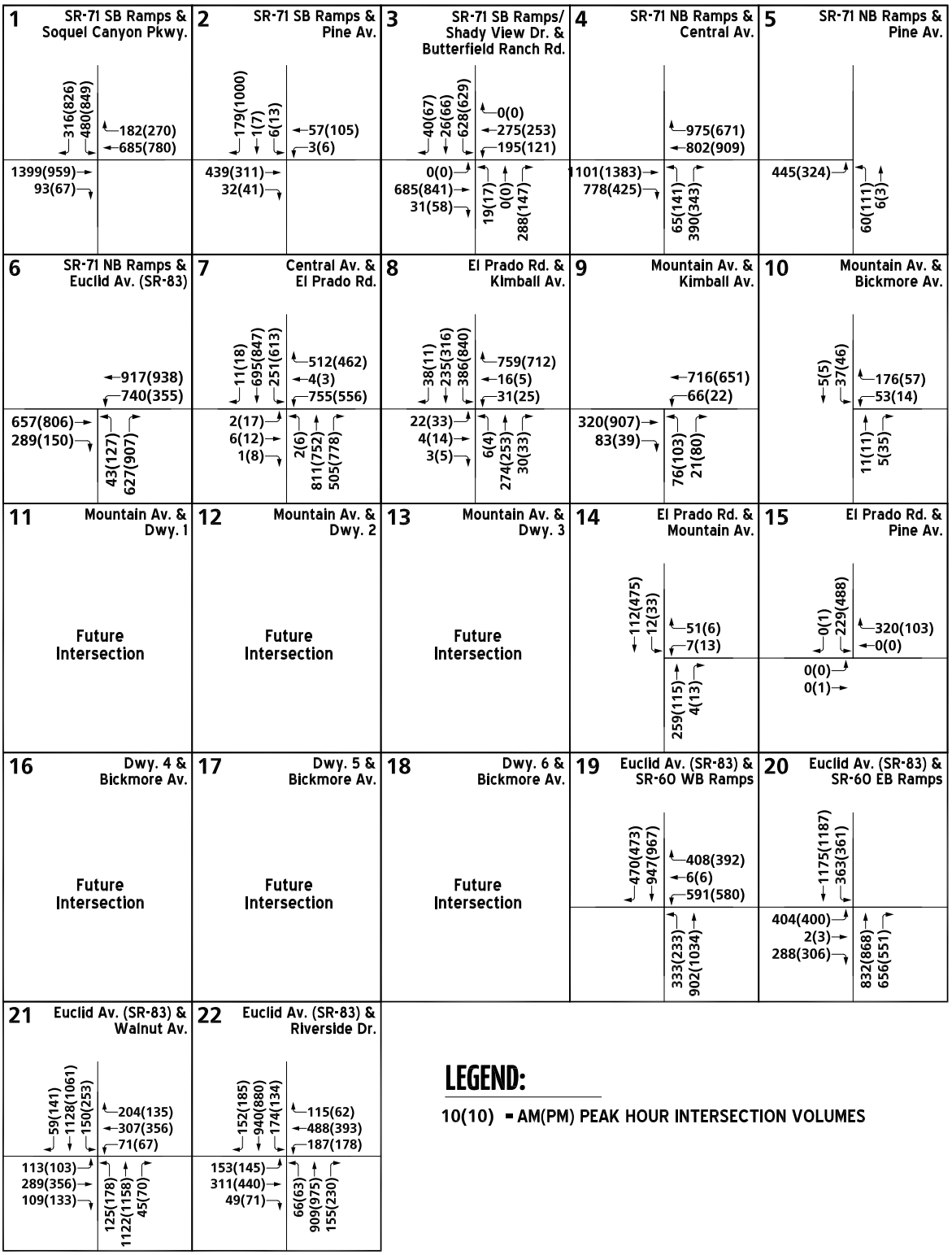


EXHIBIT 3-18 (2OF2): EXISTING (2019) TRAFFIC VOLUMES (IN PCE)

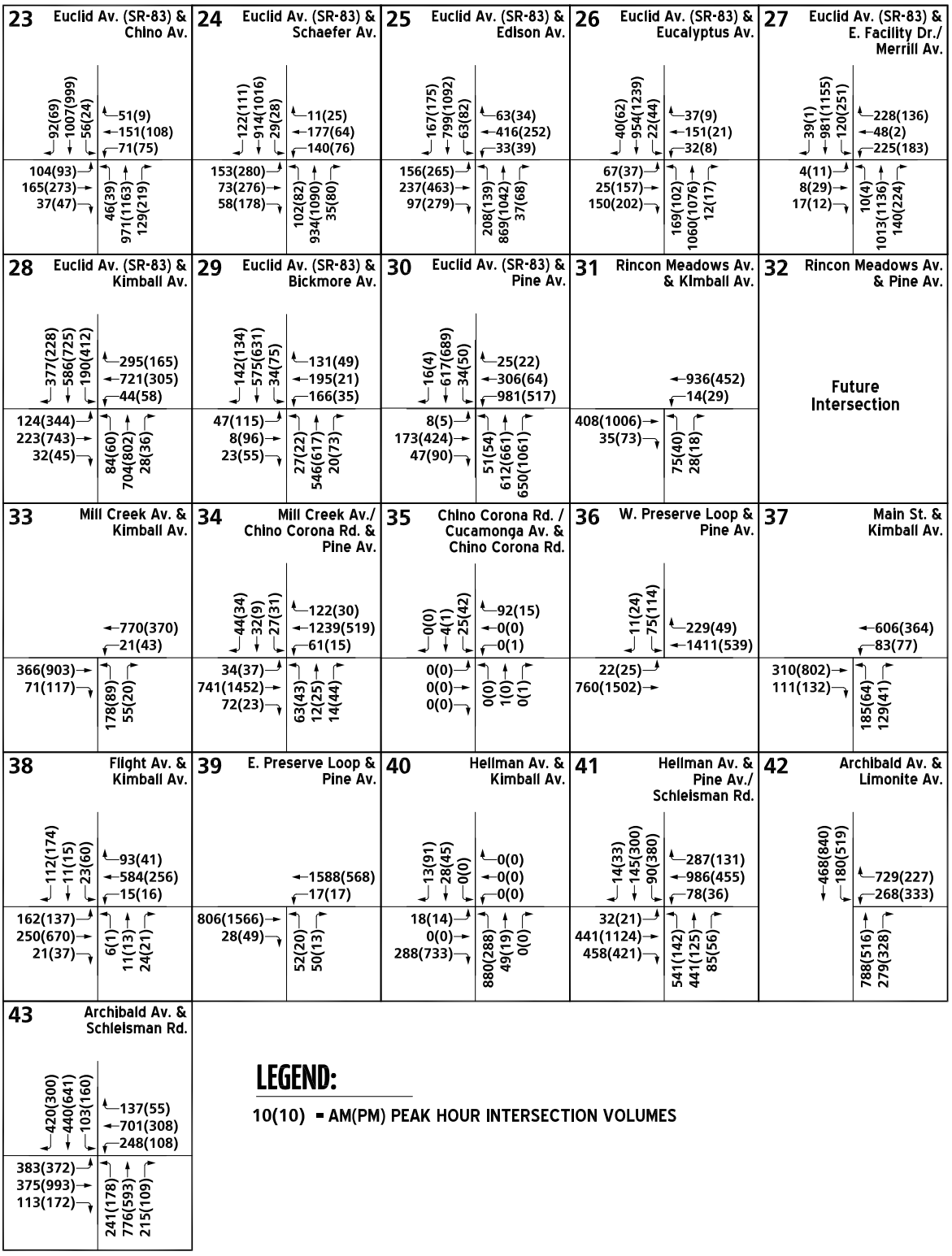


EXHIBIT 3-19: EXISTING (2019) SUMMARY OF LOS

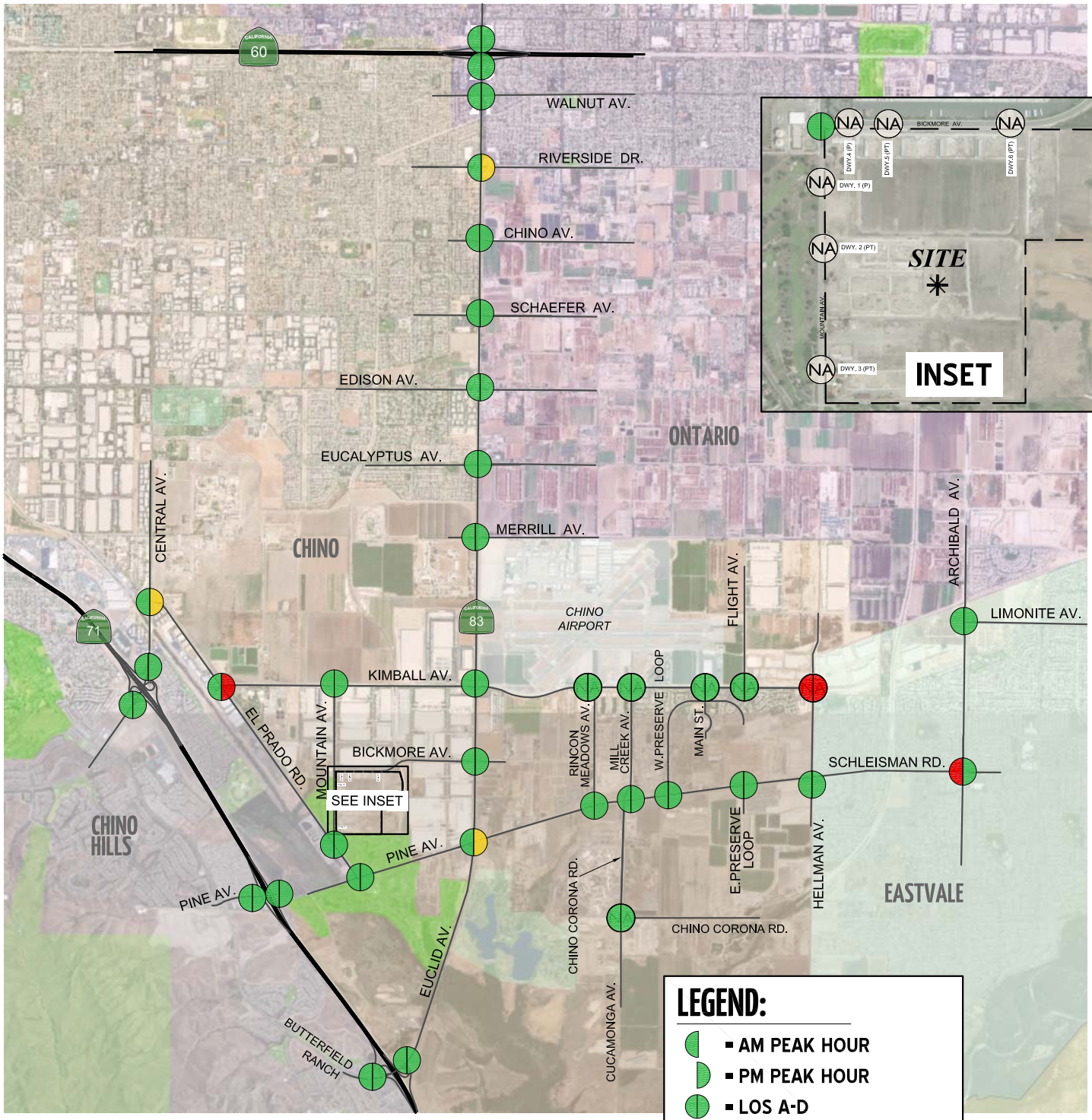


Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service		Acceptable LOS[4]
			Northbound			Southbound			Eastbound			Westbound							
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	SR-71 SB Ramps & Soquel Canyon Rd.	TS	0	0	0	1	1	0	0	3	1>>	0	3	1>>	13.3	23.2	B	C	D
2	SR-71 SB Ramps & Pine Av.	TS	0	0	0	0	1	1	0	1	1	1	2	0	31.2	26.7	C	C	D
3	SR-71 SB Ramps & Butterfield Ranch Rd.	TS	1	0	1	1	1	1	0	2	0	1	2	1>>	40.0	39.6	D	D	D
4	SR-71 NB Ramps & Central Av.	TS	1	1	0	0	0	0	0	3	1>>	0	3	1>>	8.6	7.7	A	A	D
5	SR-71 NB Ramps & Pine Av.	AWS	1	1	0	0	0	0	2	0	0	0	0	0	9.3	8.9	A	A	D
6	SR-71 NB Ramps & Euclid Av. (SR-83)	TS	2	0	1>>	0	0	0	0	2	1>>	1	2	0	27.2	42.5	C	D	D
7	Central Av. & El Prado Rd.	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	29.0	**61.2**	C	**E**	D
8	El Prado Rd. & Kimball Av.	TS	1	1	1	1	2	0	1	1	0	0	1	1>	28.1	**86.2**	C	**F**	D
9	Mountain Av. & Kimball Av.	TS	1	0	1	0	0	0	0	2	0	1	2	0	7.4	9.7	A	A	D
10	Mountain Av. & Bickmore Av.	CSS	0	1	0	1	1	0	0	0	0	1	0	1	9.8	9.6	A	A	D
11	Mountain Av. & Driveway 1		Future Intersection																D
12	Mountain Av. & Driveway 2		Future Intersection																D
13	Mountain Av. & Driveway 3		Future Intersection																D
14	El Prado Rd. & Mountain Av.	CSS	0	1	0	0	1	0	0	0	0	0	1	0	10.4	13.6	B	B	D
15	El Prado Rd. & Pine Av.	AWS	0	0	0	0	1	0	0	1	0	0	1	0	9.8	13.5	A	B	D
16	Driveway 4 & Bickmore Av.		Future Intersection																D
17	Driveway 5 & Bickmore Av.		Future Intersection																D
18	Driveway 6 & Bickmore Av.		Future Intersection																D
19	Euclid Av. (SR-83) & SR-60 WB Ramps	TS	1	2	0	0	2	1	0	0	0	1	1	1	22.3	18.6	C	B	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps	TS	0	2	1	1	2	0	1	1	0	0	0	0	25.3	21.9	C	C	D
21	Euclid Av. (SR-83) & Walnut Av.	TS	1	3	d	2	3	1	1	2	0	1	2	0	30.1	32.5	C	C	E
22	Euclid Av. (SR-83) & Riverside Dr.	TS	1	2	1	1	2	1>	1	1	0	1	2	d	47.0	**55.5**	D	**E**	D
23	Euclid Av. (SR-83) & Chino Av.	TS	1	2	1	1	2	1	1	1	1	0	1	0	21.5	23.2	C	C	D
24	Euclid Av. (SR-83) & Schaefer Av.	TS	1	2	1	1	2	1	1	1	1	1	1	0	23.6	26.2	C	C	D
25	Euclid Av. (SR-83) & Edison Av.	TS	1	2	1	1	2	1	1	1	1	1	1	0	38.1	39.7	D	D	D
26	Euclid Av. (SR-83) & Eucalyptus Av.	TS	1	2	1	1	2	1	1	1	1	1	1	0	13.8	13.2	B	B	D
27	Euclid Av. (SR-83) & Merrill Av.	TS	1	2	1	1	2	0	0	1	0	0	1	0	26.4	29.9	C	C	D
28	Euclid Av. (SR-83) & Kimball Av.	TS	1	2	1>	2	2	1>	2	2	0	1	2	0	32.4	38.3	C	D	D
29	Euclid Av. (SR-83) & Bickmore Av.	TS	1	2	0	1	2	1	1	1	1	1	1	0	16.3	14.0	B	B	D
30	Euclid Av. (SR-83) & Pine Av.	TS	1	2	1>	1	2	0	1	1	1	2	1	0	31.9	**61.5**	C	**E**	D
31	Rincon Meadows Av. & Kimball Av.	TS	1	0	1	0	0	0	0	2	0	1	1	0	15.4	12.8	B	B	D
32	Rincon Meadows Av. & Pine Av.		Future Intersection																D
33	Mill Creek Av. & Kimball Av.	TS	1	0	1	0	0	0	0	2	0	1	1	0	14.5	12.9	B	B	D
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	TS	1	1	0	1	1	0	1	2	1	1	1	1	27.1	12.2	C	B	D
35	Cucamonga Av. & Chino Corona Rd.	AWS	0	1	0	0	1	0	0	1	0	0	1	0	7.0	7.3	A	A	D
36	W. Preserve Loop & Pine Av.	TS	0	0	0	1	0	1	1	2	0	0	2	0	9.4	8.0	A	A	D
37	Main St. & Kimball Av.	TS	1	0	1	0	0	0	0	2	0	1	1	0	13.4	12.5	B	B	D
38	Flight Av. & Kimball Av.	CSS	0	1	0	0	1	0	1	2	0	1	1	0	21.0	20.5	C	C	D
39	E. Preserve Loop & Pine Av.	TS	2	0	1	0	0	0	0	2	1	1	2	0	8.5	7.2	A	A	D
40	Hellman Av. & Kimball Av.	TS	1	2	0	0	2	d	1	0	1>	0	0	0	**>200.0**	**77.9**	**F**	**F**	D

Table 3-1

Intersection Analysis for Existing (2019) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service		Acceptable LOS[4]
			Northbound			Southbound			Eastbound			Westbound							
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
41	Hellman Av. & Pine Av./Schleisman Rd.	TS	2	2	1	2	2	1	2	3	1>	2	3	1>	37.7	38.6	D	D	D
42	Archibald Av. & Limonite Av.	TS	0	1	1>	1	1	0	0	0	0	1	0	1>	48.0	29.6	D	C	D
43	Archibald Av. & Schleisman Rd.	TS	2	3	1	2	3	1	2	3	1	2	3	1	**80.1**	46.5	**F**	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

[4] Minimum acceptable LOS for each applicable jurisdiction.

3.9 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The following study area intersection currently warrants a traffic signal for Existing traffic conditions:

- El Prado Road & Mountain Avenue (#14)
- El Prado Road & Pine Avenue (#15)
- Flight Avenue & Kimball Avenue (#38)

However, all three intersections are currently operating at an acceptable LOS with current traffic controls and the installation of a traffic signal does not appear necessary with respect to peak hour operations. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

3.10 OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the SR-71 Freeway at Central Avenue, Pine Avenue, and Euclid Avenue (SR-83) and the SR-60 Freeway and Euclid Avenue (SR-83) interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially "spill back" onto the SR-71 and SR-60 Freeway mainlines. Queuing analysis findings are presented on 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 on Table 3-2, there are no movements that are currently experiencing queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Worksheets for Existing traffic conditions off-ramp queuing analysis are provided in Appendix 3.4.

3.11 FREEWAY FACILITY ANALYSIS

Existing (2019) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 3-20. As shown on Table 3-3, the SR-71 and SR-60 Freeway segments and merge/diverge ramp junctions analyzed for this study were found to operate at an acceptable LOS (i.e., LOS D or better) during the peak hours for Existing (2019) traffic conditions, with exception of the following diverge ramp junction:

- SR-60 Freeway Westbound, Euclid Avenue (SR-83) Off-Ramp (#26) – LOS E AM and PM peak hours

Existing (2019) freeway facility analysis worksheets are provided in Appendix 3.5.

Table 3-2

Peak Hour Freeway Off-Ramp Queuing Summary Existing (2019) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM Peak Hour	PM Peak Hour	AM	PM
SR-71 SB Ramps & Central Avenue	SBL	1,530	245	516 [2]	Yes	Yes
	SBL/R	740	0	698 [2]	Yes	Yes
SR-71 SB Ramps & Pine Avenue	SBL/T	1,370	8	16	Yes	Yes
	SBR	725	29	456 [2]	Yes	Yes
SR-71 SB Ramps & Euclid Avenue (SR-83)	SBL	1,100	215	230	Yes	Yes
	SBL/T	1,560	215	232	Yes	Yes
	SBR	255	0	1	Yes	Yes
SR-71 NB Ramps & Central Avenue	NBL	1,485	34	75	Yes	Yes
	NBL/R	1,070	0	0	Yes	Yes
SR-71 NB Ramps & Pine Avenue	NBL	1,375	5	10	Yes	Yes
	NBL/T	815	5	10	Yes	Yes
SR-71 NB Ramps & Euclid Avenue (SR-83)	NBL	1,745	27	44	Yes	Yes
	NBR	420	203 [2]	732 [2]	Yes	Yes[3]
Euclid Av. (SR-83) & SR-60 WB Ramps	WBL	400	306	276	Yes	Yes
	WBL/T/R	1,430	316 [2]	284	Yes	Yes
	WBR	400	202	207	Yes	Yes
Euclid Av. (SR-83) & SR-60 EB Ramps	EBL	900	363 [2]	352 [2]	Yes	Yes
	EBT/R	1,270	260 [2]	288 [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 the 95th percentile queue is anticipated to exceed the available storage for the turn lane, the adjacent through lane has sufficient storage to accommodate any spillover without spilling back and affecting the SR-71 Freeway mainline.

Table 3-3

Freeway Facility Analysis for Existing (2019) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	AM Peak Hour		PM Peak Hour	
				Density[2]	LOS[3]	Density[2]	LOS[3]
SR-71 Freeway	Southbound	North of Central Avenue	3	9.6	A	18.4	C
		Central Avenue Off-Ramp	3	16.4	B	28.0	C
		Central Avenue Loop On-Ramp	3	9.5	A	13.9	B
		Central Avenue On-Ramp	3	10.0	A	14.0	B
		Central Avenue to Pine Avenue	3	10.4	A	17.1	B
		Pine Avenue Off-Ramp	2	14.5	B	22.2	C
		Pine Avenue On-Ramp	2	12.5	B	12.3	B
		Pine Avenue to Euclid Avenue (SR-83)	2	9.2	A	9.0	A
		Euclid Avenue (SR-83) Off-Ramp	2	13.4	B	13.2	B
		Euclid Avenue (SR-83) Loop On-Ramp	2	9.7	A	10.4	B
		Euclid Avenue (SR-83) On-Ramp	2	15.8	B	16.5	B
		South of Euclid Avenue (SR-83)	2	15.0	B	16.3	B
	Northbound	North of Central Avenue	3	20.3	C	17.8	B
		Central Avenue On-Ramp	3	24.6	C	21.2	C
		Central Avenue Loop On-Ramp	3	18.7	B	16.5	B
		Central Avenue Off-Ramp	3	20.4	C	21.7	C
		Central Avenue to Pine Avenue	3	13.6	B	14.9	B
		Pine Avenue On-Ramp	2	15.8	B	18.5	C
		Pine Avenue Off-Ramp	2	22.7	C	26.4	C
		Pine Avenue to Euclid Avenue (SR-83)	2	17.2	B	20.4	C
		Euclid Avenue (SR-83) On-Ramp	2	18.6	B	22.2	C
		Euclid Avenue (SR-83) Off-Ramp	3	8.9	A	15.6	B
		South of Euclid Avenue (SR-83)	3	10.8	A	19.0	C
SR-60 Freeway	Westbound	West of Euclid Avenue (SR-83)	4	33.9	D	31.5	D
		Euclid Avenue (SR-83) On-Ramp	4	28.6	D	27.3	C
		Euclid Avenue (SR-83) Off-Ramp	4	**36.3**	**E**	**35.7**	**E**
		East of Euclid Avenue (SR-83)	4	34.6	D	33.3	D
	Eastbound	West of Euclid Avenue (SR-83)	4	31.2	D	25.7	C
		Euclid Avenue (SR-83) Off-Ramp	4	32.2	D	28.5	D
		Euclid Avenue (SR-83) On-Ramp	4	28.9	D	24.7	C
		East of Euclid Avenue (SR-83)	4	32.9	D	26.4	D

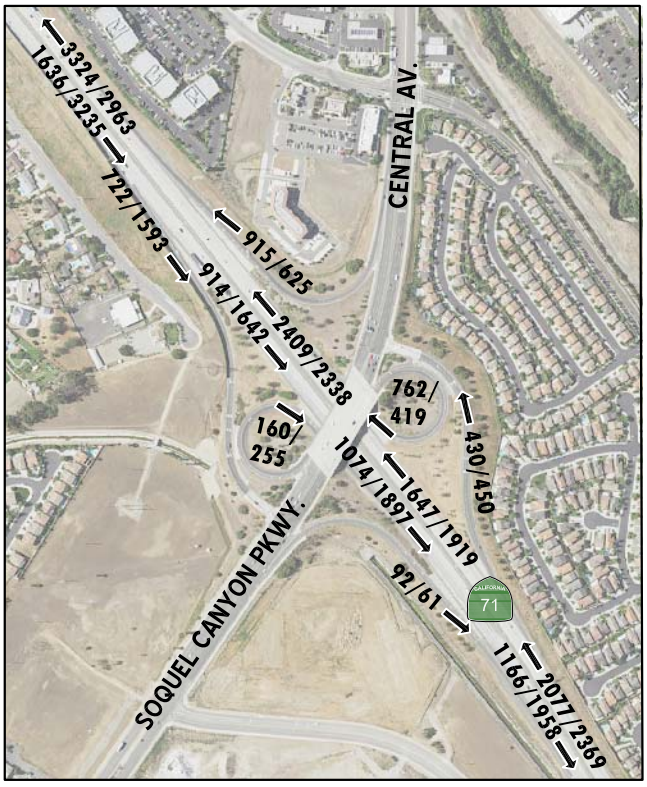
* **BOLD** = Unacceptable Level of Service

[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

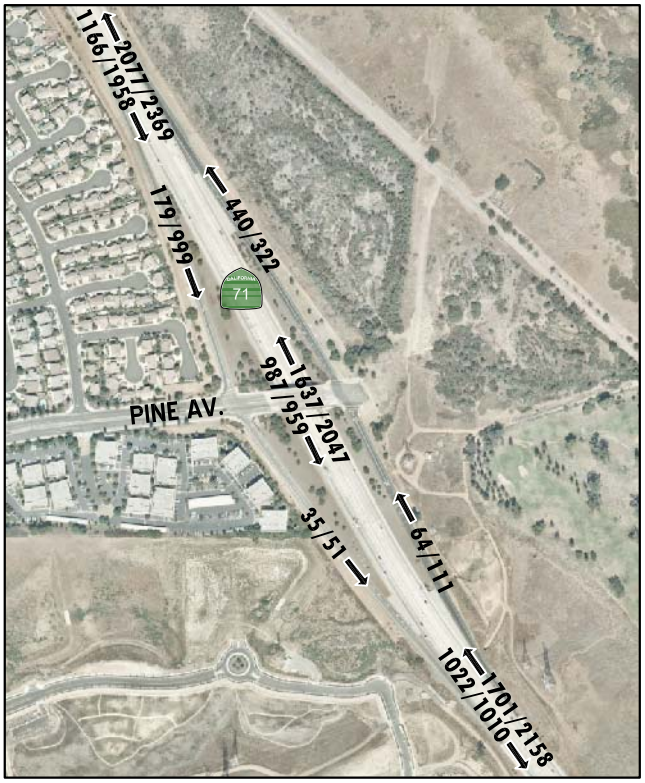
EXHIBIT 3-20: EXISTING (2019) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)



3.12 RECOMMENDED IMPROVEMENTS

Improvement strategies have been recommended at intersections and freeway segments that have been identified as impacted under Existing (2019) traffic conditions in an effort to achieve an acceptable LOS (i.e., LOS D or better).

3.12.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Table 3-4 indicates the physical improvements needed to address LOS deficiencies at each of the study area intersections under Existing (2019) traffic conditions. The following improvements are recommended to improve the Existing (2019) deficiencies back to acceptable levels.

Central Avenue & El Prado Road (#7) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Add a 2nd southbound left turn lane

El Prado Road & Kimball Avenue (#8) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Restripe the southbound approach to accommodate two southbound left turn lanes and a shared through-right turn lane.

Euclid Avenue (SR-83) & Riverside Drive (#22) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Add an eastbound right turn lane.

Euclid Avenue (SR-83) & Pine Avenue (#30) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Add a northbound free right turn lane.

Hellman Avenue & Kimball Avenue (#40) – The following improvements are necessary to improve the existing deficiency to acceptable levels:

- Operation of the traffic signal.
- Add a 2nd northbound left turn lane.

Archibald Avenue & Schleisman Road (#43) – The following improvement is necessary to improve the existing deficiency to acceptable levels:

- Modify the traffic signal to extend the cycle length to 130 seconds.

3.12.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 3-2, there are no peak hour queuing issues at the SR-71 Freeway at Central Avenue, Pine Avenue, or Euclid Avenue (SR-83) and SR-60 Freeway and Euclid Avenue (SR-83) interchanges. As such, no improvements have been recommended.

Table 3-4

Intersection Analysis for Existing (2019) 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
7	Central Av. & El Prado Rd.																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	29.0	**61.2**	C	**E**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	27.8	31.5	C	C
8	El Prado Rd. & Kimball Av.																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	28.1	**86.2**	C	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	24.4	25.7	C	C
22	Euclid Av. (SR-83) & Riverside Dr.																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	47.0	**55.5**	D	**E**
	-With Improvements	TS	1	2	1	1	2	1>	1	1	**1**	1	2	d	45.3	49.8	D	D
30	Euclid Av. (SR-83) & Pine Av.																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	31.9	**61.5**	C	**E**
	-With Improvements	TS	1	2	**1>>**	1	2	0	1	1	1	2	1	0	39.1	36.1	C	D
40	Hellman Av. & Kimball Av.																	
	-Without Improvements	TS[4]	1	2	0	0	2	d	1	0	1>	0	0	0	**>200.0**	**77.9**	**F**	**F**
	-With Improvements	**TS**	**2**	2	0	0	2	d	1	0	1>	0	0	0	53.3	39.7	D	D
43	Archibald Av. & Schleisman Rd.																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**80.1**	46.5	**F**	D
	-With Improvements[5]	TS	2	3	1	2	3	1	2	3	1	2	3	1	32.8	29.6	C	C

[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; d= Defacto 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] TS = Traffic Signal; **TS** = Improvement

[4] Traffic signal is currently flashing red. As such, an all-way stop controlled intersection was assumed for Existing traffic conditions only.

[5] Improvement consists of modifying the traffic signal to extend the cycle length to 130 seconds.

3.12.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

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 Chino (or other neighboring jurisdictions) on SHS roadway segments. As such, no improvements have been recommended to address the Existing (2019) deficiencies on the SHS, because there is no feasible mitigation available.

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4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is proposed to consist of up to 2,082,750 square feet of industrial uses. For purposes of the TIA, the following land uses are assumed:

- Building 1: 1,168,710 square feet of High-Cube Fulfillment Center Warehouse use
- Building 2: 814,040 square feet of High-Cube Fulfillment Center Warehouse use
- Remainder of Building 2: 100,000 square feet of High-Cube Warehouse with Cold Storage use
- **Total of 2,082,750 square feet**

The Project's anticipated Opening Year is 2022. Although the Project is anticipated to be developed in a single phase, Building 1 has been evaluated separately for E+P traffic conditions for the purpose of identifying potential traffic impacts for Building 1 only.

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 for the Project are shown on Table 4-1 for both actual vehicles and PCE. The trip generation summary illustrating daily, and peak hour trip generation estimates for the proposed Project in actual vehicles and PCE are shown on 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 DRAFT TUMF High-Cube Warehouse Trip Generation Study (WSP, November 6, 2018).

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									
High-Cube Fulfillment Center Warehouse	TSF	--[3]	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars (AM-84.3%; PM-87.2%; Daily-82.2%)			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (AM-6.3%; PM-6.4%; Daily-7.6%)			0.006	0.002	0.008	0.003	0.008	0.011	0.162
5+-Axle Trucks (AM-9.4%; PM-6.4%; Daily-10.2%)			0.008	0.003	0.011	0.003	0.007	0.010	0.217
High-Cube Cold Storage Warehouse (With Cold Storage)[4]	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (AM-69.2%; PM-78.3%; Daily-67.8%)			0.059	0.018	0.077	0.025	0.069	0.094	1.437
2-Axle Trucks (AM-10.7%; PM-7.5%; Daily-11.2%)			0.009	0.003	0.012	0.002	0.007	0.009	0.237
3-Axle Trucks (AM-3.4%; PM-2.4%; Daily-3.5%)			0.003	0.001	0.004	0.001	0.002	0.003	0.075
4-Axle+ Trucks (AM-16.7%; PM-11.8%; Daily-17.5%)			0.014	0.004	0.018	0.004	0.010	0.014	0.371
Passenger Car Equivalent (PCE) Trip Generation Rates[5]									
High-Cube Fulfillment Center Warehouse	TSF	--[3]	0.094	0.028	0.122	0.046	0.119	0.165	2.129
Passenger Cars (AM-84.3%; PM-87.2%; Daily-82.2%)			0.079	0.024	0.103	0.040	0.104	0.144	1.750
2-4 Axle Trucks (AM-6.3%; PM-6.4%; Daily-7.6%) (PCE = 2.0)			0.012	0.004	0.016	0.006	0.016	0.022	0.324
5+-Axle Trucks (AM-9.4%; PM-6.4%; Daily-10.2%) (PCE = 3.0)			0.025	0.008	0.033	0.008	0.022	0.030	0.651
High-Cube Cold Storage Warehouse (With Cold Storage)[4]	TSF	157	0.085	0.025	0.110	0.032	0.088	0.120	2.120
Passenger Cars (AM-69.2%; PM-78.3%; Daily-67.8%)			0.059	0.018	0.077	0.025	0.069	0.094	1.437
2-Axle Trucks (AM-10.7%; PM-7.5%; Daily-11.2%) (PCE = 1.5)			0.014	0.004	0.018	0.004	0.010	0.014	0.355
3-Axle Trucks (AM-3.4%; PM-2.4%; Daily-3.5%) (PCE = 2.0)			0.006	0.002	0.008	0.002	0.004	0.006	0.150
4-Axle+ Trucks (AM-16.7%; PM-11.8%; Daily-17.5%) (PCE = 3.0)			0.043	0.013	0.056	0.011	0.031	0.042	1.114

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

[2] TSF = thousand square feet; VFP = Vehicle Fueling Position

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

[4] Vehicle Mix Source: High Cube Warehouse Vehicle Trip Generation Analysis, October 2016, ITE.
Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type for high-cube warehouse. PCE rates are per SBCTA.

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 (Building 1)	1,168.710	TSF							
Passenger Cars:			93	28	121	47	121	168	2,046
Truck Trips:									
2-4 axle:			7	2	9	4	9	13	190
5+-axle:			10	3	13	3	8	11	254
- Net Truck Trips			17	5	22	7	17	24	444
High-Cube Fulfillment Center Warehouse (Building 2)	814.040	TSF							
Passenger Cars:			65	19	84	33	84	117	1,426
Truck Trips:									
2-4 axle:			5	1	6	3	6	9	132
5+-axle:			7	2	9	2	6	8	178
- Net Truck Trips			12	3	15	5	12	17	310
High-Cube Warehouse (With Cold Storage) (Building 2)	100.000	TSF							
Passenger Cars:			6	2	8	3	7	10	144
Truck Trips:									
2-axle:			1	0	1	0	1	1	24
3-axle:			0	0	0	0	0	0	8
4+-axle:			1	0	1	0	1	1	38
- Net Truck Trips			2	0	2	0	2	2	70
Total Passenger Cars			164	49	213	83	212	295	3,616
Total Trucks			31	8	39	12	31	43	824
Truck %			19%	16%	18%	14%	15%	15%	23%
TOTAL NET TRIPS (Actual Vehicles)[2]			**195**	**57**	**252**	**95**	**243**	**338**	**4,440**
Project Trip Generation Summary (PCE)									
High-Cube Fulfillment Center Warehouse (Building 1)	1,168.710	TSF							
Passenger Cars:			93	28	121	47	121	168	2,046
Truck Trips:									
2-4 axle:			14	4	18	7	19	26	380
5+-axle:			30	9	39	10	25	35	762
- Net Truck Trips			44	13	57	17	44	61	1,142
High-Cube Fulfillment Center Warehouse (Building 2)	814.040	TSF							
Passenger Cars:			65	19	84	33	84	117	1,426
Truck Trips:									
2-4 axle:			10	3	13	5	13	18	264
5+-axle:			21	6	27	7	18	25	530
- Net Truck Trips			31	9	40	12	31	43	794
High-Cube Warehouse (With Cold Storage) (Building 2)	100.000	TSF							
Passenger Cars:			6	2	8	3	7	10	144
Truck Trips:									
2-axle:			1	0	1	0	1	1	36
3-axle:			1	0	1	0	0	0	16
4+-axle:			4	1	5	1	3	4	112
- Net Truck Trips			6	1	7	1	4	5	164
Total Passenger Cars (PCE)			164	49	213	83	212	295	3,616
Total Trucks (PCE)			81	23	104	30	79	109	2,100
TOTAL NET TRIPS (PCE)[2]			**245**	**72**	**317**	**113**	**291**	**404**	**5,716**

[1] TSF = thousand square feet

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

The following land uses, and vehicle mixes have been utilized:

- High-Cube Fulfillment Center Warehouse has been used to derive site specific trip generation estimates for up to 1,982,700 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, November 6, 2018) 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. (4) The WSP trip generation rates were published in November 2018 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.
- ITE land use code 157 (High-Cube with Cold Storage Warehouse) has been used to derive site specific trip generation estimates for up to 100,000 square feet of the proposed Project. The truck percentage was obtained from the ITE's High Cube Warehouse Vehicle Trip Generation Analysis (October 2016). The vehicle mix varies by peak hour and overall daily: 69.2% passenger cars in the AM peak hour, 78.3% passenger cars in the PM peak hour, and 67.8% passenger cars weekday daily, with the remaining percentages associated with heavy trucks. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. For the purposes of this analysis, the percentage of trucks, by axle type, were obtained from the SCAQMD Warehouse Truck Trip Study Data Results and Usage (2014) recommended truck mix. The SCAQMD has recently performed surveys of existing facilities and compiled the data to provide interim guidance on the mix of heavy trucks for these types of high-cube warehousing/distribution facilities. Based on this interim guidance from the SCAQMD, the following truck fleet mix was utilized for the purposes of estimating the truck trip generation for the site (with cold storage): 34.7% of the total trucks as 2-axle trucks, 11.0% of the total trucks as 3-axle trucks, and 54.3% of the total trucks as 4+-axle trucks.

Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 2 different truck types: 2-4 axle, and 5+-axle trucks. PCE factors were applied to the trip generation rates for heavy trucks (large 2-4 axles, 5+-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. A PCE factor was applied to the trip generation for heavy trucks (large 2-axles, 3-axles, and 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 Appendix B of the San Bernardino County CMP, 2016 Update. (1)

As shown on Table 4-2, the proposed Project is anticipated to generate a net total of 5,716 PCE trip-ends per day, 317 PCE AM peak hour trips and 404 PCE PM peak hour trips. In comparison, the proposed Project is anticipated to generate a net total of 4,440 actual vehicle trip-ends per day with 252 AM peak hour trips and 338 PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. 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 Chino. Given these differences, separate trip distributions were generated for both passenger cars and truck trips, for each analysis scenario.

Both the near-term and Horizon Year trip distribution patterns are primarily based on the existing roadway system in relation to the Horizon Year trip distribution patterns. The Project trip distribution patterns are also affected by near-term development patterns in the vicinity of the Project site. It is our understanding that the Pine Avenue Extension west of El Prado Road is anticipated to occur after the Project's anticipated Opening Year. As such, the Pine Avenue Extension would only be assumed to be in place for Horizon Year traffic conditions. As funding has not yet been secured, other roadway network changes within the study area, such as the Limonite Avenue/Kimball Avenue extension between Hellman Avenue and Archibald Avenue, will be evaluated as part of Horizon Year traffic conditions only.

Exhibit 4-1 shows the near-term passenger car trip distribution patterns, which utilizes the existing roadway network. Similarly, Exhibit 4-2 shows the near-term truck trip distribution patterns. Both these distributions will be utilized for E+P (Building 1), E+P (Project Buildout), and Opening Year Cumulative (2022) traffic conditions. As shown on Exhibit 4-2, trucks are anticipated to utilize designated truck routes such as Euclid Avenue (SR-83), Mountain Avenue, Kimball Avenue, Bickmore Avenue, Pine Avenue, Central Avenue, Limonite Avenue, and Archibald Avenue to reach regional freeways such as the SR-71, SR-60, and I-15 Freeways.

Exhibit 4-3 shows the Horizon Year passenger car trip distribution patterns, which utilize future long-range connections such as the Pine Avenue extension between El Prado Road and the SR-71 Freeway and the extension of Kimball Avenue between Hellman Avenue and Limonite Avenue into the City of Eastvale. The passenger car trip distribution patterns are consistent with other proposed industrial/non-residential uses within the immediate area. Exhibit 4-4 shows the Horizon Year truck trip distribution patterns. The distributions shown on Exhibits 4-3 and 4-4 will be utilized for Horizon Year (2040) traffic conditions.

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).

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

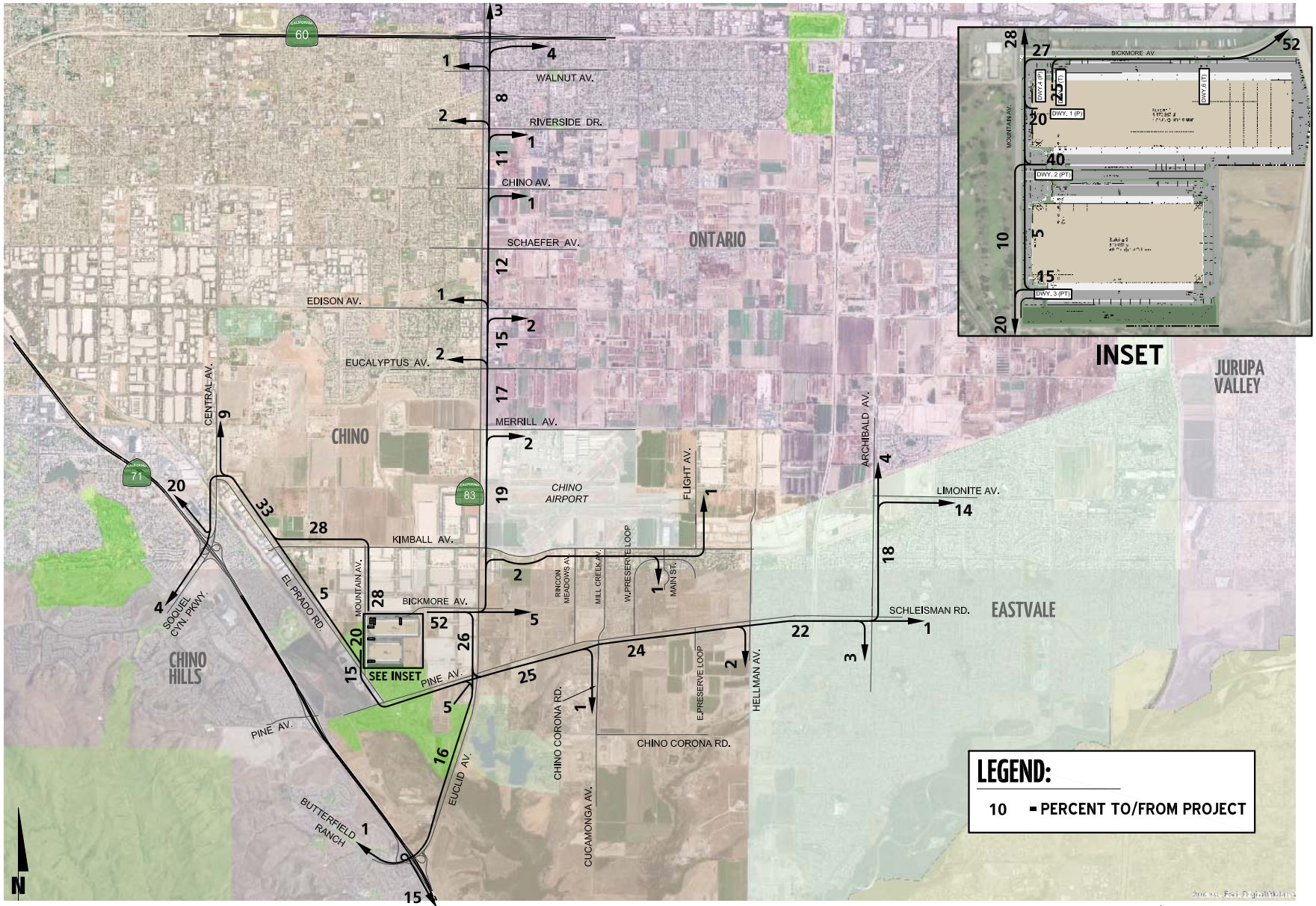

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EXHIBIT 4-2: PROJECT (NEAR-TERM TRUCKS) TRIP DISTRIBUTION

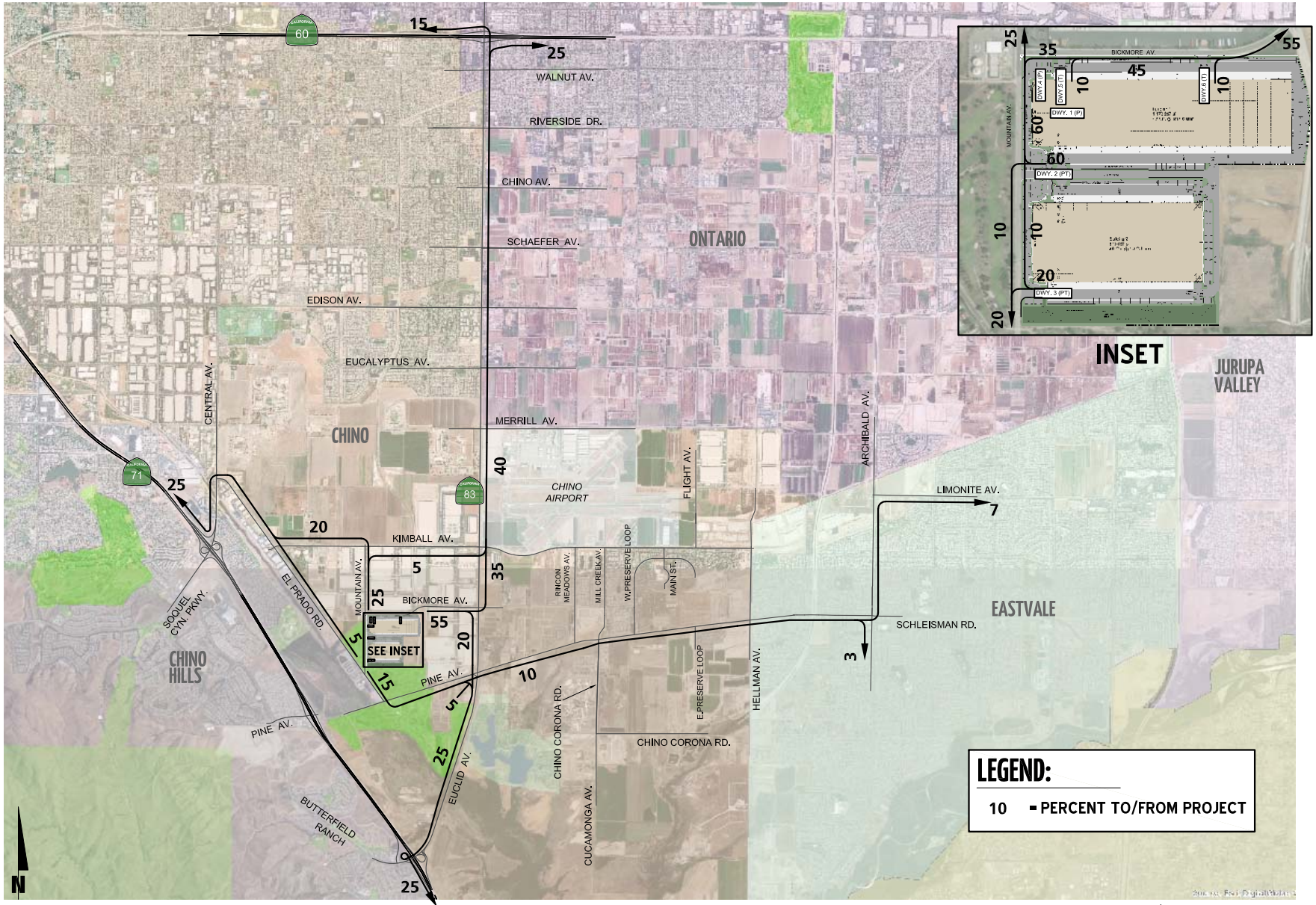

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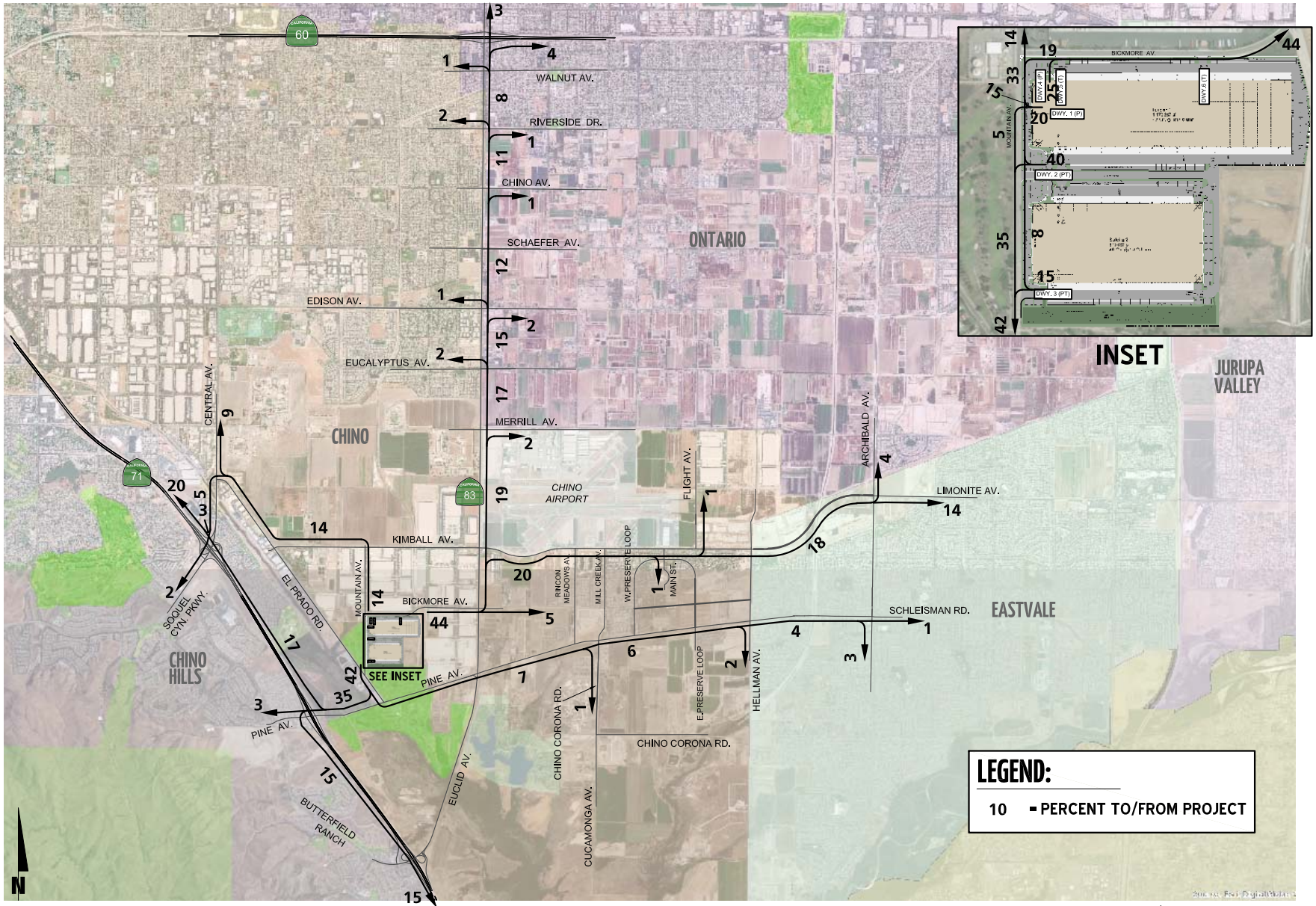
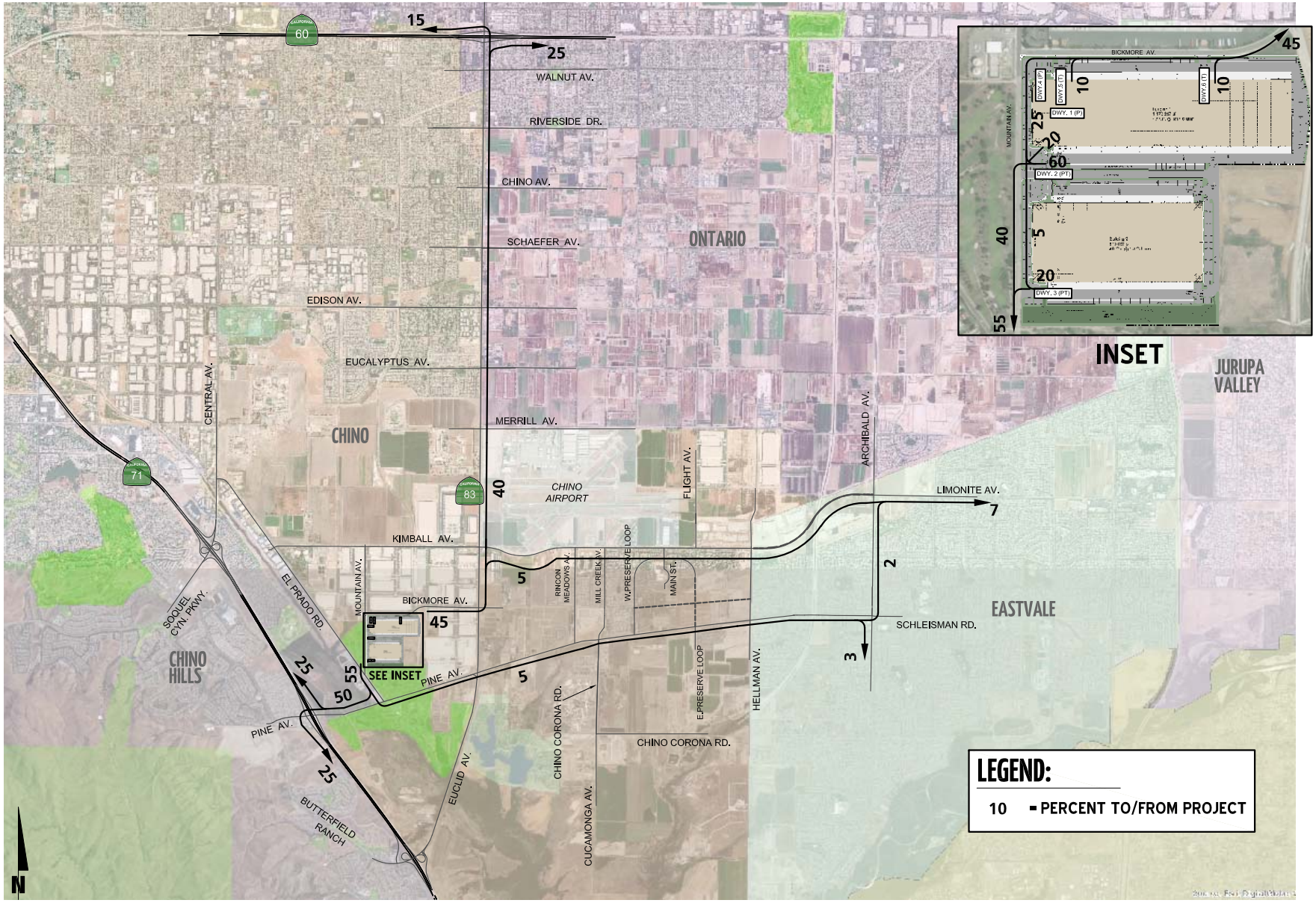
EXHIBIT 4-3: PROJECT (HORIZON YEAR PASSENGER CAR) TRIP DISTRIBUTION



URBAN CROSSROADS

EXHIBIT 4-4: PROJECT (HORIZON YEAR TRUCKS) TRIP DISTRIBUTION



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4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-5 and 4-6 for E+P (Building 1), Exhibits 4-7 and 4-8 for E+P (Project Buildout) and Opening Year Cumulative (2022), and Exhibits 4-9 and 4-10 for Horizon Year (2040) traffic conditions.

4.5 BACKGROUND TRAFFIC

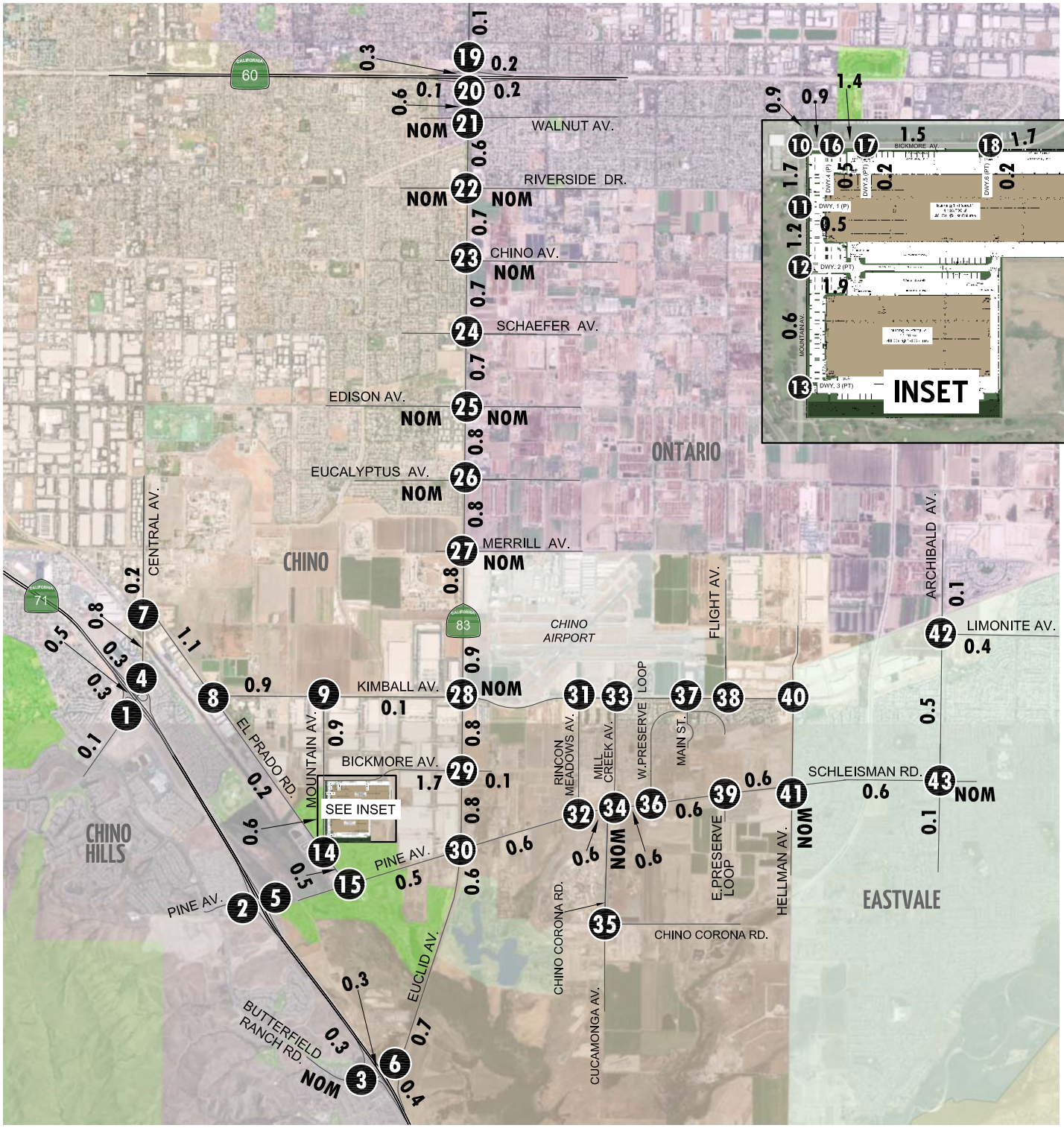
4.5.1 OPENING YEAR CUMULATIVE CONDITIONS

Future year traffic forecasts have been based upon background (ambient) growth at 2% per year for 2022 traffic conditions. The ambient growth factor is intended to approximate regional traffic growth. The total ambient growth is 6.12% for 2022 traffic conditions (compounded growth of 2 percent per year over 3 years or $1.02^{3 \text{ years}}$). 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. Opening Year Cumulative (2022) traffic volumes are provided in Section 7 *Opening Year Cumulative (2022) Traffic Conditions* of this report. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative With Project forecasts.

4.5.2 HORIZON YEAR (2040) CONDITIONS

The adopted Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (April 2016) growth forecasts for the City of Chino identifies projected growth in population of 79,400 in 2012 to 120,400 in 2040, or a 51.64% increase over the 28-year period. (8) The change in population equates to roughly a 1.50% growth rate, compounded annually. Similarly, growth over the same 28-year period in households is projected to increase by 61.90%, or a 1.74% annual growth rate. Finally, growth in employment over the same 28-year period is projected to increase by 18.78%, or a 0.62% annual growth rate.

EXHIBIT 4-5: PROJECT (BUILDING 1) ONLY AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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EXHIBIT 4-6 (1OF2): PROJECT (BUILDING 1) ONLY TRAFFIC VOLUMES (IN PCE)

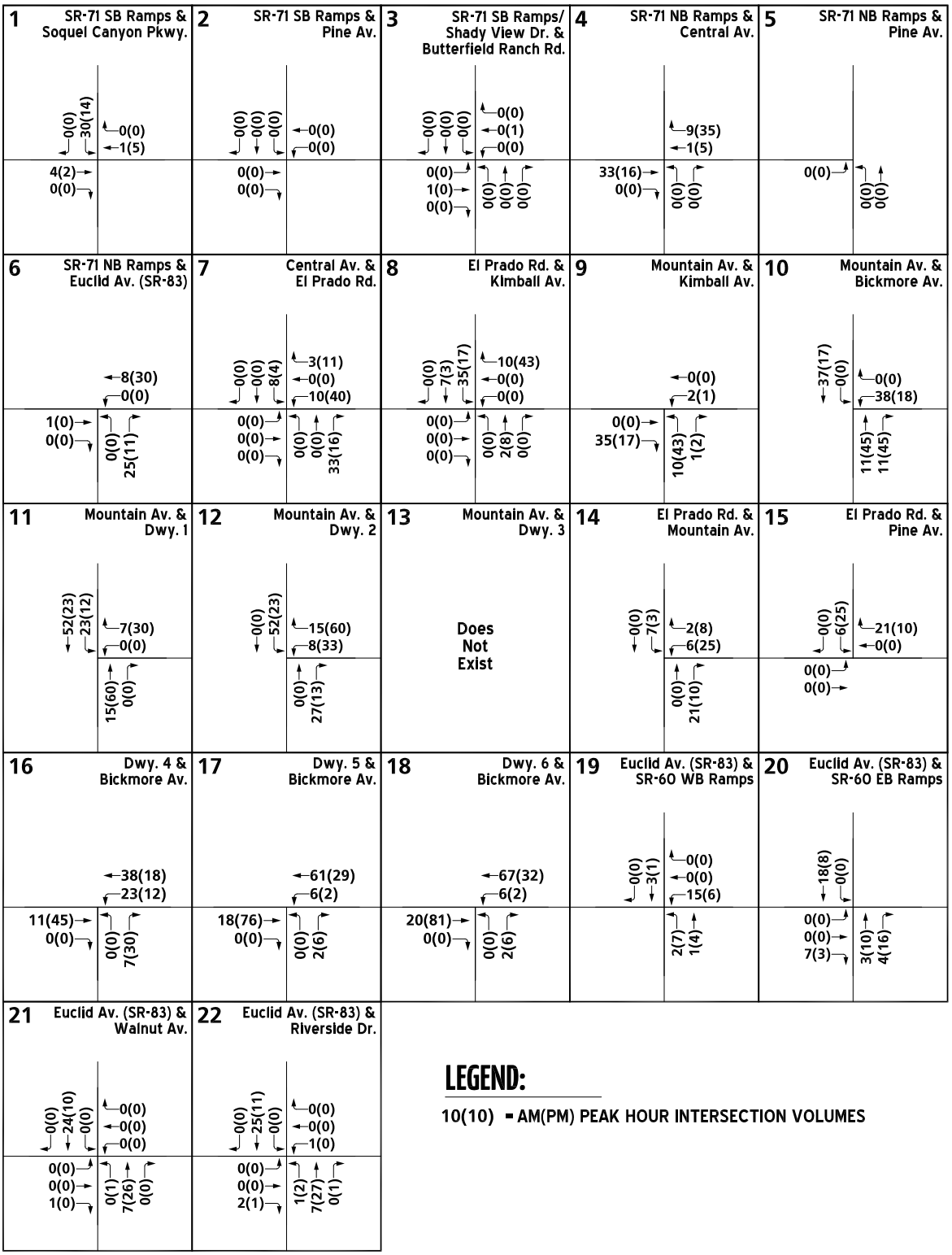


EXHIBIT 4-6 (2OF2): PROJECT (BUILDING 1) ONLY TRAFFIC VOLUMES (IN PCE)

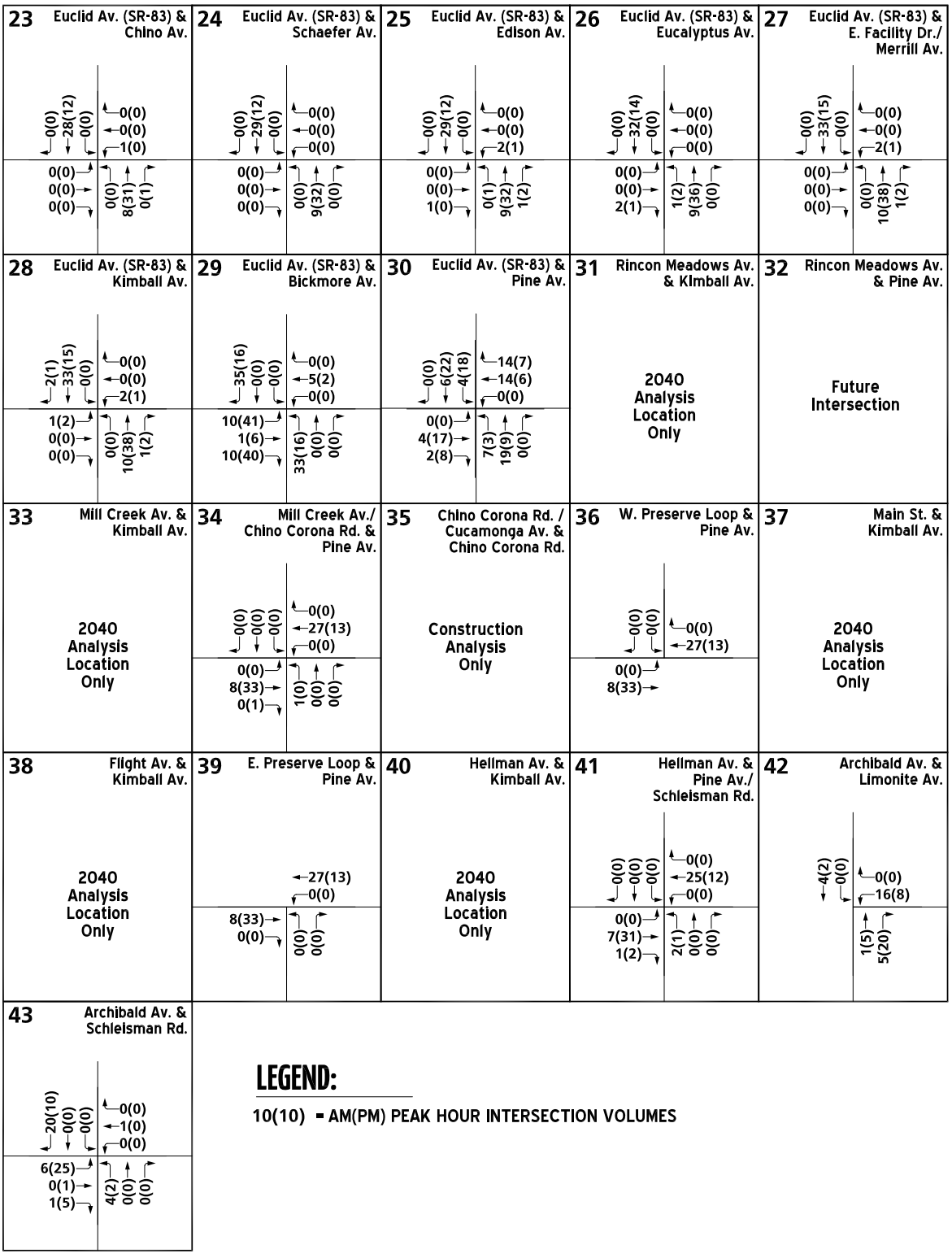
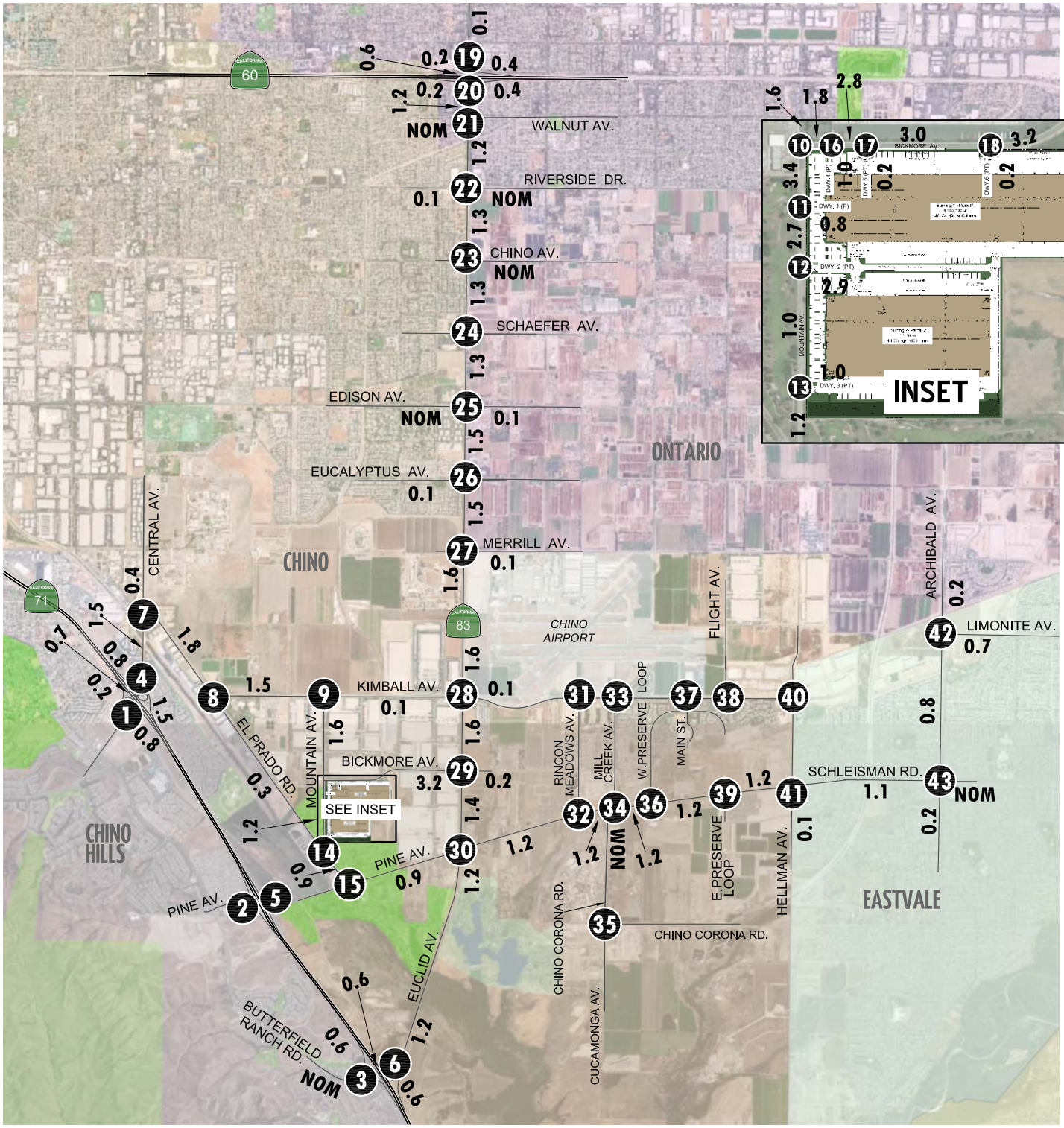


EXHIBIT 4-7: PROJECT (PROJECT BUILDOUT) ONLY AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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EXHIBIT 4-8 (1OF2): PROJECT (PROJECT BUILDOUT) ONLY TRAFFIC VOLUMES (IN PCE)

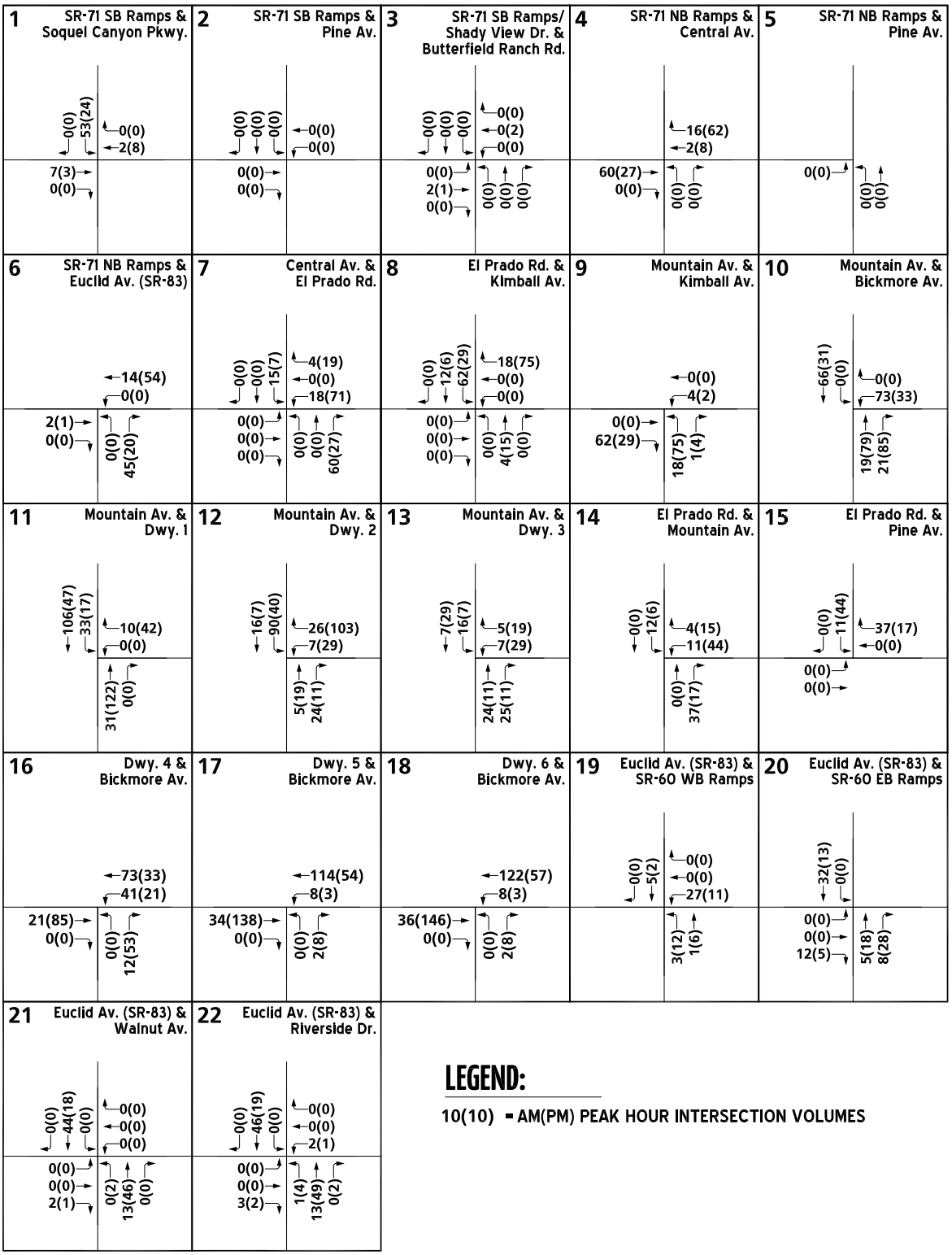


EXHIBIT 4-8 (2OF2): PROJECT (PROJECT BUILDOUT) ONLY TRAFFIC VOLUMES (IN PCE)

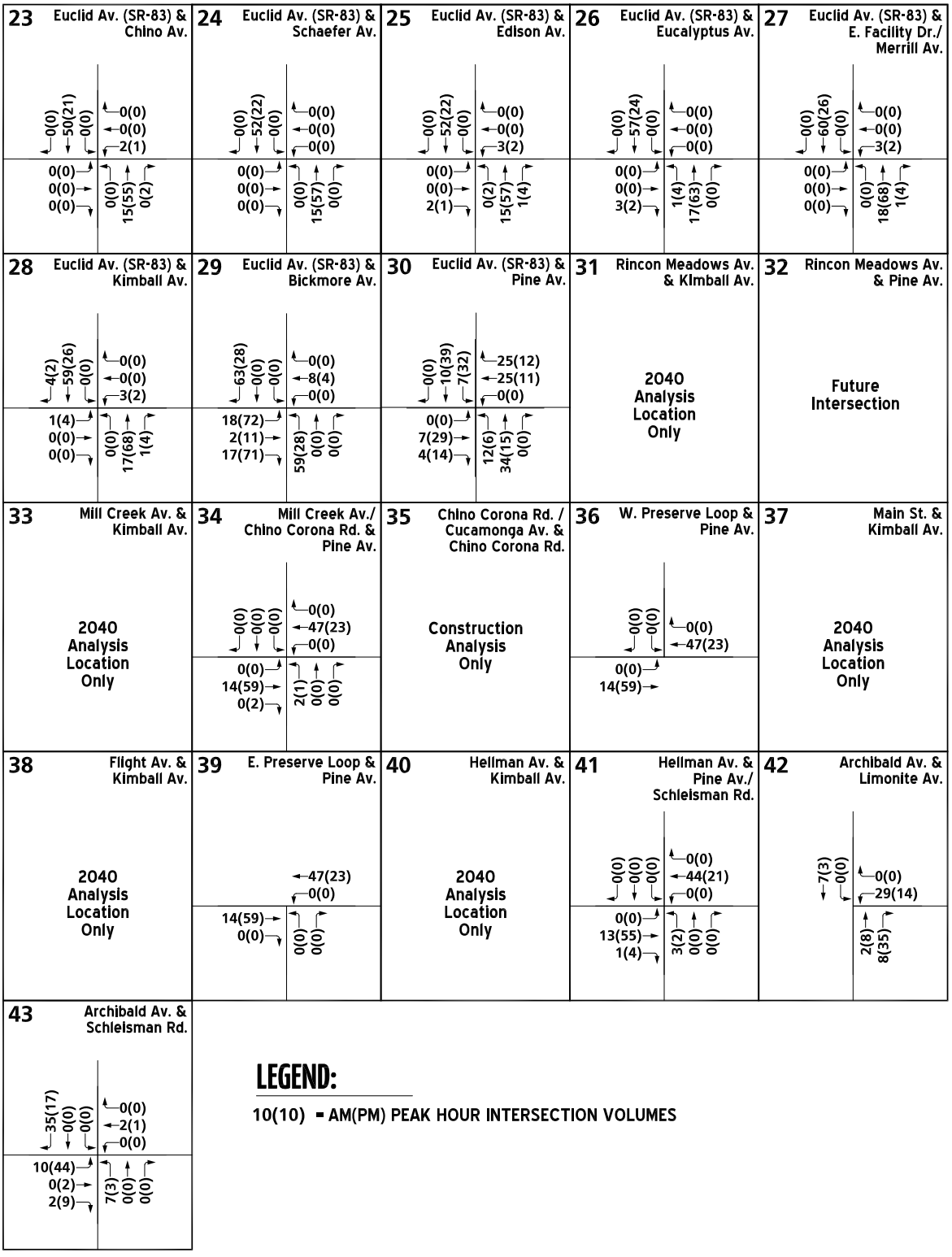
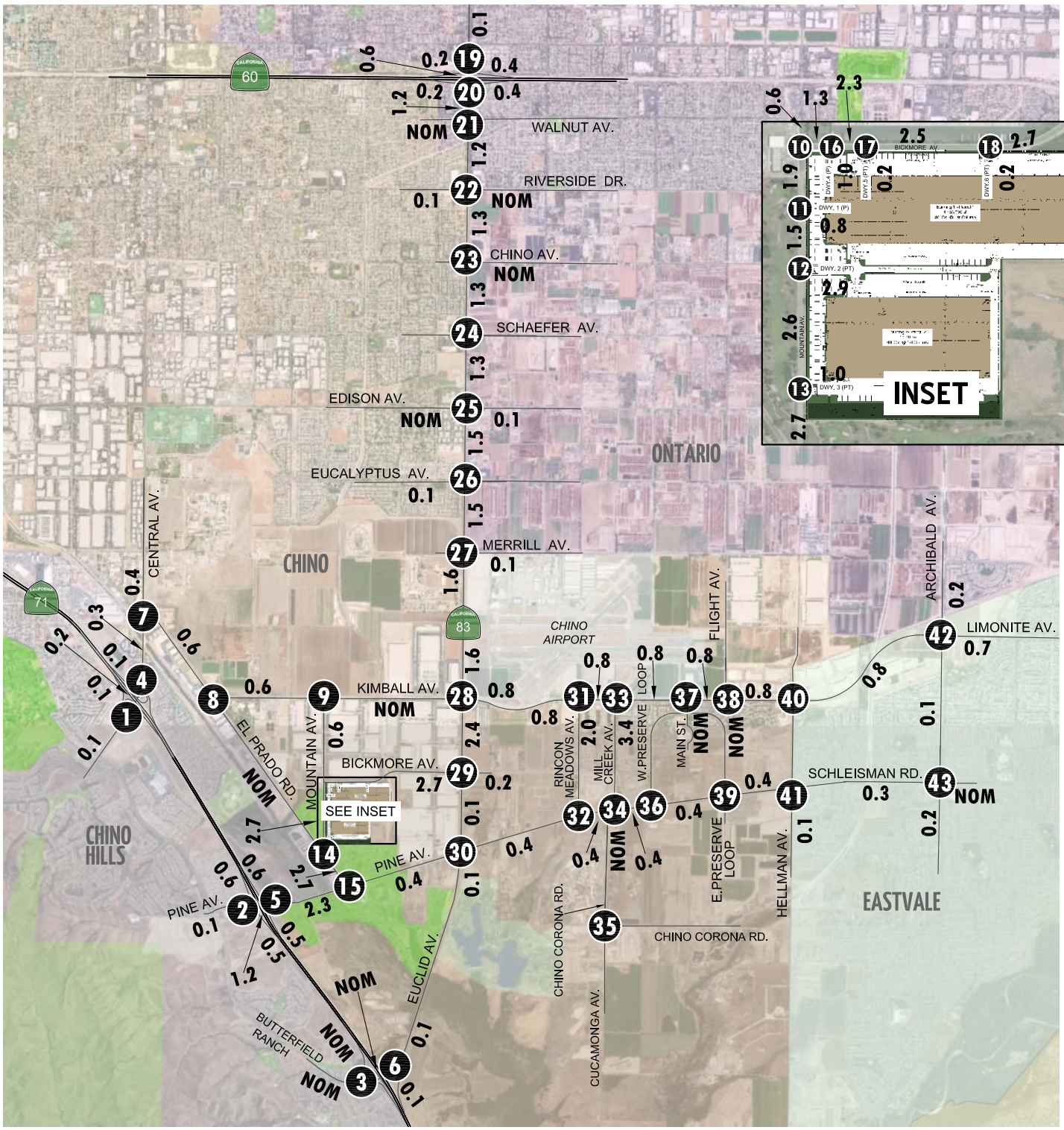


EXHIBIT 4-9: PROJECT ONLY (HORIZON YEAR) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)
NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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EXHIBIT 4-10 (1OF2): PROJECT ONLY (HORIZON YEAR) TRAFFIC VOLUMES (IN PCE)

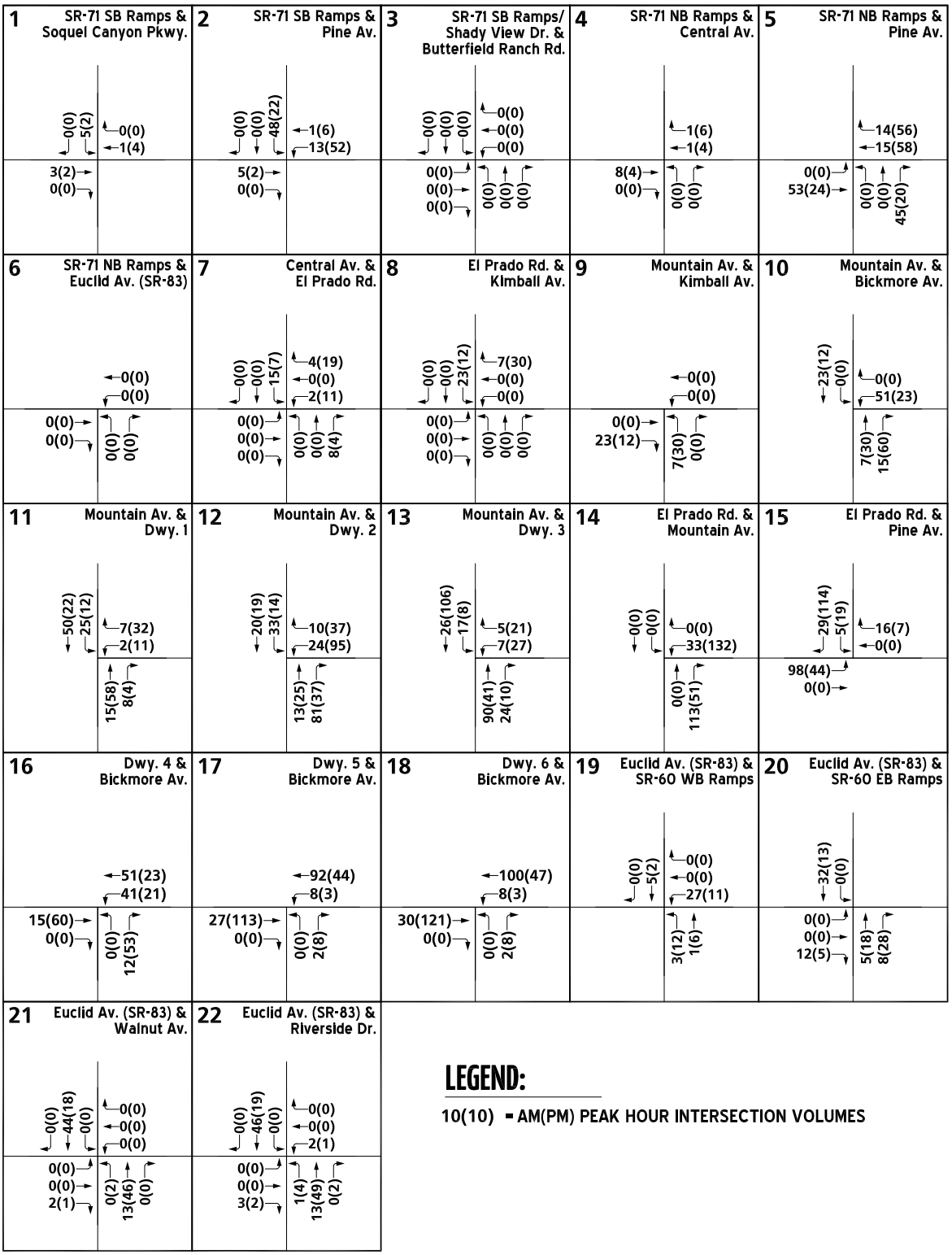
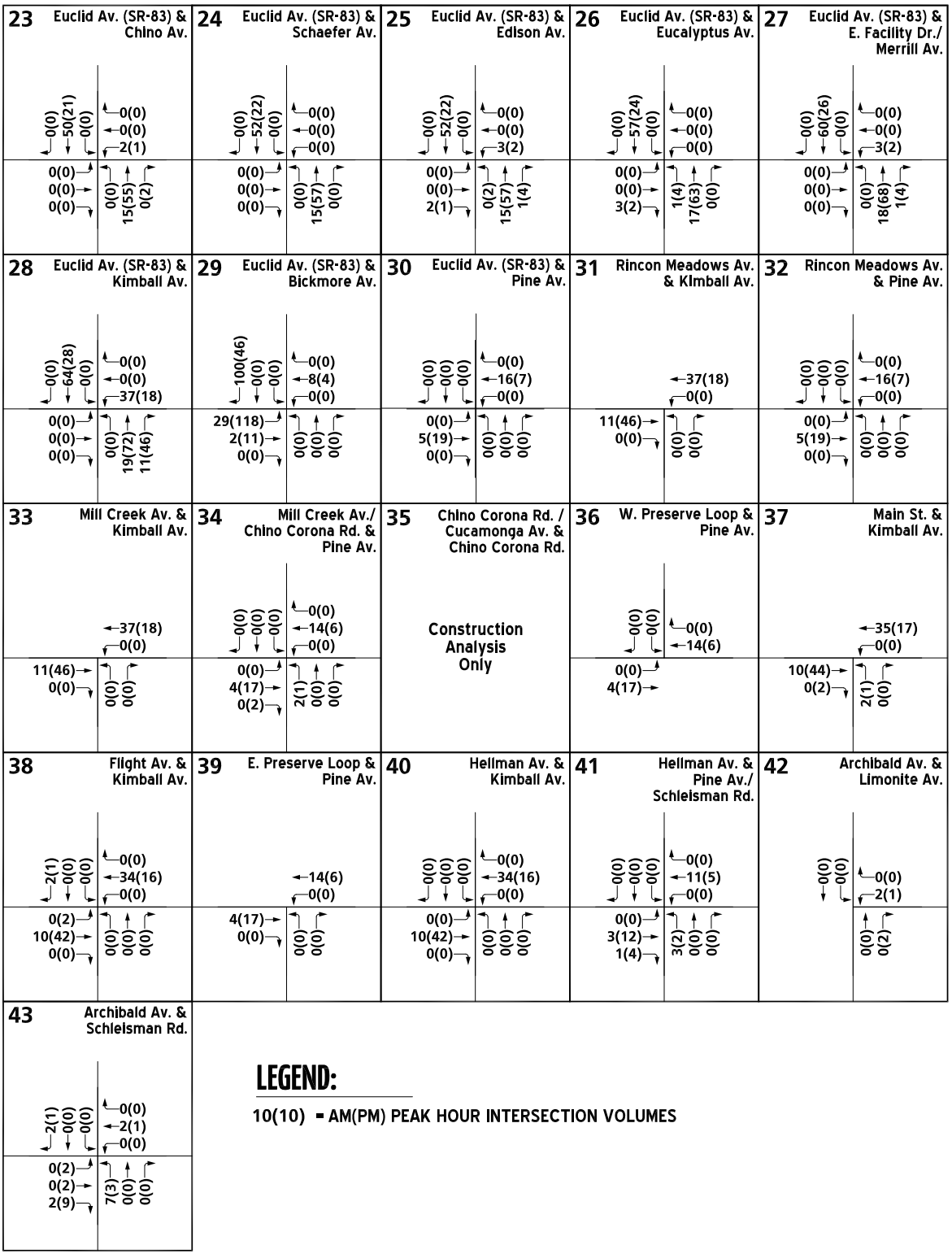


EXHIBIT 4-10 (2OF2): PROJECT ONLY (HORIZON YEAR) TRAFFIC VOLUMES (IN PCE)



Based on a comparison of Existing (2019) traffic volumes to the Horizon Year (2040) forecasts, the average growth rate is estimated at approximately 2.73%, compounded annually between Existing (2019) and 2040 traffic conditions. The annual growth rate at each individual intersection is not lower than 0.92% compounded annually to as high as 9.18% 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 Chino for Opening Year Cumulative and Horizon Year (2040) traffic conditions, especially when considered along with the addition of project-related traffic, which 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 Chino. The neighboring jurisdiction of Chino Hills has also been contacted to include key projects in their respective cities.

Exhibit 4-11 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to the Opening Year Cumulative forecasts to ensure that traffic generated by the listed cumulative development projects on Table 4-3 are reflected as part of the background traffic. Cumulative only ADT and peak hour intersection turning movement volumes are shown on Exhibits 4-12 and 4-13, respectively.

4.7 HORIZON YEAR (2040) VOLUME DEVELOPMENT

Traffic projections for Horizon Year (2040) without Project conditions were derived from the San Bernardino Transportation Analysis Model (SBTAM) using accepted procedures for model forecast refinement and smoothing for study area intersections located within the County of San Bernardino. 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 (2019) 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 (2040) 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 January 2019. 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. Similarly, the Riverside Transportation Analysis Model (RivTAM) has a base (validation) year of 2012 and a horizon (future forecast) year of 2040.

EXHIBIT 4-11: CUMULATIVE DEVELOPMENT LOCATION MAP

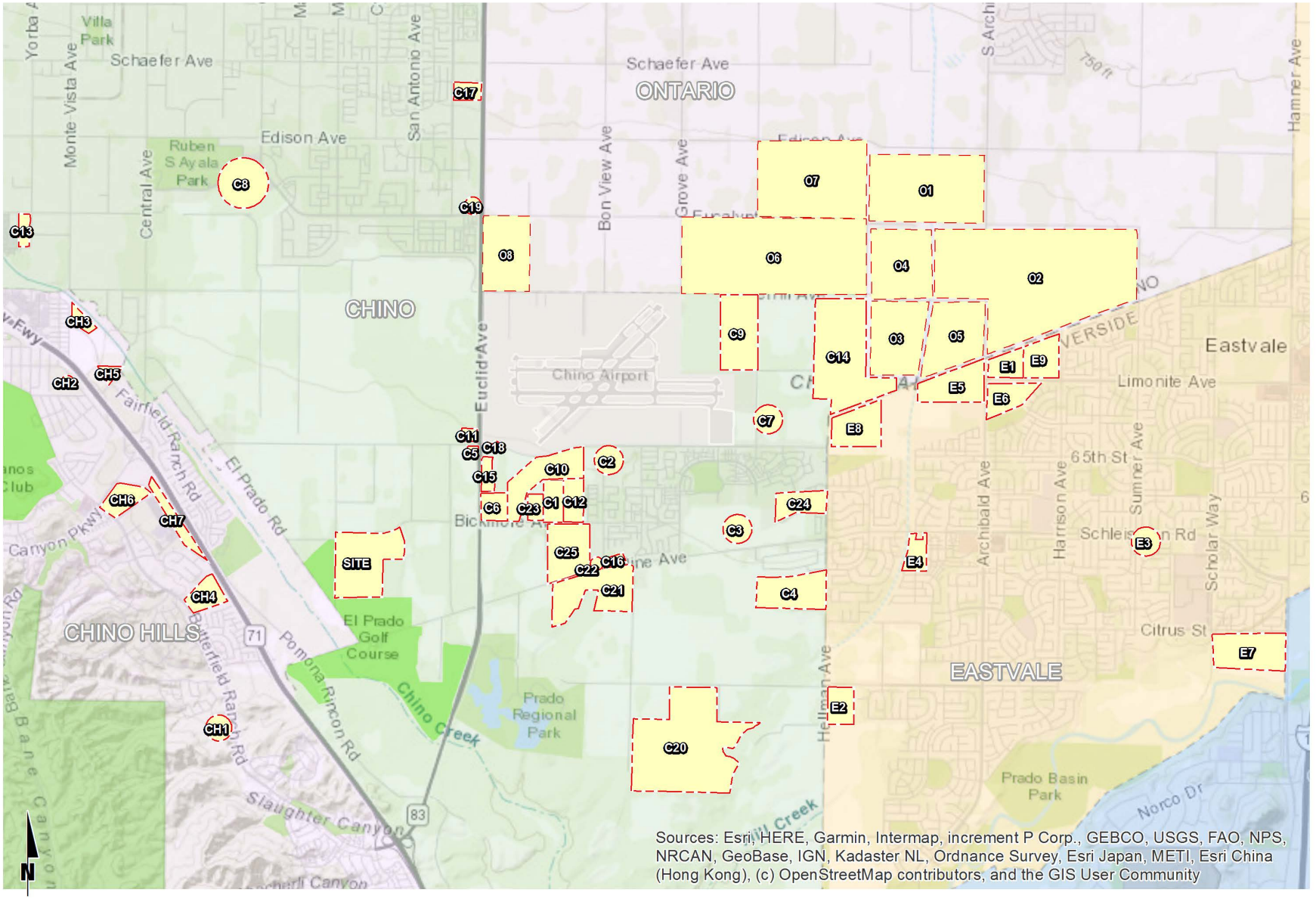


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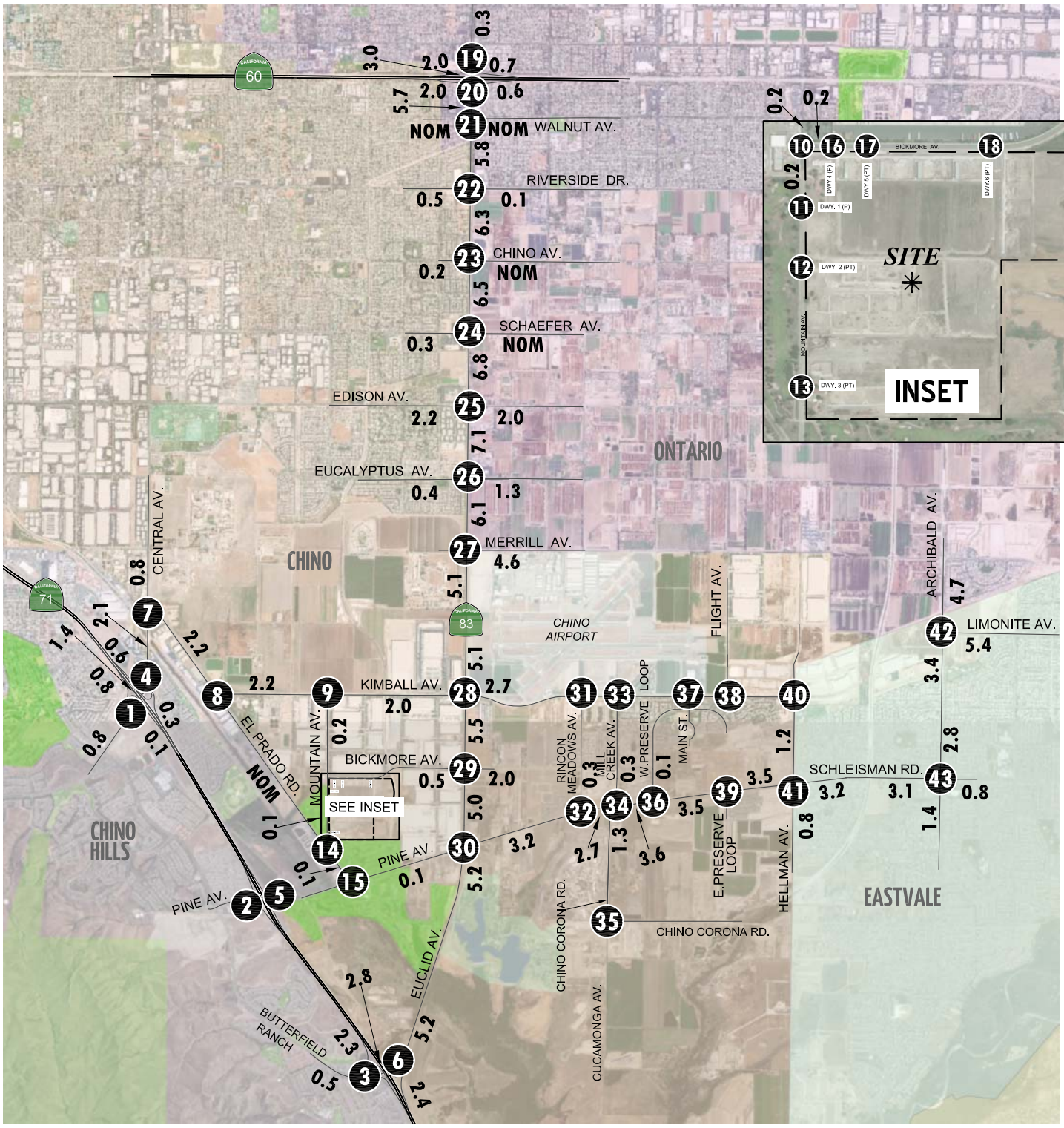
EXHIBIT 4-12: CUMULATIVE ONLY AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

NOM = NOMINAL, LESS THAN 50 VEHICLES PER DAY

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EXHIBIT 4-13 (1OF2): CUMULATIVE ONLY TRAFFIC VOLUMES (IN PCE)

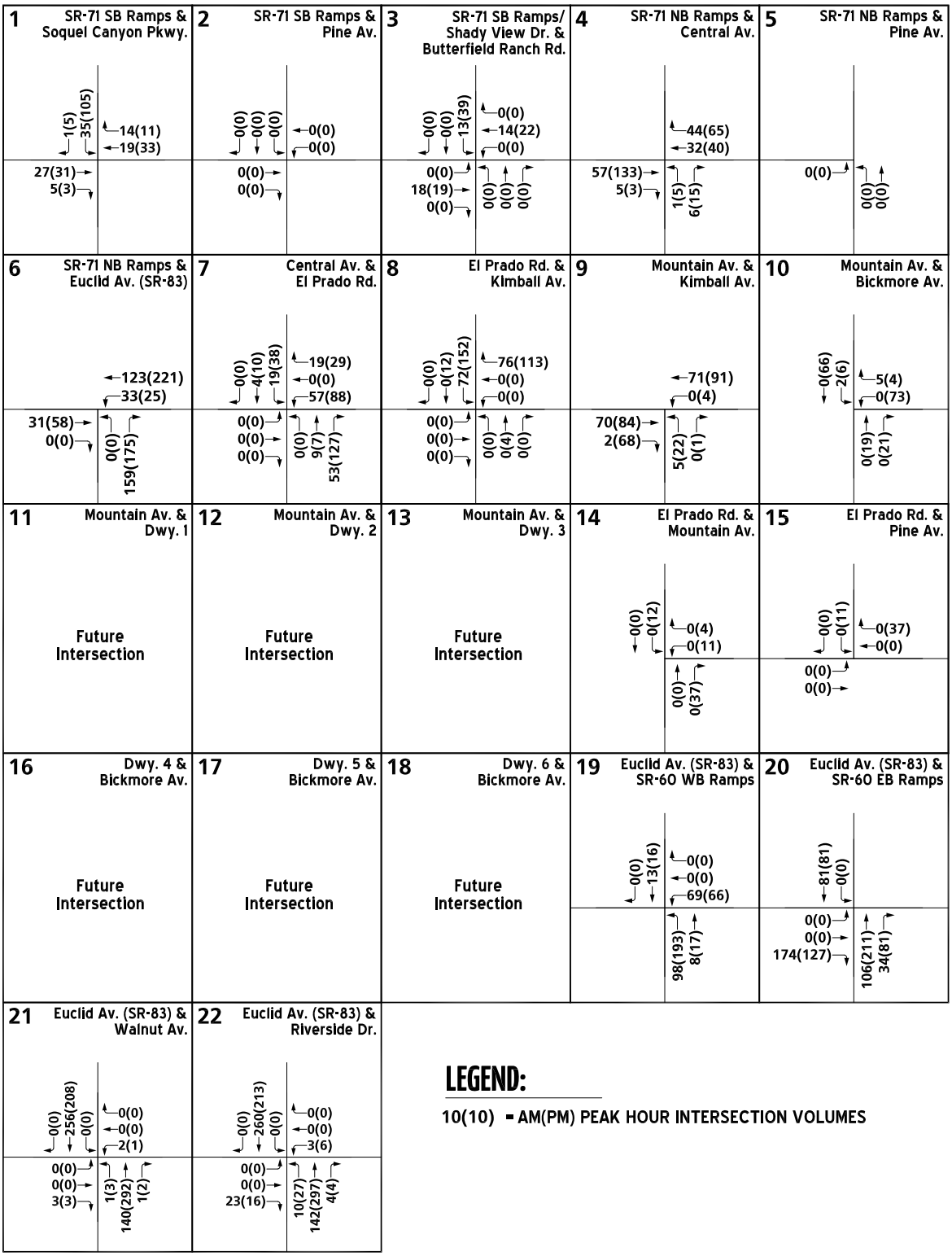

EXHIBIT 4-13 (2OF2): CUMULATIVE ONLY TRAFFIC VOLUMES (IN PCE)

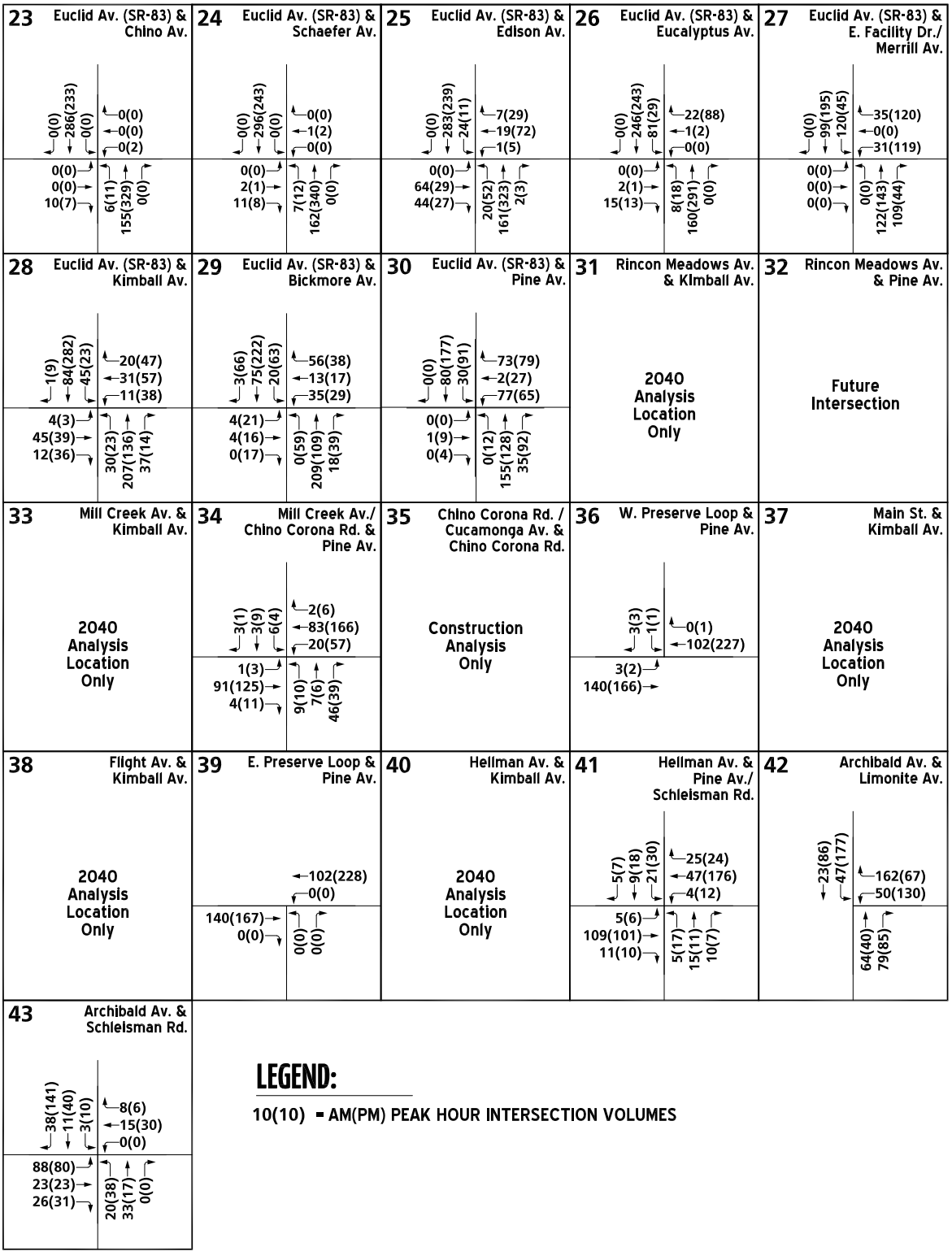

Table 4-3

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
City of Chino				
C1	Bickmore Street Residential (TM 18858) (30% complete)	SFDR	185	DU
C2	TM17574 (80% complete)	Condo/Townhouse	108	DU
C3	Falloncrest at the Preserve	SFDR	210	DU
		Condo/Townhouse	786	DU
		Apartments	412	DU
		Shopping Center	77.597	TSF
		General Office	77.597	TSF
C4	Tract 19980 (Homecoming Phase 4)	Apartments	454	DU
	TTM No. 20166 & 20167	SFDR	148	DU
	Brio & TTM No. 21065 & 20168 (Orchards)	SFDR	239	DU
C5	Farmer Boys	Fast-food w/ Drive-Thru	3.218	TSF
		Shopping Center	2.300	TSF
C6	Euclid & Bickmore Warehouse	Warehousing	205.820	TSF
		General Light Industrial	51.030	TSF
		Business Park	110.620	TSF
C7	Kimball Business Park	Business Park	146.550	TSF
C8	Chaffey College Expansion	Junior/Community College	93.50	AC
	College Park Commercial	Shopping Center	7.50	AC
C9	Chino Parcel Delivery	Parcel Delivery Facility	765.274	TSF
C10	Altitude Business Centre	Warehousing	715.000	TSF
		Light Industrial	255.000	TSF
		Business Park	233.000	TSF
		Self-Storage	110.000	TSF
C11	Majestic Gateway	Specialty Retail	25.000	TSF
		Pharmacy/Drugstore with Drive-Thru	13.000	TSF
		Fast-Food with Drive-Thru	8.600	TSF
C12	Bouma Residential	SFDR	106	DU
		Condo/Townhouse	94	DU
C13	Fairfield Inn & Suites (PL 17-0060 & PL 17-0061)	Hotel	111	RM
C14	Watson Industrial Park (40% complete)	High-Cube Warehouse	3,889.900	TSF
C15	Chino Business Park	General Light Industrial	165.500	TSF
		Business Park	21.500	TSF
C16	Flores Site	Shopping Center	4.000	TSF
		Gas Station w/ convenience store	16	VFP
		Express Car Wash	5.000	TSF
C17	Brewart Residential (Stonebrook - TM 18923)	SFDR	127	DU
C18	Archibald's (PL 17-0037)	Fast-Food with Drive-Thru	3.147	TSF
C19	TM 18972 (80% complete)	SFDR	147	DU
C20	Rancho Miramonte	SFDR	691	DU
		Condo/Townhouse	132	DU
		Neighborhood Retail	21.780	TSF
		Church	400	SEAT

Table 4-3

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
C21	Pines Community	SFDR	552	DU
		Public Park	3.0	AC
		Sports Park	41.8	AC
		Self-Storage & RV Storage	120.000	TSF
C22	Church	Church	47.979	TSF
		Daycare	190	STU
C23	Appesetche Residential	SFDR	60	DU
		Condo/Townhouse	160	DU
C24	Tract 19951, 19952, 19953, 19935 & 18479	SFDR	151	DU
		Condo/Townhouse	150	DU
C25	Ag. Buffer, Bungalow, Lic. Product, Liberty Deluxe, Lyon 2 & 3	SFDR	474	DU
City of Eastvale				
E1	The Merge	Warehousing	336.501	TSF
		Shopping Center	4.750	TSF
		Supermarket	30.000	TSF
		Gas Station w/ convenience store	16	VFP
		Pharmacy/Drugstore with Drive-Thru	14.600	TSF
		Fast-Food with Drive-Thru	6.000	TSF
		Automated Car Wash	4.000	TSF
		Fast-Food Without Drive-Thru	7.750	TSF
		Coffee/Donut Shop With Drive-Thru	2.500	TSF
E2	TR29997	SFDR	122	DU
E3	13-0632 - Sumner Residential (Stratham Homes)	SFDR	129	DU
E4	TR35751	Condo/Townhouse	243	DU
E5	PP23219 (PM35865) (50% complete)	General Light Industrial	738.430	TSF
E6	Eastvale Shopping Center	Free-Standing Discount Superstore	192.000	TSF
		Specialty Retail	9.200	TSF
		Fast-Food Without Drive-Thru	7.200	TSF
		Coffee/Donut Shop w/ Drive Thru	2.000	TSF
		Fast-Food with Drive-Thru	3.500	TSF
		Gas Station w/ convenience store and car wash	16	VFP
E7	Van Leeuwen	SFDR	224	DU
E8	SP00358 - The Ranch at Eastvale	Shopping Center	267.200	TSF
		General Light Industrial	801.500	TSF
		Business Park	1,121.100	TSF
E9	SC Limonite, LLC	SFDR	330	TSF
City of Ontario				
O1	Parkside	SFDR	437	DU
		Multi-Family Attached (Apartments)	1,510	DU
		Shopping Center	115.000	TSF
O2	Subarea 29 & Amendment (40% complete)	SFDR	2,149	DU
		Shopping Center	87.000	TSF
O3	Colony Commerce West	High-Cube Warehouse	2213.360	TSF
		Manufacturing	737.786	TSF
O4	West Ontario Commerce Center SP	High-Cube Warehouse	1976.535	TSF
		Manufacturing	658.845	TSF
		Business Park	548.856	TSF

Cumulative Development Land Use Summary

#	Project/Location	Land Use[1]	Quantity	Units[2]
O5	Colony Commerce East	High-Cube Warehouse	998.680	TSF
		Manufacturing	233.129	TSF
		Warehousing	699.387	TSF
O6	Merrill Commerce Center	High-Cube Fulfillment Warehouse	7014.000	TSF
		Business Park	1441.000	TSF
O7	Parente Home Ranch SP	SFDR	270	DU
		Condo/Townhouse	1,872	DU
		General Office	462.281	TSF
		Shopping Center	194.278	TSF
O8	Ontario Ranch Commerce Center	High-Cube Cold Storage Warehouse	1159.200	TSF
		Warehousing	337.600	TSF
		Business Park	290.200	TSF
City of Chino Hills				
CH1	Vila Borba Specific Plan (TR 16414)	SFDR	172	DU
CH2	Country Club Villas	Condo/Townhouse	46	DU
CH3	Crossings at Chino Hills	Apartments	346	DU
CH4	The Goddard School	Daycare	10.587	TSF
CH5	Indus Light Industrial	General Light Industrial	100.330	TSF
CH6	The Santa Barbara	Condo/Townhouse - Low Rise	138	DU
		Condo/Townhouse - Mid Rise	186	DU
		Shopping Center	15.700	TSF
CH7	Heritage Professional Center	Hospital	55.000	TSF
		Medical Office Building	86.952	TSF
		Hotel	120	RM
		Shopping Center	38.848	TSF
		Restaurant	7.200	TSF

[1] SFDR = Single Family Detached Residential

[2] TSF = Thousand Square Feet; DU = Dwelling Unit; VFP = Vehicle Fueling Position ; AC = Acres

[3] Source: Altfillisch Residential Project TIA Memorandum, LSA Associates, Inc., July 25, 2011.

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.

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 or Opening Year Cumulative 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 (2040) forecasts. Horizon Year (2040) turning volumes were compared to Opening Year Cumulative (2022) volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative (2022) 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 (2019) and Opening Year Cumulative (2022) conditions. Adjustments have not been made to study area intersections that may be affected by new future roadway connections (such as the extension of Pine Avenue or the extension of Kimball Avenue/Limonite Avenue), where travel patterns would likely get affected and forecasts may potentially decrease from the Opening Year Cumulative 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.

The SBTAM and RivTAM 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 Opening Year Cumulative (2022) traffic forecasts, which are presented and evaluated in PCE (see Section 3.7 *Existing (2019) 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 CONSTRUCTION TRAFFIC

Traffic operations during the proposed construction phase of the Project may result localized short-term traffic impacts caused by vehicle trips associated with construction employees, import of soil, import of construction materials, etc.

5.1 EMPLOYEE TRIPS

Employee trips are estimated based on the number of employees anticipated to be on-site throughout the various stages of construction. Each employee is assumed to drive to and from the construction site each day. It has been assumed that employees will arrive up to 30 minutes prior to the workday and will leave up to 30 minutes after the workday ends. Initially, parking for employees and non-employee vehicles can be accommodated on-site near the construction staging area. Once the on-site roadway network is constructed, employee parking can be accommodated on-site.

It is anticipated that the majority of employees would arrive and depart from the site between 5:00 and 6:00 PM for nighttime hauling or between 6:00 and 7:00 AM for daytime hauling. Employee trips are based on the number of employees estimated to be on site during different points throughout the project. The potential impacts resulting from construction-related parking and employee trips are considered less than significant during the peak hours.

5.2 EXCESS FILL DIRT SITES

The 96.9-acre Project site is located at the southeast corner of Mountain Avenue and Bickmore Avenue in the City of Chino and is generally below the 566 Elevation. In order for the Project to be able to be constructed and occupied, it requires that dirt be imported to raise the proposed building Finish Floor elevations so that they are 567-feet above mean sea level. To accomplish this, five nearby borrow sites (or "Excess Fill Dirt Sites") have been identified that can provide export to be used as import for the Project. The order in which soil will be imported from the Excess Fill Dirt Sites is as follows (see Exhibit 5-1):

- Excess Fill Dirt Site #1
- Excess Fill Dirt Site #3
- Excess Fill Dirt Site #4
- Excess Fill Dirt Site #5
- Excess Fill Dirt Site #2

It is our understanding, based on information from the Project Applicant, that import activities from the Excess Fill Dirt Sites will not overlap with another (i.e., hauling activity at one site is independent from other sites). Soil import activity could occur during typical construction daytime (7:00 AM – 3:00 PM) or off-peak/nighttime (6:00 PM – 2:00 AM) hours. Notwithstanding, the off-road construction equipment is not anticipated to operate for more than 8 hours per day.

EXHIBIT 5-1: EXCESS FILL DIRT SITE LOCATION MAP

Construction of the Project will require the import of approximately 608,896 cubic yards of soil. The sum total dirt available for export to the Project site from Excess Fill Dirt Sites 1, 3, and 4 is approximately 786,994 gross cubic yards. Since only approximately 608,896 cubic yards of soil is needed at the Project Site, Excess Fill Dirt Sites 1, 3, and 4 are predicted to provide sufficient dirt needed for the Project Site. If additional dirt is needed, dirt is available at Excess Fill Dirt Sites 5 and 2. As such, the analysis herein considers up to 940,351 cubic yards of soil import at up to 5 borrow sites (Excess Fill Dirt Sites 1, 3, 4, 5, and 2) as a conservative measure. It is estimated that 526-673 haul truck loads will be required per day for the duration of soil import activities. Each truck will generate one inbound and one outbound trip, accounting for a total of two truck trips per load of material imported. Thus, a total of 1,052 to 1,346 haul trucks (two-way) per day will be generated, which translates to approximately 132-168 haul trips (two-way) per hour (see Table 5-1). In the event that soil import activity is to occur during peak periods, hauling activity should be limited to no more than 16 trucks trips per hour (8 trucks in and 8 trucks out) during the hours of 6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM to ensure that haul activity would not significantly impact study area intersections along the haul route.

As shown on Table 5-1, the following cubic yards of soil will be imported to the site from each of the Excess Fill Dirt Sites:

- Excess Fill Dirt Site #1: 462,518 cubic yards of soil over 55 days
- Excess Fill Dirt Site #3: 156,222 cubic yards of soil over 22 days
- Excess Fill Dirt Site #4: 168,254 cubic yards of soil over 21 days
- Excess Fill Dirt Site #5: 98,867 cubic yards of soil over 11 days
- Excess Fill Dirt Site #2: 54,490 cubic yards of soil over 6 days

The soil import values shown above are the maximum that have been considered for the purposes of this TIA. Actual import of soil may be less than those shown above.

5.3 HEAVY EQUIPMENT

Heavy equipment to be utilized on-site during construction include, but is not limited to: flat beds, dozers, scrapers, graders, track hoes, dump trucks, forklifts, cranes, cement trucks, pavers, rollers, water trucks, rolling container trucks and bobcats. Heavy equipment will be delivered and removed from the site throughout the construction phase. As most heavy equipment is typically not an authorized vehicle to be driven on a public roadway, most of the equipment will be delivered and removed from the site via large flatbed trucks. It is anticipated that delivery of heavy equipment would not occur on a daily basis, but rather periodically throughout the construction phase based on need.

The delivery and removal of heavy equipment is recommended to occur outside of the morning and evening peak hours in order to have nominal impacts to traffic and circulation near the vicinity of the Project. In order to minimize the impact of construction truck traffic to the surrounding roadway network, it is recommended that trucks utilize the most direct route between the site and the SR-71 Freeway via Euclid Avenue (SR-83). With the application of these measures, it is anticipated that traffic impacts associated with the delivery and removal of heavy equipment are less than significant.

Table 5-1

Import Operation by Excess Fill Dirt Site

Site	Nighttime Hauling		Daytime Hauling		Excess Fill Dirt (CY of Import)	Trucks Per Day (one-way)[1]	Total Trucks per Hour[2]	Two-way Truck Trips per Hour[3]
	Hours	Duration	Hours[4]	Duration				
1	6:00 PM to 2:00 AM	55 Nights	7:00 AM to 3:00 PM	55 Days	462,518	623	78	156
3	6:00 PM to 2:00 AM	22 Nights	7:00 AM to 3:00 PM	22 Days	156,222	526	66	132
4	6:00 PM to 2:00 AM	21 Nights	7:00 AM to 3:00 PM	21 Days	168,254	593	74	148
5	6:00 PM to 2:00 AM	11 Nights	7:00 AM to 3:00 PM	11 Days	98,867	666	83	166
2	6:00 PM to 2:00 AM	6 Nights	7:00 AM to 3:00 PM	6 Days	54,490	673	84	168

[1] [Excess Fill Dirt / Duration] / 13.5 cubic yards per truck

[2] [Trucks Per Day / 8 hours]

[3] [Trucks Per Day / 8 hours] x 2 trips (one trip in and one trip out)

[4] In order to keep traffic impacts to less than significant during the AM peak hour, the Project shall limit trips to less than 50 two-way peak hour trips during the hours of 7:00 AM to 9:00 AM.

5.4 CONSTRUCTION MITIGATION MEASURES

Based on the haul routes between the Project site and each of the Excess Fill Dirt Sites (see Exhibit 5-2), if hauling activity is not limited during normal construction hours (outside of the morning and evening peak periods), the following intersections may potentially be impacted by haul trucks during the soil import phase:

- El Prado Road & Mountain Avenue (#14)
- El Prado Road & Pine Avenue (#15)
- Euclid Avenue (SR-83) & Pine Avenue (#30)
- Rincon Meadows Avenue & Pine Avenue (#32)
- Mill Creek Avenue/Chino Corona Road & Pine Avenue (#34)
- Cucamonga Avenue & Chino Corona Road (#35)
- W. Preserve Loop & Pine Avenue (#36)
- E. Preserve Loop & Pine Avenue (#39)
- Hellman Avenue & Pine Avenue (#41)

However, the following mitigation measures would ensure that traffic impacts at the aforementioned intersections would be less than significant for the morning and evening peak periods (6:00 AM – 9:00 AM and 3:00 PM – 6:00 PM) during hauling activity:

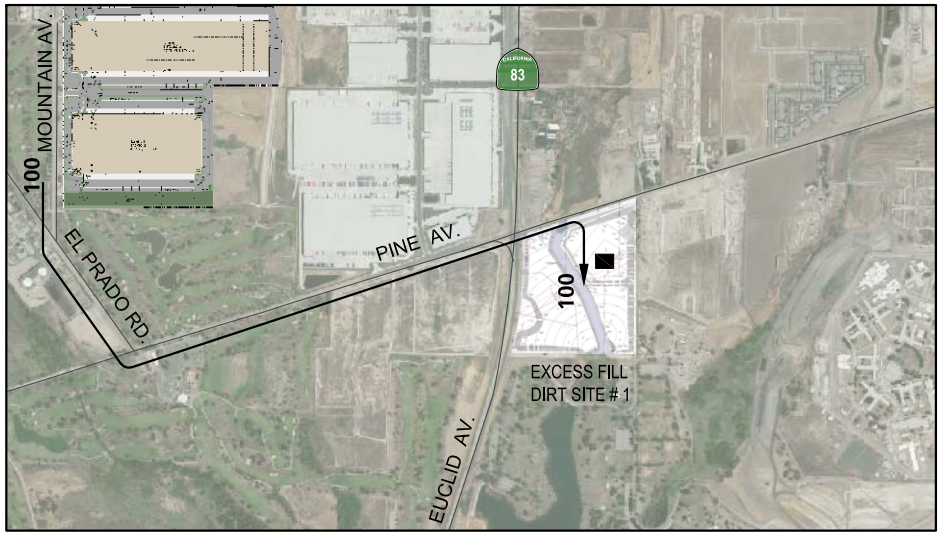
Mitigation Measure 4.1 – The Project Applicant will be required to develop and implement a City-approved Construction Traffic Management Plan addressing potential construction-related traffic detours and disruptions. In general, the Construction Traffic Management Plan would ensure that to the extent practical, construction traffic would access the Project site during off-peak hours or limited access during the peak hours; and that construction traffic would be routed to avoid travel through, or proximate to, sensitive land uses.

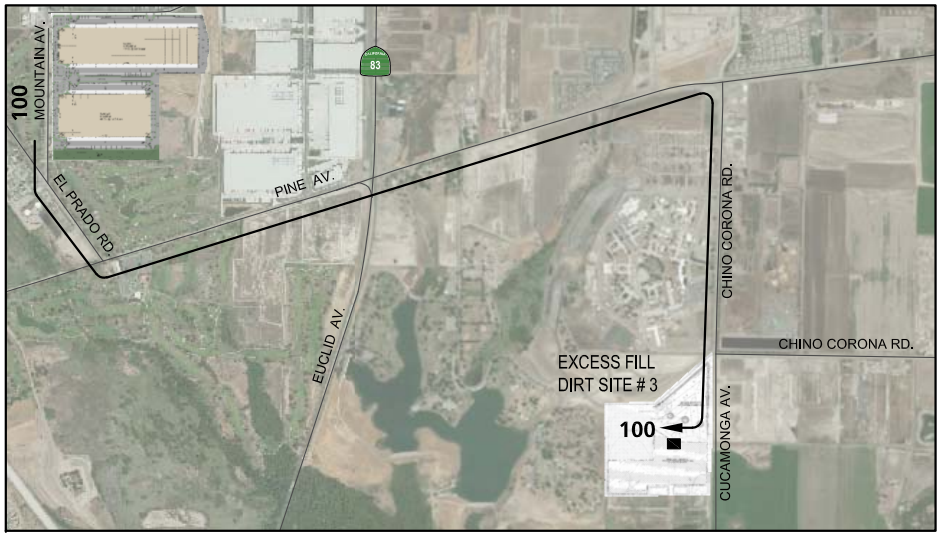
Mitigation Measure 5.1 – The delivery and removal of heavy equipment is recommended to minimize the heavy truck activity during the morning and evening peak periods (6:00 AM to 9:00 AM and 3:00 PM to 6:00 PM) in order to have nominal impacts to traffic and circulation near the vicinity of the Project.

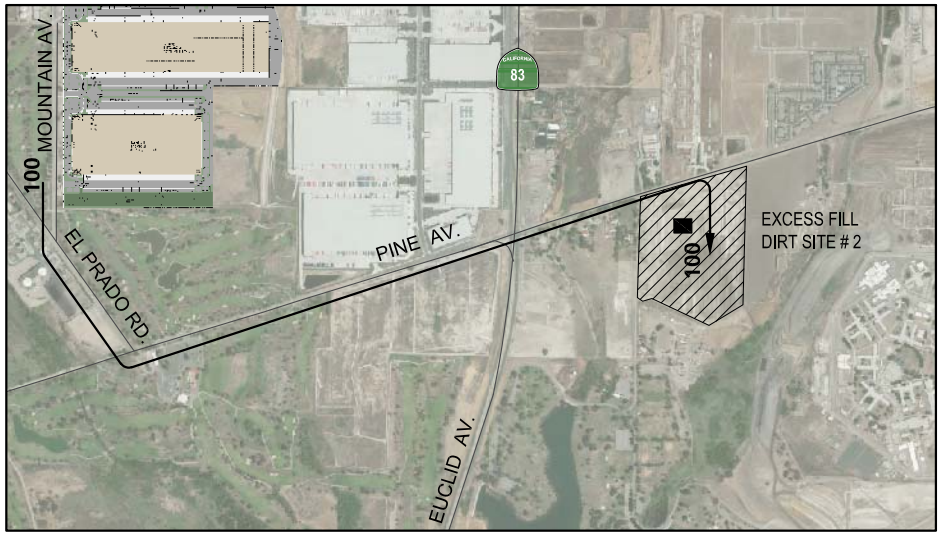
Mitigation Measure 6.1 – During the site grading, the Project shall limit soil import activity between the Project site and excess dirt fill sites during the hours of 6:00 AM – 9:00 AM (morning peak period) and 3:00 PM – 6:00 PM (evening peak period) to fewer than the equivalent of 50 passenger car equivalent (PCE) truck trips per hour. 50 PCE truck trips equates to approximately 16 total trucks (8 trucks in and 8 trucks out) during the peak periods specified above in order to limit the potential impacts of haul truck activity during these busy commute times:

50 PCE truck trips / 3.0 PCE factor = 16 total trucks during the peak hour

EXHIBIT 5-2 (1OF2): HAUL ROUTES BETWEEN THE PROJECT AND EXCESS FILL DIRT SITES







LEGEND:

10 = PERCENT TO/FROM PROJECT

■ = STAGING AREA

N

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EXHIBIT 5-2 (2OF2): HAUL ROUTES BETWEEN THE PROJECT AND EXCESS FILL DIRT SITES

LEGEND:

10 = PERCENT TO/FROM PROJECT

■ = STAGING AREA

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6 E+P TRAFFIC CONDITIONS

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

6.1 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).

6.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. Although the Project is anticipated to be developed in a single phase, Building 1 has been evaluated separately for E+P traffic conditions for the purpose of identifying potential traffic impacts for Building 1 only.

The ADT volumes which can be expected for E+P (Building 1) traffic conditions are shown on Exhibits 6-1. E+P (Building 1) weekday AM and PM peak hour intersection turning movement volumes are shown on Exhibits 6-2.

The ADT volumes which can be expected for E+P (Project Buildout) traffic conditions are shown on Exhibits 6-3. E+P (Project Buildout) weekday AM and PM peak hour intersection turning movement volumes are shown on Exhibits 6-4.

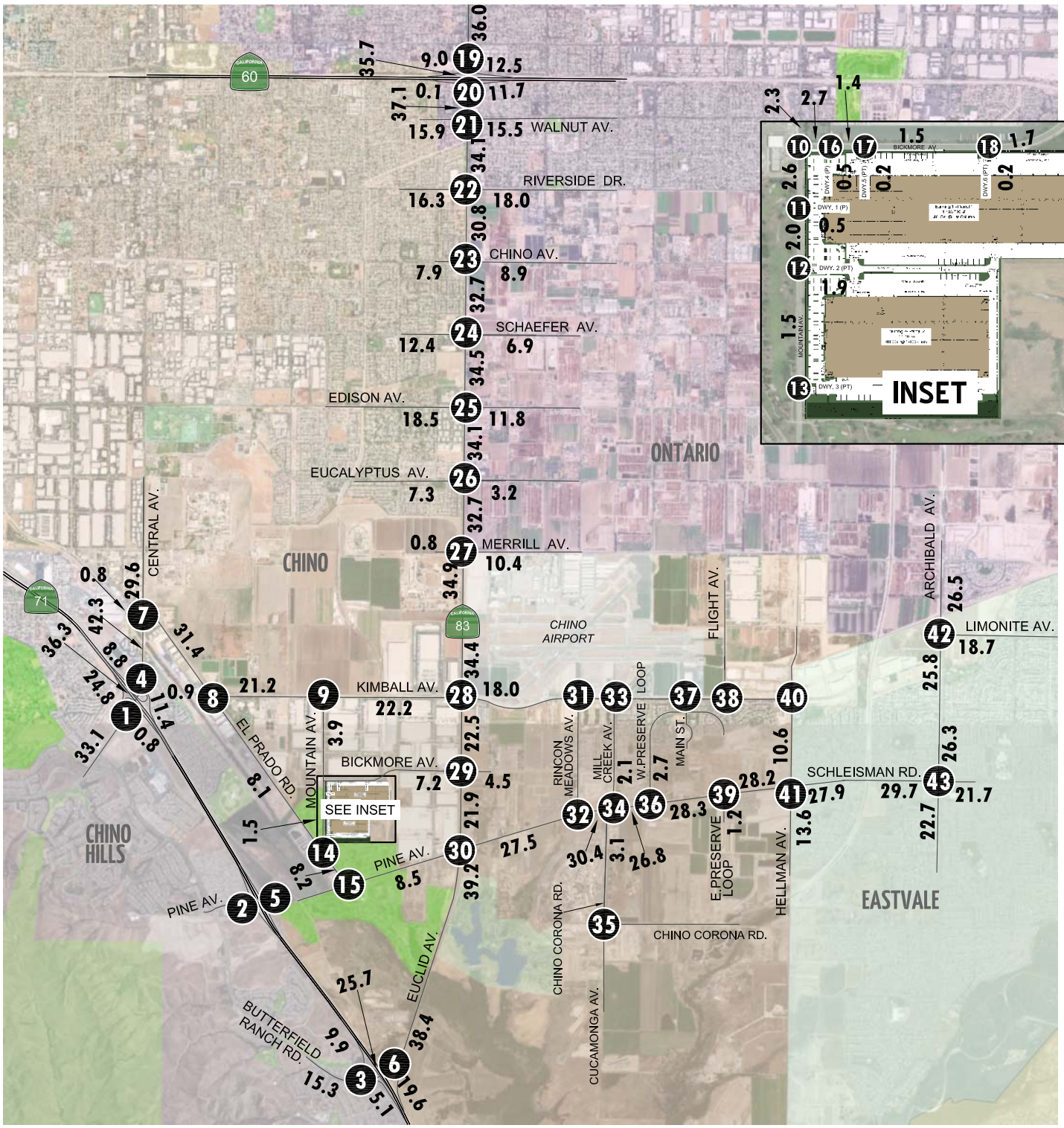
6.3 INTERSECTION OPERATIONS ANALYSIS

E+P (Building 1) 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 on Table 6-1, which indicate that there are no additional study area intersections that are anticipated to operate at an unacceptable LOS, in addition to those identified for Existing traffic conditions. However, the Project (Building 1) is anticipated to contribute less than 50 peak hour trips to the following locations, resulting in a less than significant impact:

- Euclid Avenue (SR-83) & Riverside Drive (#22)
- Archibald Avenue & Schleisman Road (#43)

The intersection of Hellman Avenue and Kimball Avenue was not evaluated for E+P (Building 1) traffic conditions. Consistent with Table 6-1, a summary of the peak hour intersection LOS for E+P conditions is shown on Exhibit 6-5 for E+P (Building 1) traffic conditions. The intersection operations analysis worksheets for E+P (Building 1) traffic conditions are included in Appendix 6.1 of this TIA.

EXHIBIT 6-1: E+P (BUILDING 1) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 6-2 (1OF2): E+P (BUILDING 1) TRAFFIC VOLUMES (IN PCE)

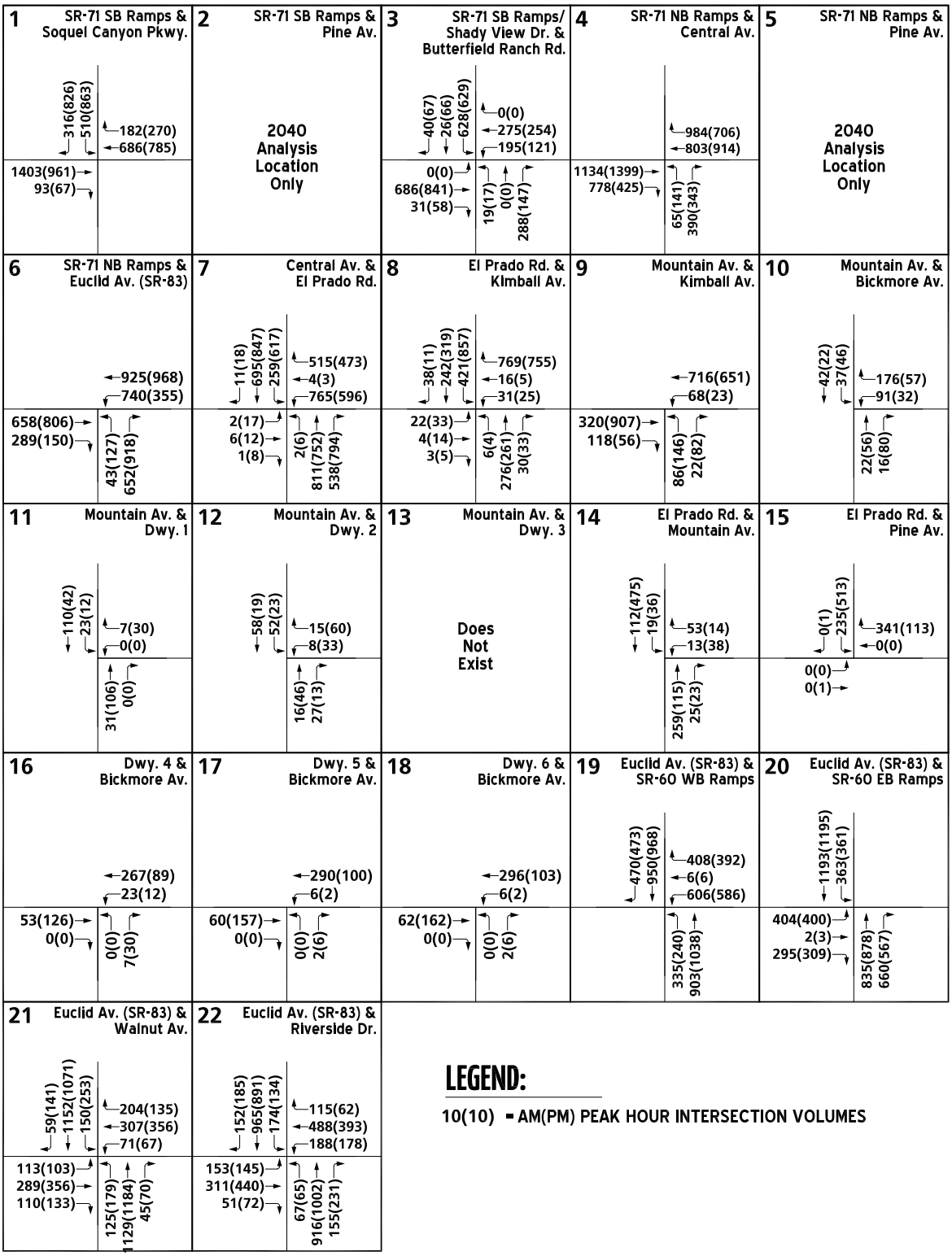


EXHIBIT 6-2 (2OF2): E+P (BUILDING 1) TRAFFIC VOLUMES (IN PCE)

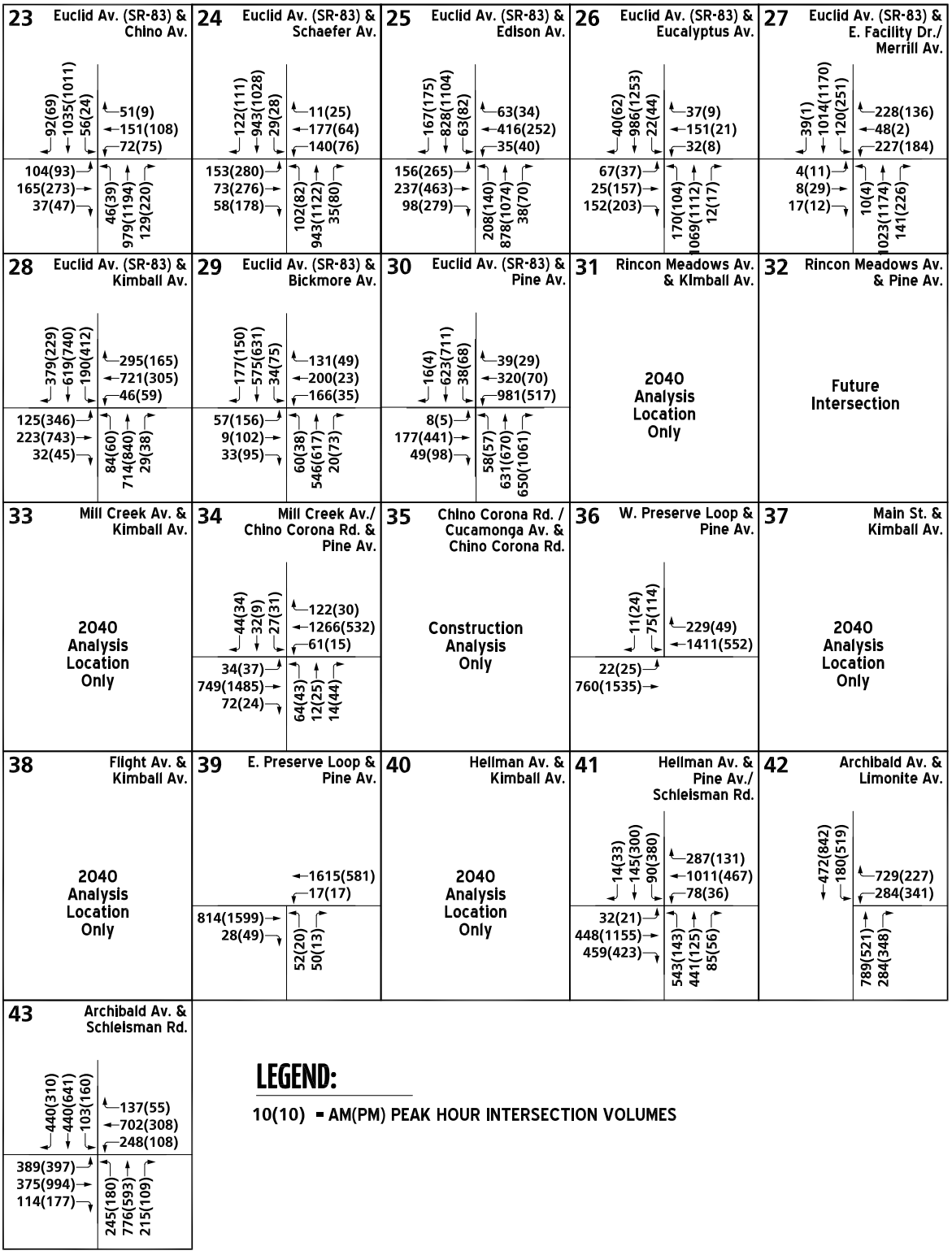
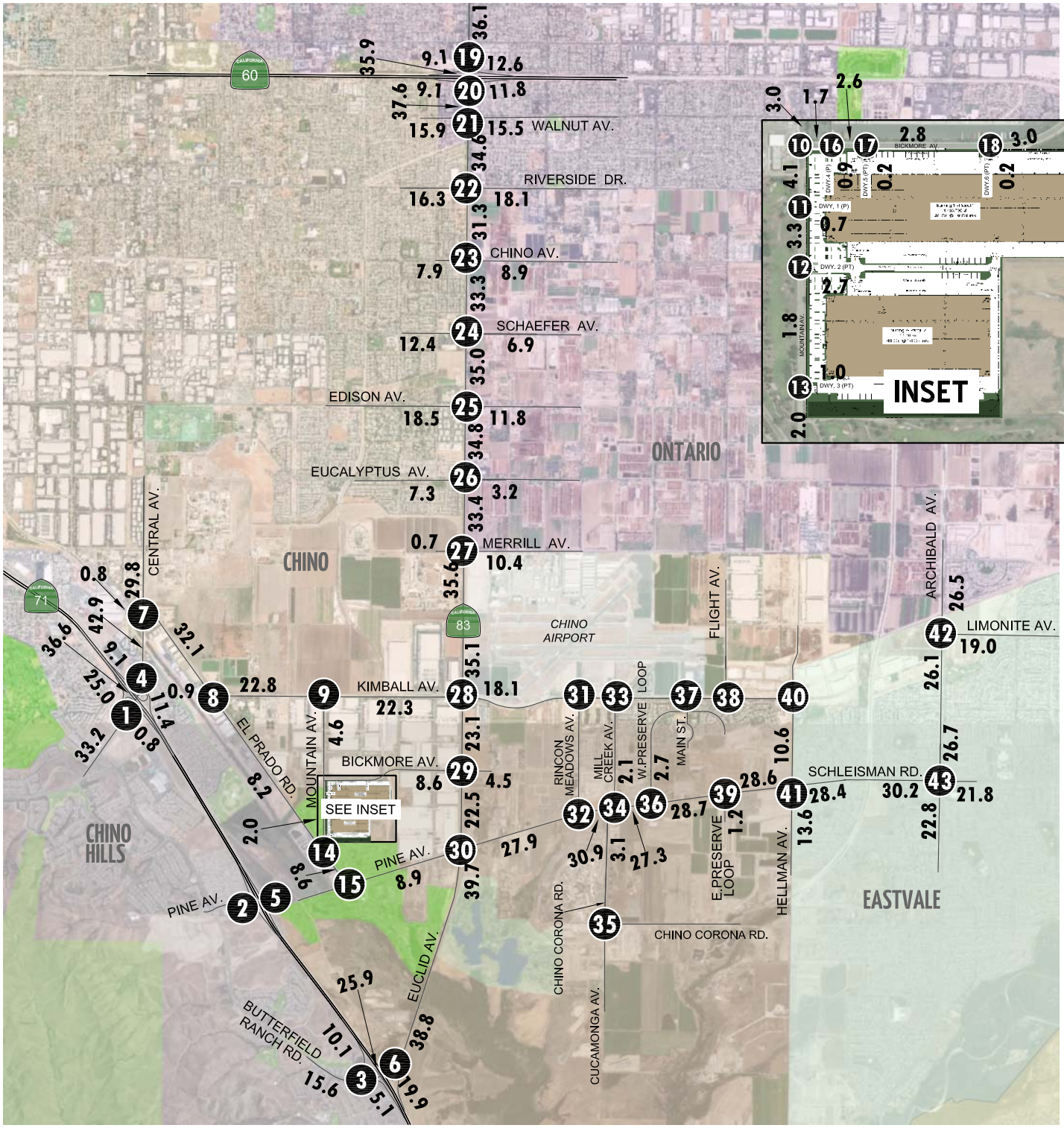


EXHIBIT 6-3: E+P (PROJECT BUILDOUT) AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 6-4 (1OF2): E+P (PROJECT BUILDOUT) TRAFFIC VOLUMES (IN PCE)

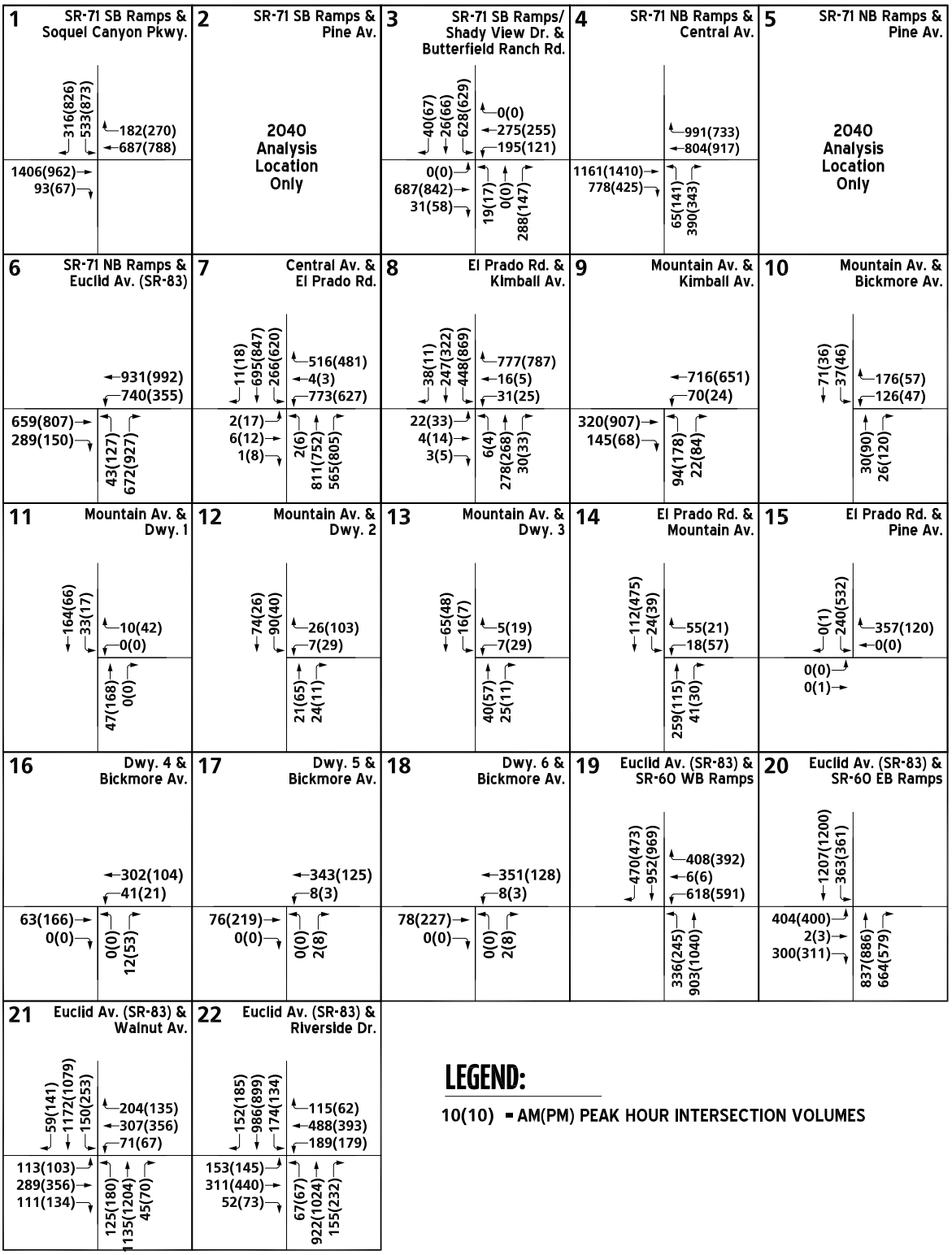


EXHIBIT 6-4 (2OF2): E+P (PROJECT BUILDOUT) TRAFFIC VOLUMES (IN PCE)

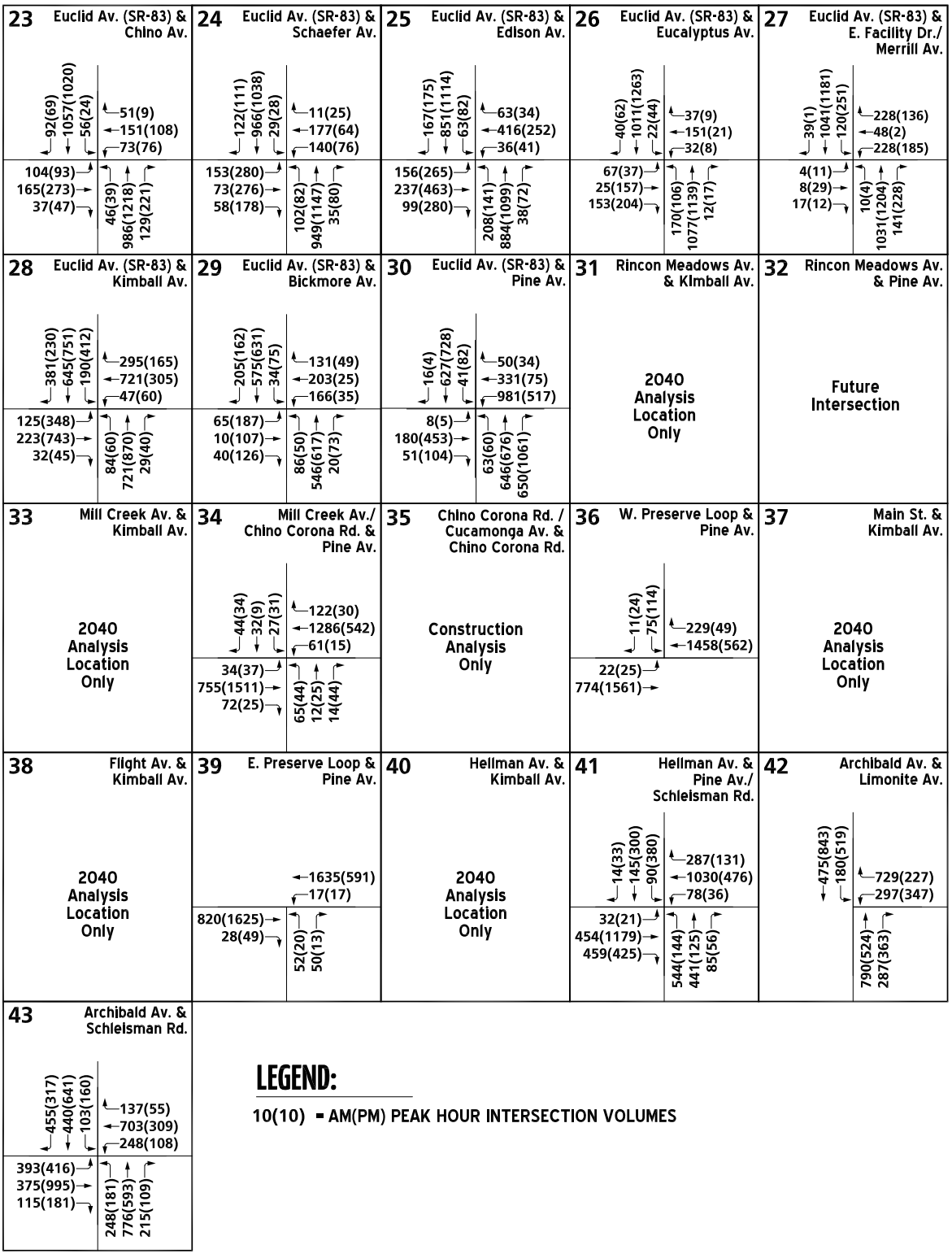


EXHIBIT 6-5: E+P (BUILDING 1) SUMMARY OF LOS

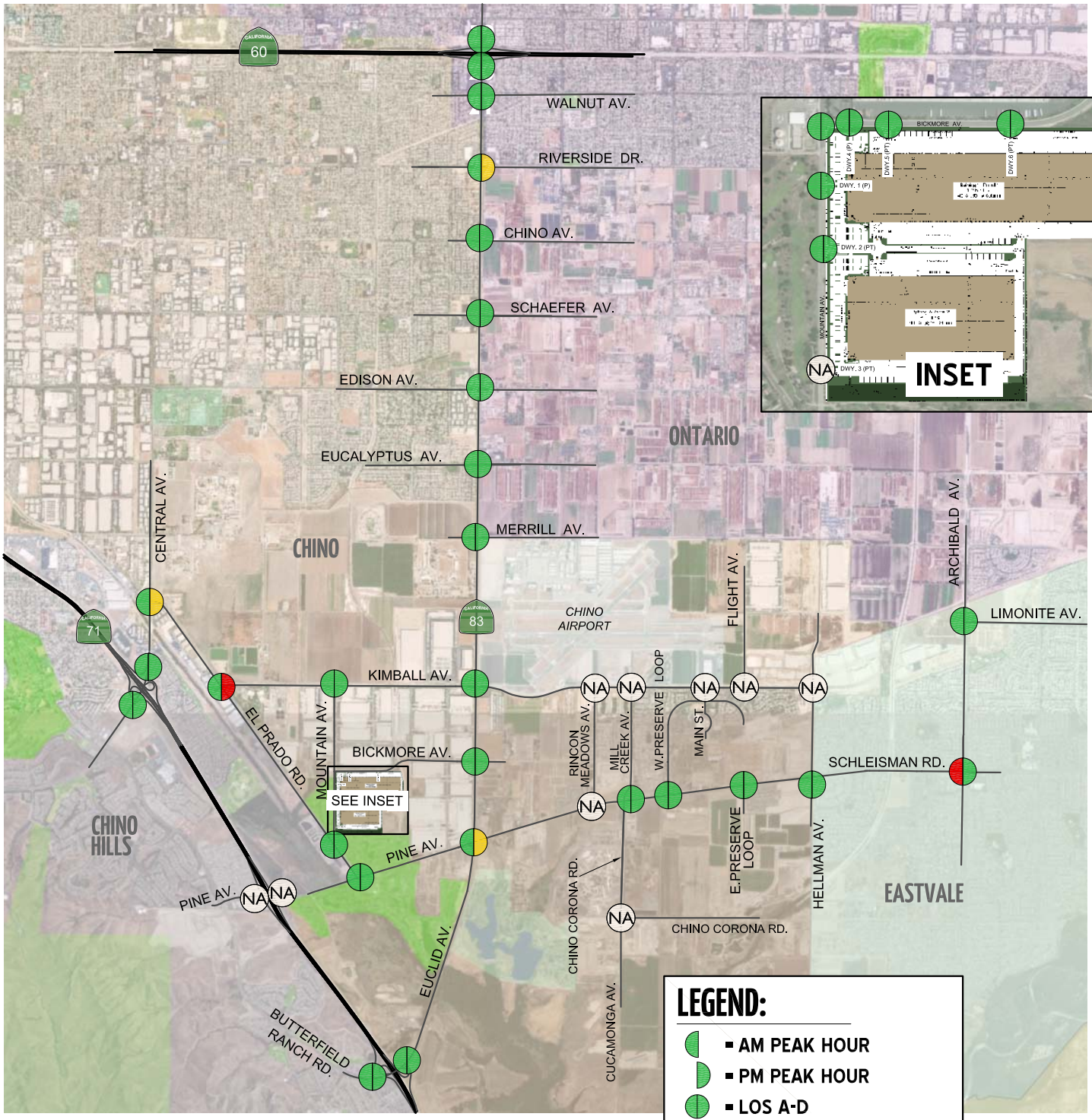


Table 6-1

Intersection Analysis for E+P (Building 1) Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				E+P - Building 1				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	SR-71 SB Ramps & Soquel Canyon Rd.	TS	13.3	23.2	B	C	13.9	23.7	B	C	D
2	SR-71 SB Ramps & Pine Av.	TS	31.2	26.7	C	C	2040 Analysis Location				D
3	SR-71 SB Ramps & Butterfield Ranch Rd.	TS	40.0	39.6	D	D	40.0	39.7	D	D	D
4	SR-71 NB Ramps & Central Av.	TS	8.6	7.7	A	A	8.6	7.7	A	A	D
5	SR-71 NB Ramps & Pine Av.	AWS	9.3	8.9	A	A	2040 Analysis Location				D
6	SR-71 NB Ramps & Euclid Av. (SR-83)	TS	27.2	42.5	C	D	29.8	42.5	C	D	D
7	Central Av. & El Prado Rd.	TS	29.0	**61.2**	C	**E**	29.8	**64.6**	C	**E**	D
8	El Prado Rd. & Kimball Av.	TS	28.1	**86.2**	C	**F**	30.3	**90.4**	C	**F**	D
9	Mountain Av. & Kimball Av.	TS	7.4	9.7	A	A	7.8	10.4	A	B	D
10	Mountain Av. & Bickmore Av.	CSS	9.8	9.6	A	A	10.4	10.2	B	B	D
11	Mountain Av. & Driveway 1	**CSS**	Future Intersection				8.5	9.0	A	A	D
12	Mountain Av. & Driveway 2	**CSS**	Future Intersection				9.0	9.3	A	A	D
13	Mountain Av. & Driveway 3	**CSS**	Future Intersection				Future Intersection				D
14	El Prado Rd. & Mountain Av.	CSS	10.4	13.6	B	B	10.7	15.0	B	C	D
15	El Prado Rd. & Pine Av.	AWS	9.8	13.5	A	B	10.1	14.6	B	B	D
16	Driveway 4 & Bickmore Av.	**CSS**	Future Intersection				8.6	9.1	A	A	D
17	Driveway 5 & Bickmore Av.	**CSS**	Future Intersection				8.6	9.1	A	A	D
18	Driveway 6 & Bickmore Av.	**CSS**	Future Intersection				8.6	9.2	A	A	D
19	Euclid Av. (SR-83) & SR-60 WB Ramps	TS	22.3	18.6	C	B	22.6	18.9	C	B	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps	TS	25.3	21.9	C	C	25.5	22.0	C	C	D
21	Euclid Av. (SR-83) & Walnut Av.	TS	30.1	32.5	C	C	30.2	32.6	C	C	E
22	Euclid Av. (SR-83) & Riverside Dr.	TS	47.0	**55.5**	D	**E**	47.6	**57.5**	D	**E**	D
23	Euclid Av. (SR-83) & Chino Av.	TS	21.5	23.2	C	C	21.6	23.3	C	C	D
24	Euclid Av. (SR-83) & Schaefer Av.	TS	23.6	26.2	C	C	24.0	26.6	C	C	D
25	Euclid Av. (SR-83) & Edison Av.	TS	38.1	39.7	D	D	38.8	40.4	D	D	D
26	Euclid Av. (SR-83) & Eucalyptus Av.	TS	13.8	13.2	B	B	14.0	13.3	B	B	D
27	Euclid Av. (SR-83) & Merrill Av.	TS	26.4	29.9	C	C	27.0	31.5	C	C	D
28	Euclid Av. (SR-83) & Kimball Av.	TS	32.4	38.3	C	D	32.8	39.6	C	D	D
29	Euclid Av. (SR-83) & Bickmore Av.	TS	16.3	14.0	B	B	17.3	15.3	B	B	D
30	Euclid Av. (SR-83) & Pine Av.	TS	31.9	**61.5**	C	**E**	33.3	**67.5**	C	**E**	D
31	Rincon Meadows Av. & Kimball Av.	TS	15.4	12.8	B	B	2040 Analysis Location				D
32	Rincon Meadows Av. & Pine Av.		Future Intersection				Future Intersection				D
33	Mill Creek Av. & Kimball Av.	TS	14.5	12.9	B	B	2040 Analysis Location				D
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	TS	27.1	12.2	C	B	27.1	12.3	C	B	D
35	Cucamonga Av. & Chino Corona Rd.	AWS	7.0	7.3	A	A	Construction Location Only				D
36	W. Preserve Loop & Pine Av.	TS	9.4	8.0	A	A	9.4	8.0	A	A	D
37	Main St. & Kimball Av.	TS	13.4	12.5	B	B	2040 Analysis Location				D
38	Flight Av. & Kimball Av.	CSS	21.0	20.5	C	C	2040 Analysis Location				D
39	E. Preserve Loop & Pine Av.	TS	8.5	7.2	A	A	8.5	7.2	A	A	D
40	Hellman Av. & Kimball Av.	TS	**>200.0**	**77.9**	**F**	**F**	2040 Analysis Location				D

Table 6-1

Intersection Analysis for E+P (Building 1) Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				E+P - Building 1				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
41	Hellman Av. & Pine Av./Schleisman Rd.	TS	37.7	38.6	D	D	37.7	39.0	D	D	D
42	Archibald Av. & Limonite Av.	TS	48.0	29.6	D	C	48.0	30.8	D	C	D
43	Archibald Av. & Schleisman Rd.	TS	**80.1**	46.5	**F**	D	**80.1**	50.9	**F**	D	D

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

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

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

E+P (Project Buildout) 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 on Table 6-2, which indicate that there are no additional study area intersections that are anticipated to operate at an unacceptable LOS, in addition to those identified for Existing traffic conditions.

The intersection of Hellman Avenue and Kimball Avenue was not evaluated for E+P (Project Buildout) traffic conditions. Consistent with Table 6-2, a summary of the peak hour intersection LOS for E+P conditions is shown on Exhibit 6-6 for E+P (Project Buildout) traffic conditions. The intersection operations analysis worksheets for E+P (Project Buildout) traffic conditions are included in Appendix 6.2 of this TIA.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no study area intersections anticipated to meet either peak hour or planning level (ADT) volume-based traffic signal warrants for E+P (Building 1) and E+P (Project Buildout) traffic conditions, in addition to those previously warranted under Existing (2019) traffic conditions (see Appendix 6.3 and Appendix 6.4).

6.5 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for E+P traffic conditions are presented on Table 6-3. As shown on Table 6-3, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with addition of Project traffic (for both Building 1 and Project Buildout traffic conditions). Worksheets for E+P (Building 1) and E+P (Project Buildout) traffic conditions off-ramp queuing analysis are provided in Appendix 6.5 and Appendix 6.6, respectively.

6.6 FREEWAY FACILITY ANALYSIS

E+P (Building 1) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 6-7. E+P (Project Buildout) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 6-8. As shown on Table 6-4, no additional freeway segments or merge/diverge ramp junctions analyzed for this TIA were found to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours for E+P traffic conditions, in addition to those previously identified under Existing (2019) traffic conditions. E+P (Building 1) and E+P (Project Buildout) freeway facility analysis worksheets are provided in Appendix 6.7 and Appendix 6.8, respectively.

Table 6-2

Intersection Analysis for E+P (Project Buildout) Conditions

#	Intersection	Traffic Control[2]	Existing (2019) Delay[1] (secs.) AM	Existing (2019) Delay[1] (secs.) PM	Existing (2019) Level of Service AM	Existing (2019) Level of Service PM	E+P - Project Buildout Delay[1] (secs.) AM	E+P - Project Buildout Delay[1] (secs.) PM	E+P - Project Buildout Level of Service AM	E+P - Project Buildout Level of Service PM	Acceptable LOS
1	SR-71 SB Ramps & Soquel Canyon Rd.	TS	13.3	23.2	B	C	14.3	24.0	B	C	D
2	SR-71 SB Ramps & Pine Av.	TS	31.2	26.7	C	C	2040 Analysis Location				D
3	SR-71 SB Ramps & Butterfield Ranch Rd.	TS	40.0	39.6	D	D	40.0	39.8	D	D	D
4	SR-71 NB Ramps & Central Av.	TS	8.6	7.7	A	A	8.6	7.7	A	A	D
5	SR-71 NB Ramps & Pine Av.	AWS	9.3	8.9	A	A	2040 Analysis Location				D
6	SR-71 NB Ramps & Euclid Av. (SR-83)	TS	27.2	42.5	C	D	32.7	42.6	C	D	D
7	Central Av. & El Prado Rd.	TS	29.0	**61.2**	C	**E**	30.5	**67.2**	C	**E**	D
8	El Prado Rd. & Kimball Av.	TS	28.1	**86.2**	C	**F**	34.7	**93.2**	C	**F**	D
9	Mountain Av. & Kimball Av.	TS	7.4	9.7	A	A	8.1	10.8	A	B	D
10	Mountain Av. & Bickmore Av.	CSS	9.8	9.6	A	A	11.2	10.8	B	B	D
11	Mountain Av. & Driveway 1	**CSS**	Future Intersection				8.6	9.4	A	A	D
12	Mountain Av. & Driveway 2	**CSS**	Future Intersection				9.1	9.6	A	A	D
13	Mountain Av. & Driveway 3	**CSS**	Future Intersection				9.2	9.3	A	A	D
14	El Prado Rd. & Mountain Av.	CSS	10.4	13.6	B	B	11.0	16.2	B	C	D
15	El Prado Rd. & Pine Av.	AWS	9.8	13.5	A	B	10.3	16.0	B	C	D
16	Driveway 4 & Bickmore Av.	**CSS**	Future Intersection				8.6	9.4	A	A	D
17	Driveway 5 & Bickmore Av.	**CSS**	Future Intersection				8.7	9.5	A	A	D
18	Driveway 6 & Bickmore Av.	**CSS**	Future Intersection				8.7	9.6	A	A	D
19	Euclid Av. (SR-83) & SR-60 WB Ramps	TS	22.3	18.6	C	B	22.8	19.1	C	B	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps	TS	25.3	21.9	C	C	25.6	22.1	C	C	D
21	Euclid Av. (SR-83) & Walnut Av.	TS	30.1	32.5	C	C	30.2	32.6	C	C	E
22	Euclid Av. (SR-83) & Riverside Dr.	TS	47.0	**55.5**	D	**E**	48.0	**59.4**	D	**E**	D
23	Euclid Av. (SR-83) & Chino Av.	TS	21.5	23.2	C	C	21.8	23.5	C	C	D
24	Euclid Av. (SR-83) & Schaefer Av.	TS	23.6	26.2	C	C	24.4	26.9	C	C	D
25	Euclid Av. (SR-83) & Edison Av.	TS	38.1	39.7	D	D	39.5	41.0	D	D	D
26	Euclid Av. (SR-83) & Eucalyptus Av.	TS	13.8	13.2	B	B	14.2	13.4	B	B	D
27	Euclid Av. (SR-83) & Merrill Av.	TS	26.4	29.9	C	C	27.3	33.0	C	C	D
28	Euclid Av. (SR-83) & Kimball Av.	TS	32.4	38.3	C	D	33.1	40.7	C	D	D
29	Euclid Av. (SR-83) & Bickmore Av.	TS	16.3	14.0	B	B	18.1	16.2	B	B	D
30	Euclid Av. (SR-83) & Pine Av.	TS	31.9	**61.5**	C	**E**	34.6	**71.3**	C	**E**	D
31	Rincon Meadows Av. & Kimball Av.	TS	15.4	12.8	B	B	2040 Analysis Location				D
32	Rincon Meadows Av. & Pine Av.		Future Intersection				Future Intersection				D
33	Mill Creek Av. & Kimball Av.	TS	14.5	12.9	B	B	2040 Analysis Location				D
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	TS	27.1	12.2	C	B	32.3	12.3	C	B	D
35	Cucamonga Av. & Chino Corona Rd.	AWS	7.0	7.3	A	A	Construction Location Only				D
36	W. Preserve Loop & Pine Av.	TS	9.4	8.0	A	A	9.6	8.0	A	A	D
37	Main St. & Kimball Av.	TS	13.4	12.5	B	B	2040 Analysis Location				D
38	Flight Av. & Kimball Av.	CSS	21.0	20.5	C	C	2040 Analysis Location				D
39	E. Preserve Loop & Pine Av.	TS	8.5	7.2	A	A	8.8	7.2	A	A	D
40	Hellman Av. & Kimball Av.	TS	**>200.0**	**77.9**	**F**	**F**	2040 Analysis Location				D

Table 6-2

Intersection Analysis for E+P (Project Buildout) Conditions

#	Intersection	Traffic Control[2]	Existing (2019)				E+P - Project Buildout				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
41	Hellman Av. & Pine Av./Schleisman Rd.	TS	37.7	38.6	D	D	38.3	39.4	D	D	D
42	Archibald Av. & Limonite Av.	TS	48.0	29.6	D	C	48.0	31.6	D	C	D
43	Archibald Av. & Schleisman Rd.	TS	**80.1**	46.5	**F**	D	**88.1**	55.0	**F**	D	D

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

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

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

Table 6-3

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

Intersection	Movement	Available Stacking Distance (Feet)	Existing (2019)				E+P - Building 1				E+P - Project Buildout			
			95th Percentile Queue (Feet)[3]		Acceptable?[1]		95th Percentile Queue (Feet)[3]		Acceptable?[1]		95th Percentile Queue (Feet)[3]		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
SR-71 SB Ramps & Central Avenue	SBL	1,530	245	516 [2]	Yes	Yes	257	528 [2]	Yes	Yes	265	538 [2]	Yes	Yes
	SBL/R	740	0	698 [2]	Yes	Yes	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 SB Ramps & Pine Avenue	SBL/T	1,370	8	16	Yes	Yes	2040 Analysis Location				2040 Analysis Location			
	SBR	725	29	456 [2]	Yes	Yes								
SR-71 SB Ramps & Euclid Avenue (SR-83)	SBL	1,100	215	230	Yes	Yes	215	230	Yes	Yes	215	230	Yes	Yes
	SBL/T	1,560	215	232	Yes	Yes	215	232	Yes	Yes	215	232	Yes	Yes
	SBR	255	0	1	Yes	Yes	0	1	Yes	Yes	0	1	Yes	Yes
SR-71 NB Ramps & Central Avenue	NBL	1,485	34	75	Yes	Yes	34	75	Yes	Yes	34	75	Yes	Yes
	NBL/R	1,070	0	0	Yes	Yes	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 NB Ramps & Pine Avenue	NBL	1,375	5	10	Yes	Yes	2040 Analysis Location				2040 Analysis Location			
	NBL/T	815	5	10	Yes	Yes								
SR-71 NB Ramps & Euclid Avenue (SR-83)	NBL	1,745	27	44	Yes	Yes	27	44	Yes	Yes	27	44	Yes	Yes
	NBR	420	203 [2]	732 [2]	Yes	Yes[3]	235 [2]	745 [2]	Yes	Yes[3]	259 [2]	757 [2]	Yes	Yes[3]
Euclid Av. (SR-83) & SR-60 WB Ramps	WBL	400	306	276	Yes	Yes	312 [2]	280	Yes	Yes	326 [2]	283	Yes	Yes
	WBL/T/R	1,430	316 [2]	284	Yes	Yes	342 [2]	281	Yes	Yes	346 [2]	284	Yes	Yes
	WBR	400	202	207	Yes	Yes	206	209	Yes	Yes	209	209	Yes	Yes
Euclid Av. (SR-83) & SR-60 EB Ramps	EBL	900	363 [2]	352 [2]	Yes	Yes	363 [2]	352 [2]	Yes	Yes	363 [2]	352 [2]	Yes	Yes
	EBT/R	1,270	260 [2]	288 [2]	Yes	Yes	289 [2]	294 [2]	Yes	Yes	300 [2]	298 [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 SR-71 Freeway mainline.

Table 6-4

Freeway Facility Analysis for E+P Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Existing (2019)				E+P - Building 1				E+P - Project Buildout			
				AM Peak Hour		PM Peak Hour		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]	Density[2]	LOS[3]	Density[2]	LOS[3]
SR-71 Freeway	Southbound	North of Central Avenue	3	9.6	A	18.4	C	9.7	A	18.5	C	9.8	A	18.6	C
		Central Avenue Off-Ramp	3	16.4	B	28.0	C	16.6	B	28.1	D	16.7	B	28.1	D
		Central Avenue Loop On-Ramp	3	9.5	A	13.9	B	9.5	A	13.9	B	9.5	A	13.9	B
		Central Avenue On-Ramp	3	10.0	A	14.0	B	10.0	A	14.0	B	10.0	A	14.0	B
		Central Avenue to Pine Avenue	3	10.4	A	17.1	B	10.4	A	17.1	B	10.4	A	17.1	B
		Pine Avenue Off-Ramp	2	14.5	B	22.2	C	14.5	B	22.2	C	14.5	B	22.2	C
		Pine Avenue On-Ramp	2	12.5	B	12.3	B	12.5	B	12.3	B	12.5	B	12.3	B
		Pine Avenue to Euclid Avenue (SR-83)	2	9.2	A	9.0	A	9.2	A	9.0	A	9.2	A	9.0	A
		Euclid Avenue (SR-83) Off-Ramp	2	13.4	B	13.2	B	13.4	B	13.2	B	13.4	B	13.2	B
		Euclid Avenue (SR-83) Loop On-Ramp	2	9.7	A	10.4	B	9.8	A	10.6	B	9.8	A	10.8	B
		Euclid Avenue (SR-83) On-Ramp	2	15.8	B	16.5	B	15.8	B	16.8	B	15.9	B	17.0	B
		South of Euclid Avenue (SR-83)	2	15.0	B	16.3	B	15.0	B	16.1	B	15.0	B	16.3	B
	Northbound	North of Central Avenue	3	20.3	C	17.8	B	20.4	C	17.9	B	20.4	C	18.1	C
		Central Avenue On-Ramp	3	24.6	C	21.2	C	24.6	C	21.4	C	24.7	C	21.6	C
		Central Avenue Loop On-Ramp	3	18.7	B	16.5	B	18.7	B	16.9	B	18.7	B	16.9	B
		Central Avenue Off-Ramp	3	20.4	C	21.7	C	20.4	C	21.7	C	20.4	C	21.7	C
		Central Avenue to Pine Avenue	3	13.6	B	14.9	B	13.6	B	14.9	B	13.6	B	14.9	B
		Pine Avenue On-Ramp	2	15.8	B	18.5	C	15.8	B	18.5	C	15.8	B	18.5	C
		Pine Avenue Off-Ramp	2	22.7	C	26.4	C	22.7	C	26.4	C	22.7	C	26.4	C
		Pine Avenue to Euclid Avenue (SR-83)	2	17.2	B	20.4	C	17.2	B	20.4	C	17.2	B	20.4	C
		Euclid Avenue (SR-83) On-Ramp	2	18.6	B	22.2	C	18.8	B	22.5	C	18.8	B	22.5	C
		Euclid Avenue (SR-83) Off-Ramp	3	8.9	A	15.6	B	9.1	A	15.7	B	9.2	A	15.7	B
		South of Euclid Avenue (SR-83)	3	10.8	A	19.0	C	11.0	A	19.0	C	11.1	B	19.1	C
SR-60 Freeway	Westbound	West of Euclid Avenue (SR-83)	4	33.9	D	31.5	D	34.0	D	31.5	D	343.0	D	32.2	D
		Euclid Avenue (SR-83) On-Ramp	4	28.6	D	27.3	C	33.4	D	32.0	C	33.4	D	32.3	C
		Euclid Avenue (SR-83) Off-Ramp	4	**36.3**	**E**	**35.7**	**E**	**36.4**	**E**	**35.7**	**E**	**36.5**	**E**	**35.7**	**E**
		East of Euclid Avenue (SR-83)	4	34.6	D	33.3	D	34.7	D	33.4	D	34.7	D	33.4	D
	Eastbound	West of Euclid Avenue (SR-83)	4	31.2	D	25.7	C	31.2	D	25.7	C	31.2	D	25.8	C
		Euclid Avenue (SR-83) Off-Ramp	4	32.2	D	28.5	D	32.2	D	28.6	D	32.3	D	28.7	D
		Euclid Avenue (SR-83) On-Ramp	4	28.9	D	24.7	C	33.1	D	24.8	C	33.1	D	27.6	C
		East of Euclid Avenue (SR-83)	4	32.9	D	26.4	D	32.9	D	26.5	D	33.0	D	26.5	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

EXHIBIT 6-6: E+P (PROJECT BUILDOUT) SUMMARY OF LOS

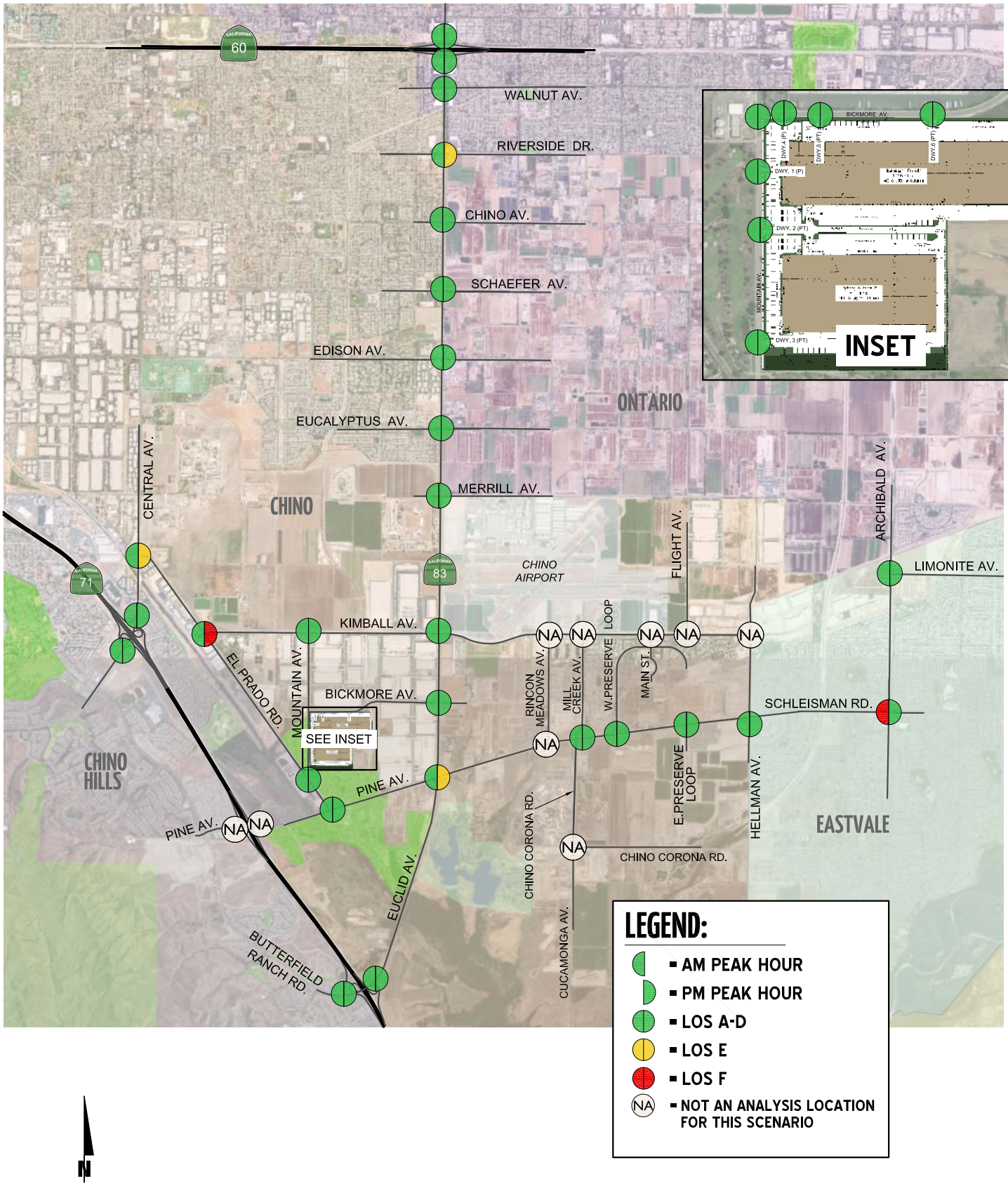
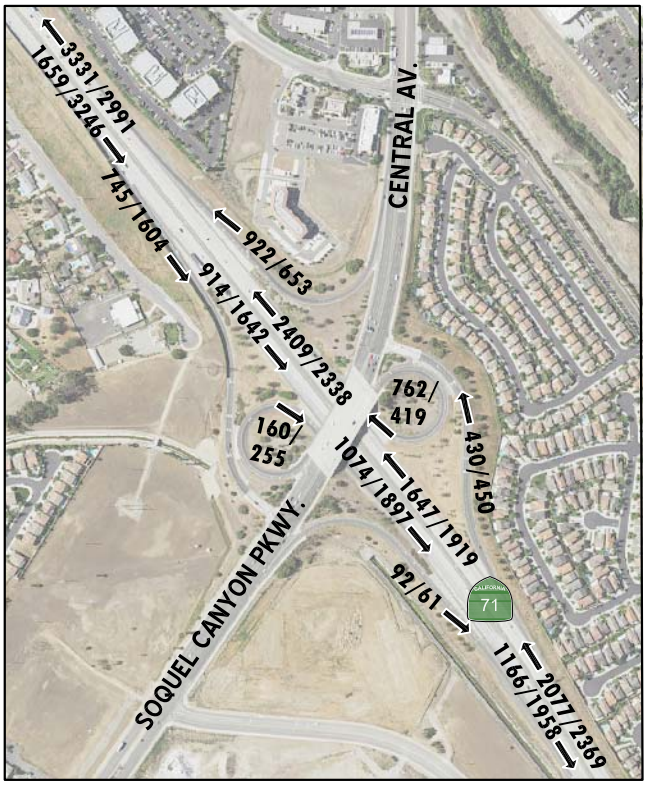


EXHIBIT 6-7: E+P (BUILDING 1) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

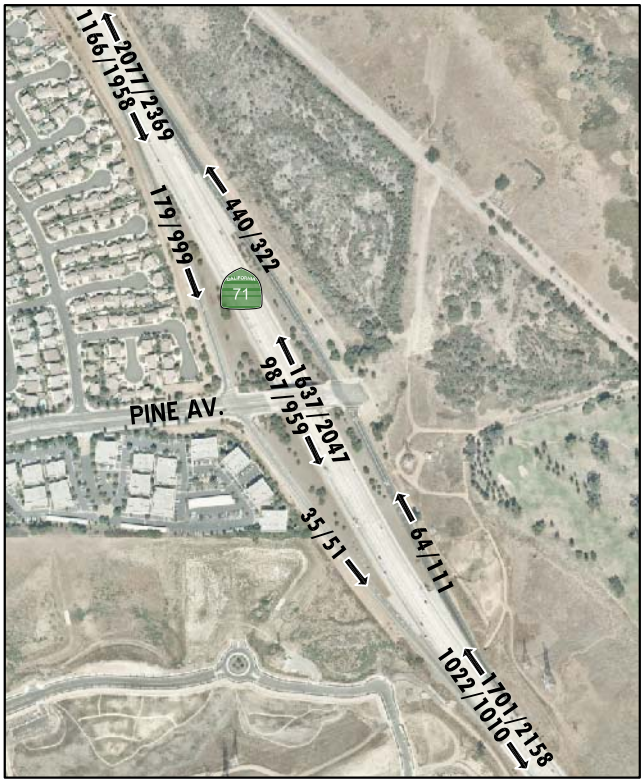
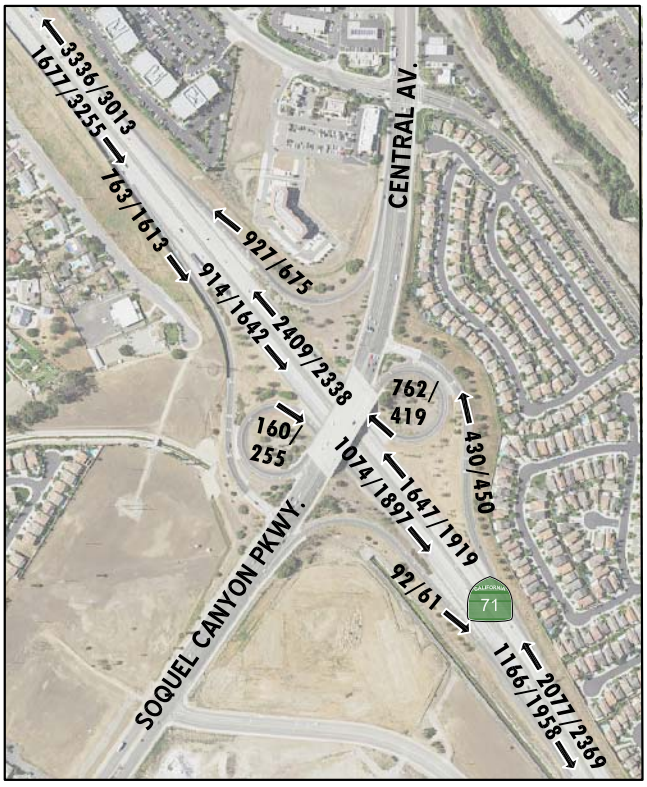


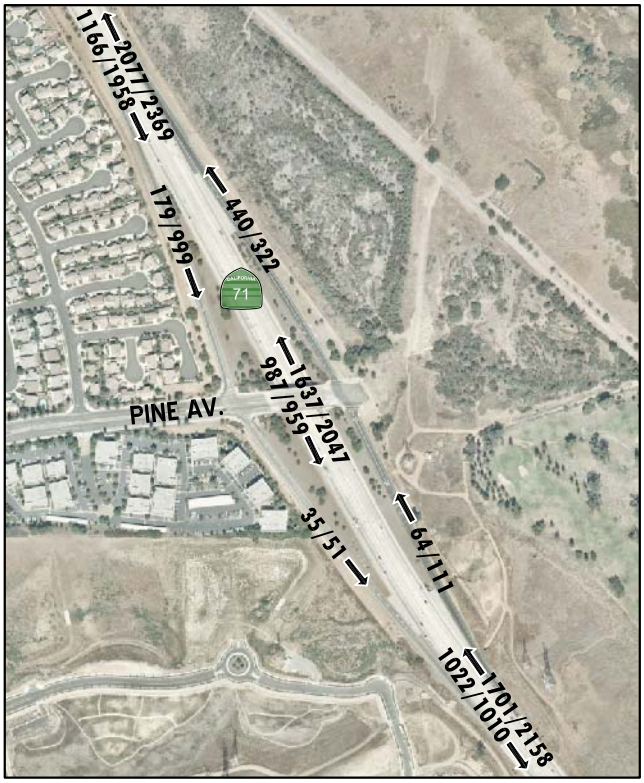
EXHIBIT 6-8: E+P (PROJECT BUILDOUT) FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)



6.7 PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS

This section provides a summary of Project impacts and recommended improvements. Based on the City of Chino significance criteria discussed in Section 2.9 *Thresholds of Significance*, the following intersections were found to be impacted by Project. Improvements necessary to reduce project-related traffic impacts to less than significant are also discussed below.

6.7.1 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

The effectiveness of the proposed recommended mitigation measures is presented on Table 6-5 for E+P traffic conditions. The recommended mitigation measures necessary to reduce Project impacts to less than significant are discussed below. The intersection operations analysis worksheets for E+P (Building 1) and E+P (Project Buildout) traffic conditions, with improvements, are included in Appendix 6.9 and Appendix 6.10, respectively.

E+P (Building 1) Conditions:

Central Avenue & El Prado Road (#7) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Payment of the Project's DIF fees to be applied towards the addition of a 2nd southbound left turn lane to improve the existing deficiency.

El Prado Road & Kimball Avenue (#8) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Contribute fair share towards restriping the southbound approach to accommodate two left turn lanes and one shared through-right turn lane to improve the existing deficiency.

Table 6-5

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
7	Central Av. & El Prado Rd.																	
	Existing:																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	29.0	**61.2**	C	**E**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	27.8	31.5	C	C
	E+P (Building 1):																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	29.8	**64.6**	C	**E**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	28.0	32.9	C	C
	E+P (Project Buildout):																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	30.5	**67.2**	C	**E**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	28.2	34.1	C	C
8	El Prado Rd. & Kimball Av.																	
	Existing:																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	28.1	**86.2**	C	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	24.4	25.7	C	C
	E+P (Building 1):																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	30.3	**90.4**	C	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	24.4	26.2	C	C
	E+P (Project Buildout):																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	34.7	**93.2**	C	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	24.5	26.7	C	C
22	Euclid Av. (SR-83) & Riverside Dr.																	
	Existing:																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	47.0	**55.5**	D	**E**
	-With Improvements	TS	1	2	1	1	2	1>	1	1	**1**	1	2	d	45.3	49.8	D	D
	E+P (Building 1):																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	47.6	**57.5**	D	**E**
	-With Improvements		Not Applicable															
	E+P (Project Buildout):																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	48.0	**59.4**	D	**E**
	-With Improvements	TS	1	2	1	1	2	1>	1	1	**1**	1	2	d	45.8	51.5	D	D
30	Euclid Av. (SR-83) & Pine Av.																	
	Existing:																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	31.9	**61.5**	C	**E**
	-With Improvements	TS	1	2	**1>>**	1	2	0	1	1	1	2	1	0	39.1	36.1	C	D
	E+P (Building 1):																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	33.3	**67.5**	C	**E**
	-With Improvements	TS	1	2	**1>>**	1	2	0	1	1	1	2	1	0	40.4	39.7	D	D
	E+P (Project Buildout):																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	34.6	**71.3**	C	**E**
	-With Improvements	TS	1	2	**1>>**	1	2	0	1	1	1	2	1	0	41.8	42.9	D	D

Table 6-5

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
43	Archibald Av. & Schleisman Rd.																	
	Existing:																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**80.1**	46.5	**F**	D
	-With Improvements[4]	TS	2	3	1	2	3	1	2	3	1	2	3	1	32.8	29.6	C	C
	E+P (Building 1):																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**80.1**	50.9	**F**	D
	-With Improvements		Not Applicable															
	E+P (Project Buildout):																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**88.1**	55.0	**F**	D
	-With Improvements[4]	TS	2	3	1	2	3	1	2	3	1	2	3	1	34.5	30.1	C	C

[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; **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] TS = Traffic Signal

[4] Improvement consists of modifying the traffic signal to extend the cycle length to 130 seconds.

Euclid Avenue (SR-83) & Pine Avenue (#30) – 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 the one or more peak hours with the addition of Project (Building 1) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Payment of Project's DIF fees to be applied towards the addition of a northbound free-right turn lane to improve the existing deficiency.

E+P (Project Buildout) Conditions:

Central Avenue & El Prado Road (#7) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Payment of the Project's DIF fees to be applied towards the addition of a 2nd southbound left turn lane to improve the existing deficiency.

El Prado Road & Kimball Avenue (#8) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Contribute fair share towards restriping the southbound approach to accommodate two left turn lanes and one shared through-right turn lane to improve the existing deficiency.

Euclid Avenue (SR-83) & Riverside Drive (#22) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Contribute fair share towards an eastbound right turn lane to improve the existing deficiency.

Euclid Avenue (SR-83) & Pine Avenue (#30) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Payment of Project's DIF fees to be applied towards the addition of a northbound free-right turn lane to improve the existing deficiency.

Archibald Avenue & Schleisman Road (#43) – 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 the one or more peak hours with the addition of Project (Project Buildout) traffic. As such, the impact is considered cumulatively significant.

The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less than significant:

- Contribute fair share towards modifying the traffic signal to extend the cycle length to 130-seconds to improve the existing deficiency.

6.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 6-3, there are no peak hour queuing issues at the SR-71 Freeway at Euclid Avenue (SR-83) and Euclid Avenue (SR-83) at SR-60 Freeway interchanges. As such, no improvements have been recommended.

6.7.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

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 Chino (or other neighboring jurisdictions) on SHS roadway segments. As such, no improvements have been recommended to address the E+P deficiencies on the SHS, because there is no feasible mitigation available.

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7 OPENING YEAR CUMULATIVE (2022) TRAFFIC CONDITIONS

This section discusses the methods used to develop Opening Year Cumulative (2022) Without and With Project traffic forecasts, and the resulting intersection operations, freeway mainline operations, and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

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

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

7.2 OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT 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. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2022) Without Project traffic conditions are shown on Exhibits 7-1 and 7-2.

7.3 OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Opening Year Cumulative (2022) Without Project traffic in conjunction with the addition of Project traffic. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Opening Year Cumulative (2022) With Project traffic conditions are shown on Exhibits 7-3 and 7-4.

EXHIBIT 7-1: OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT) (IN PCE)

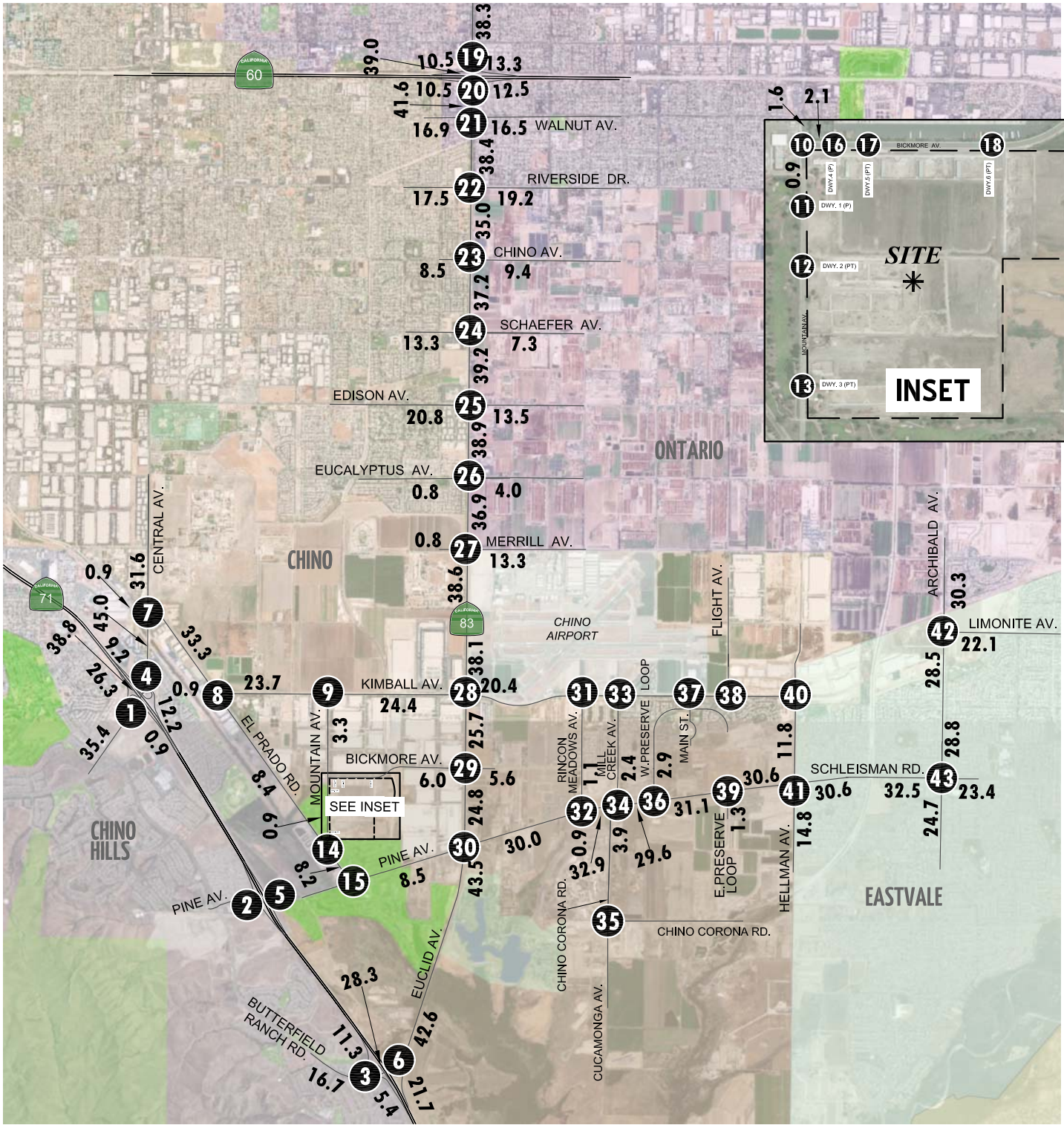

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EXHIBIT 7-2 (1OF2): OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)

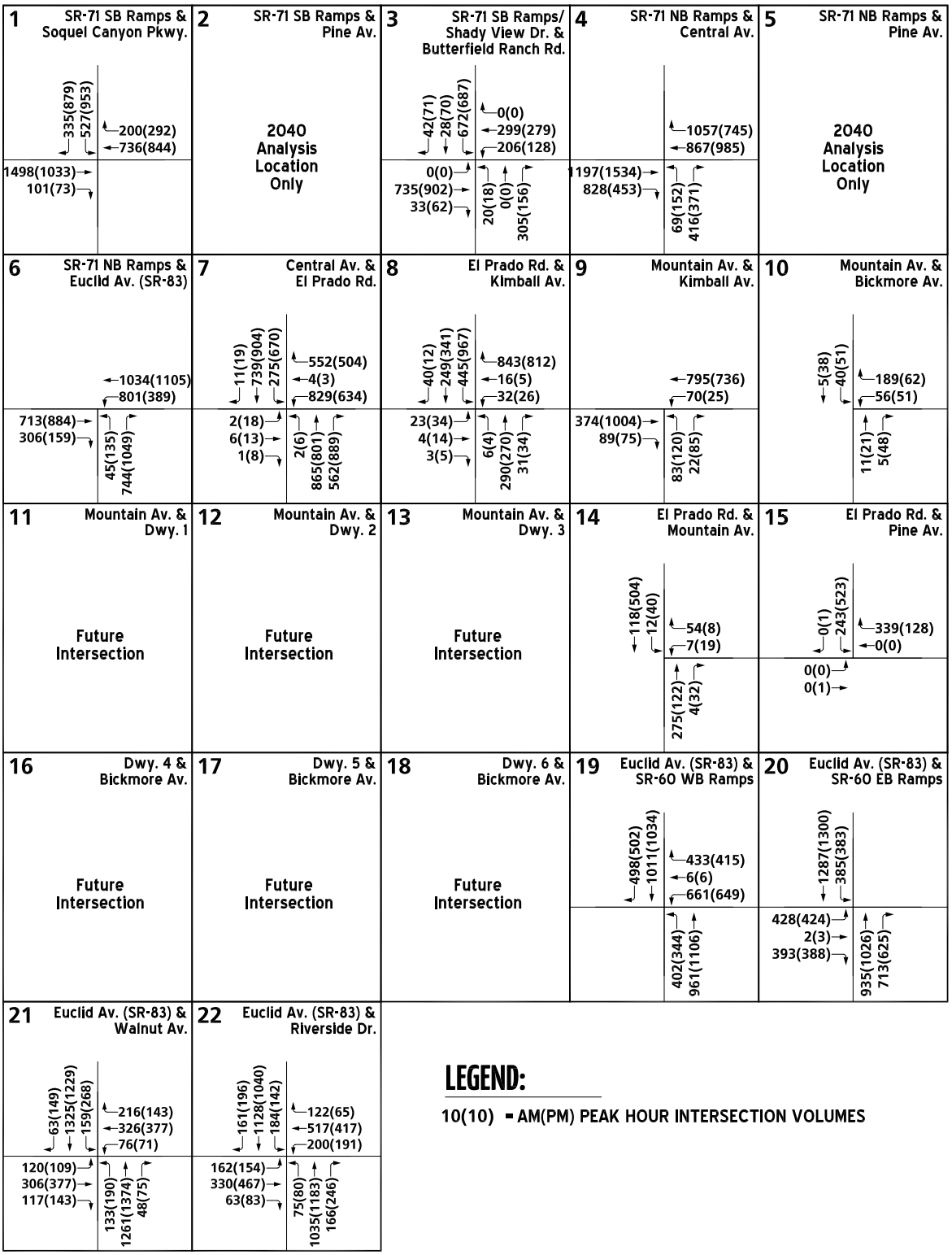


EXHIBIT 7-2 (2OF2): OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)

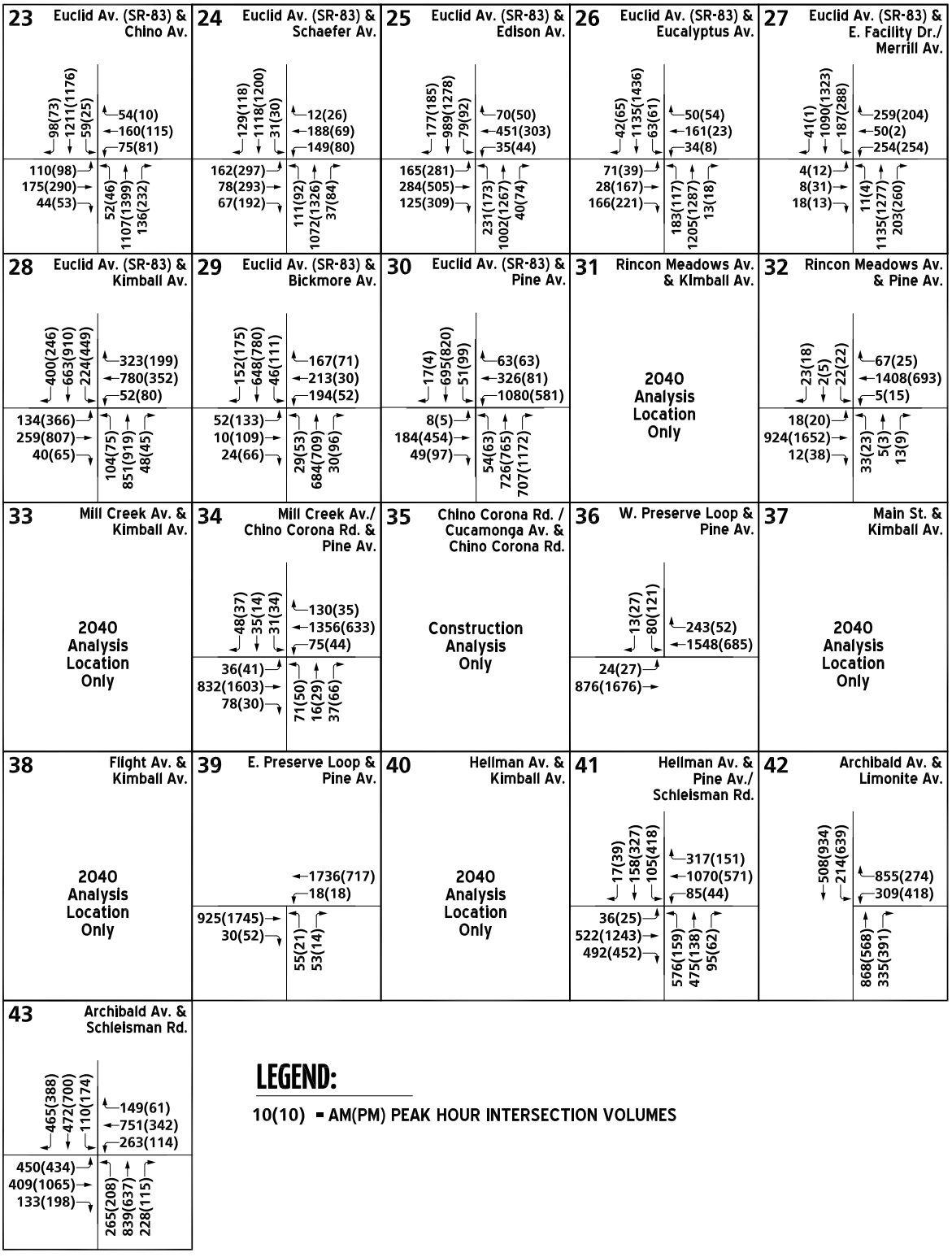
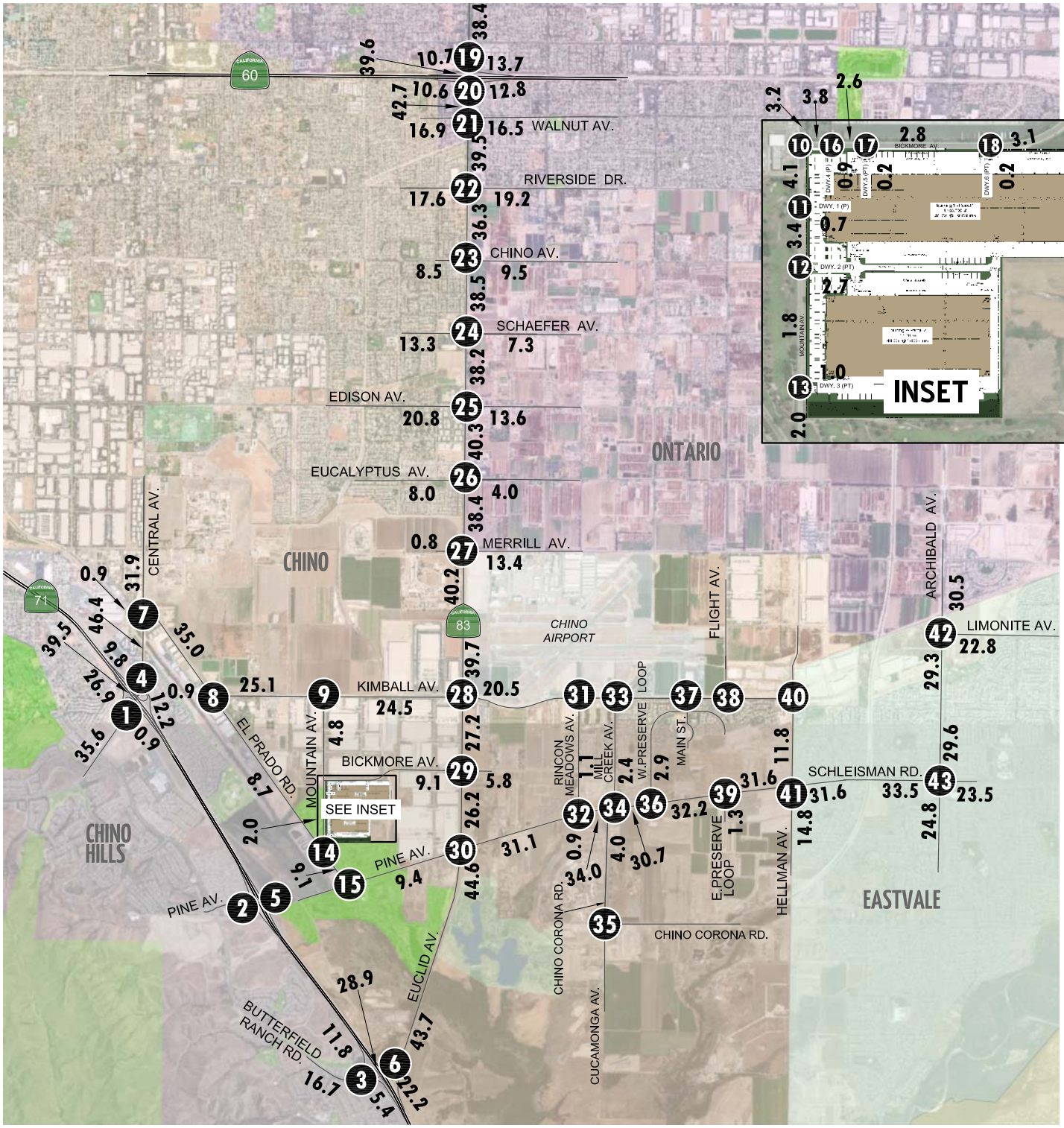


EXHIBIT 7-3: OPENING YEAR CUMULATIVE (2022) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

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EXHIBIT 7-4 (1OF2): OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC VOLUMES (IN PCE)

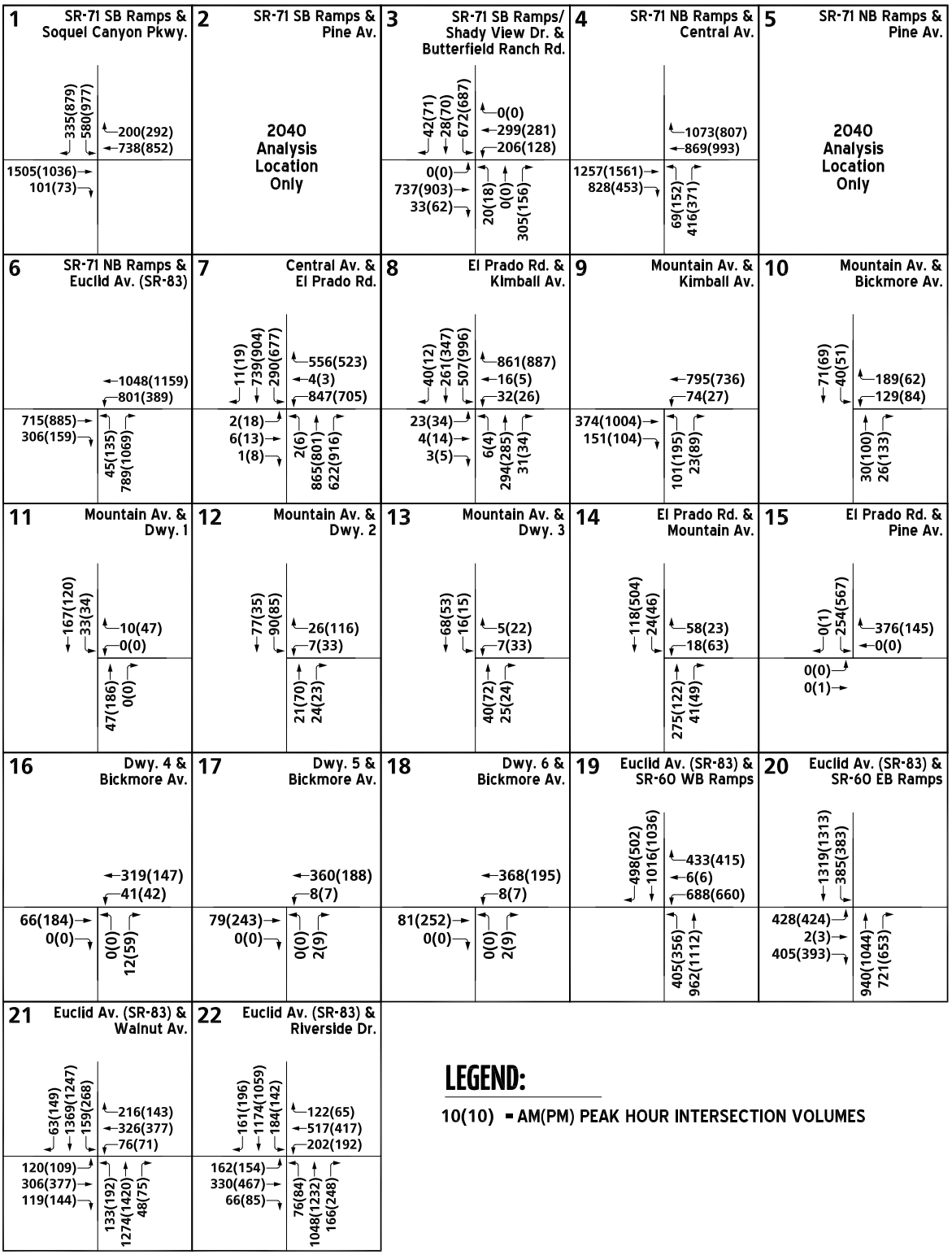
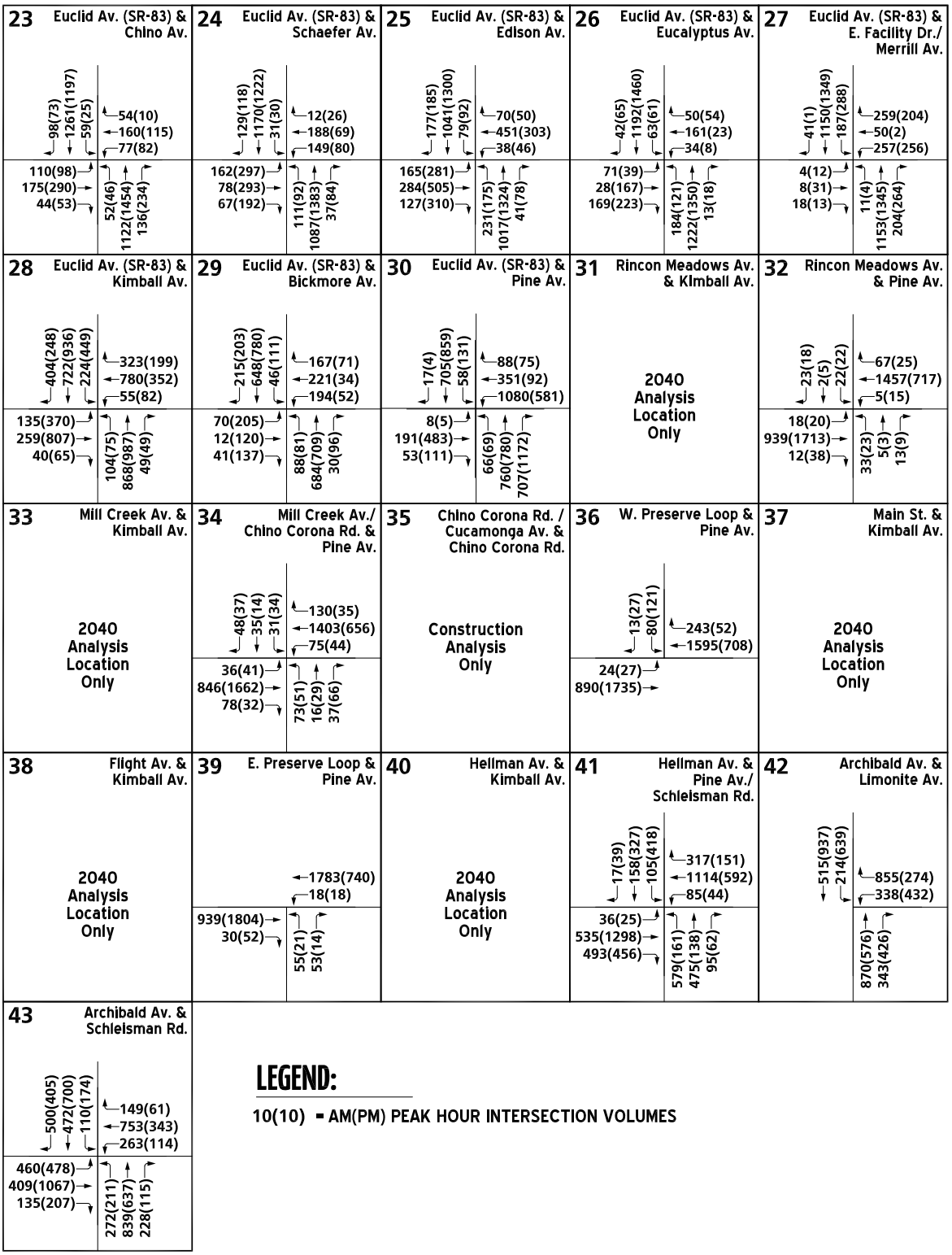


EXHIBIT 7-4 (2OF2): OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



7.4 INTERSECTION OPERATIONS ANALYSIS

7.4.1 OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Opening Year Cumulative (2022) Without Project conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown on Table 7-1, the following study area intersections are anticipated to operate at an unacceptable LOS under Opening Year (2022) Without Project traffic conditions:

- Central Avenue & El Prado Road (#7) – LOS F PM peak hour only
- El Prado Road & Kimball Avenue (#8) – LOS F PM peak hour only
- Euclid Avenue (SR-83) & Riverside Drive (#22) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Edison Avenue (#25) – LOS E PM peak hour only
- Euclid Avenue (SR-83) & Merrill Avenue (#27) – LOS E PM peak hour only
- Euclid Avenue (SR-83) & Pine Avenue (#30) – LOS F PM peak hour only
- Archibald Avenue & Limonite Avenue (#42) – LOS E AM and PM peak hour
- Archibald Avenue & Schleisman Road (#43) – LOS F AM peak hour; LOS E PM peak hour

A summary of the peak hour intersection LOS for Opening Year Cumulative (2022) Without Project conditions is shown on Exhibit 7-5. The intersection operations analysis worksheets for Opening Year Cumulative (2022) Without Project traffic conditions are included in Appendix 7.1 of this TIA.

7.4.2 OPENING YEAR CUMULATIVE (2022) WITH PROJECT TRAFFIC CONDITIONS

As shown on Table 7-1 and illustrated on Exhibit 7-6, the following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Opening Year Cumulative (2022) With Project traffic conditions with the addition of Project traffic, in addition to the locations identified above for Opening Year Cumulative (2022) Without Project traffic conditions:

- Euclid Avenue (SR-830 & Kimball Avenue (#28) – LOS E PM peak hour only

The intersection operations analysis worksheets for Opening Year Cumulative (2022) With Project traffic conditions are included in Appendix 7.2 of this TIA.

7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

There are no study area intersections anticipated to meet either peak hour or planning level (ADT) volume-based traffic signal warrants for Opening Year Cumulative (2022) Without and With Project traffic conditions, in addition to those previously warranted under Existing (2019) traffic conditions (see Appendix 7.3 and Appendix 7.4).

Table 7-1

Intersection Analysis for Opening Year Cumulative (2022) Conditions

#	Intersection	Traffic Control[2]	2022 Without Project				2022 With Project				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	SR-71 SB Ramps & Soquel Canyon Rd.	TS	14.8	30.5	B	C	16.0	32.0	B	C	D
2	SR-71 SB Ramps & Pine Av.	TS	2040 Analysis Location				2040 Analysis Location				D
3	SR-71 SB Ramps & Butterfield Ranch Rd.	TS	43.6	46.7	D	D	43.6	46.7	D	D	D
4	SR-71 NB Ramps & Central Av.	TS	9.2	8.2	A	A	9.2	8.2	A	A	D
5	SR-71 NB Ramps & Pine Av.	AWS	2040 Analysis Location				2040 Analysis Location				D
6	SR-71 NB Ramps & Euclid Av. (SR-83)	TS	33.7	49.0	C	D	37.1	49.1	D	D	D
7	Central Av. & El Prado Rd.	TS	35.0	**81.1**	D	**F**	36.9	**87.7**	D	**F**	D
8	El Prado Rd. & Kimball Av.	TS	35.0	**124.9**	C	**F**	48.8	**132.4**	D	**F**	D
9	Mountain Av. & Kimball Av.	TS	7.7	11.0	A	B	8.3	12.2	A	B	D
10	Mountain Av. & Bickmore Av.	CSS	9.9	10.3	A	B	11.3	11.7	B	B	D
11	Mountain Av. & Driveway 1	**CSS**	Future Intersection				8.6	9.5	A	A	D
12	Mountain Av. & Driveway 2	**CSS**	Future Intersection				9.1	10.0	A	B	D
13	Mountain Av. & Driveway 3	**CSS**	Future Intersection				9.2	9.5	A	A	D
14	El Prado Rd. & Mountain Av.	CSS	10.5	14.9	B	B	11.2	18.1	B	C	D
15	El Prado Rd. & Pine Av.	AWS	10.2	15.7	B	C	10.7	18.4	B	C	D
16	Driveway 4 & Bickmore Av.	**CSS**	Future Intersection				8.7	9.6	A	A	D
17	Driveway 5 & Bickmore Av.	**CSS**	Future Intersection				8.7	9.7	A	A	D
18	Driveway 6 & Bickmore Av.	**CSS**	Future Intersection				8.7	9.7	A	A	D
19	Euclid Av. (SR-83) & SR-60 WB Ramps	TS	26.4	22.7	C	C	27.6	23.3	C	C	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps	TS	35.3	25.2	D	C	36.4	25.6	D	C	D
21	Euclid Av. (SR-83) & Walnut Av.	TS	32.3	35.5	C	D	32.4	35.7	C	D	E
22	Euclid Av. (SR-83) & Riverside Dr.	TS	**59.0**	**83.7**	**E**	**F**	**61.2**	**91.8**	**E**	**F**	D
23	Euclid Av. (SR-83) & Chino Av.	TS	23.9	27.3	C	C	24.3	28.2	C	C	D
24	Euclid Av. (SR-83) & Schaefer Av.	TS	30.1	33.4	C	C	31.5	35.2	C	D	D
25	Euclid Av. (SR-83) & Edison Av.	TS	51.6	**60.6**	D	**E**	**56.3**	**64.8**	**E**	**E**	D
26	Euclid Av. (SR-83) & Eucalyptus Av.	TS	17.1	16.7	B	B	17.8	17.4	B	B	D
27	Euclid Av. (SR-83) & Merrill Av.	TS	45.5	**71.5**	D	**E**	47.6	**81.6**	D	**F**	D
28	Euclid Av. (SR-83) & Kimball Av.	TS	42.4	52.2	D	D	43.2	**57.1**	D	**E**	D
29	Euclid Av. (SR-83) & Bickmore Av.	TS	18.9	16.1	B	B	20.8	18.5	C	B	D
30	Euclid Av. (SR-83) & Pine Av.	TS	45.3	**101.0**	D	**F**	50.0	**114.4**	D	**F**	D
31	Rincon Meadows Av. & Kimball Av.	TS	2040 Analysis Location				2040 Analysis Location				D
32	Rincon Meadows Av. & Pine Av.	**TS**	10.7	11.3	B	B	11.0	11.9	B	B	D
33	Mill Creek Av. & Kimball Av.	TS	2040 Analysis Location				2040 Analysis Location				D
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	TS	42.1	15.9	D	B	49.6	16.2	D	B	D
35	Cucamonga Av. & Chino Corona Rd.	AWS	Construction Location Only				Construction Location Only				D
36	W. Preserve Loop & Pine Av.	TS	10.3	8.2	B	A	10.6	8.2	B	A	D
37	Main St. & Kimball Av.	TS	2040 Analysis Location				2040 Analysis Location				D
38	Flight Av. & Kimball Av.	CSS	2040 Analysis Location				2040 Analysis Location				D
39	E. Preserve Loop & Pine Av.	TS	8.5	7.3	A	A	8.6	7.4	A	A	D
40	Hellman Av. & Kimball Av.	TS	2040 Analysis Location				2040 Analysis Location				D

Table 7-1

Intersection Analysis for Opening Year Cumulative (2022) Conditions

#	Intersection	Traffic Control[2]	2022 Without Project				2022 With Project				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
41	Hellman Av. & Pine Av./Schleisman Rd.	TS	39.8	42.0	D	D	40.7	43.7	D	D	D
42	Archibald Av. & Limonite Av.	TS	**76.8**	**63.6**	**E**	**E**	**77.2**	**66.5**	**E**	**E**	D
43	Archibald Av. & Schleisman Rd.	TS	**106.7**	**66.0**	**F**	**E**	**116.0**	**77.8**	**F**	**E**	D

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

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

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

[3] Intersection geometrics reflect the completion of Pine Avenue Stages 1-3.

EXHIBIT 7-5: OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT SUMMARY OF LOS

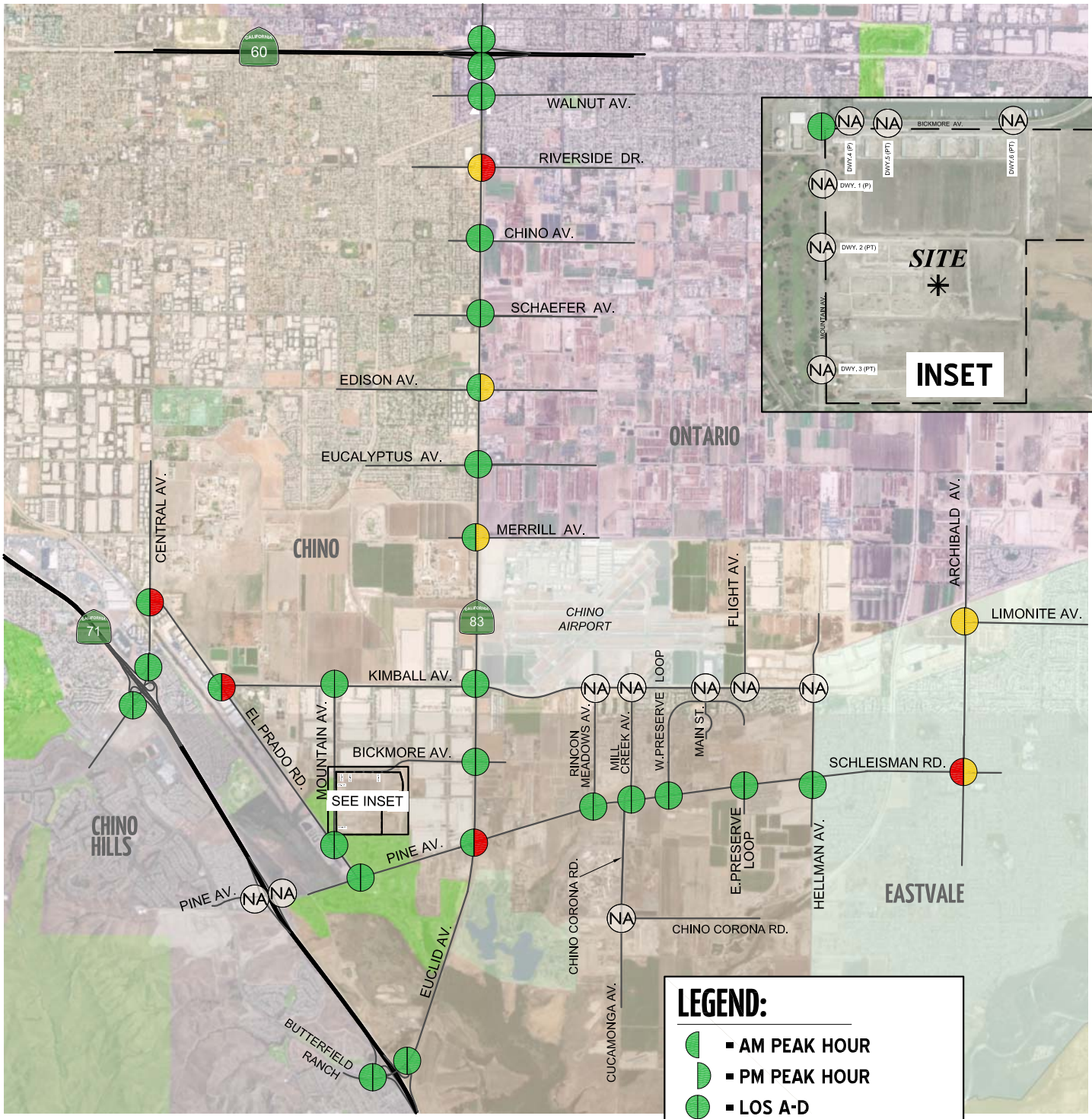


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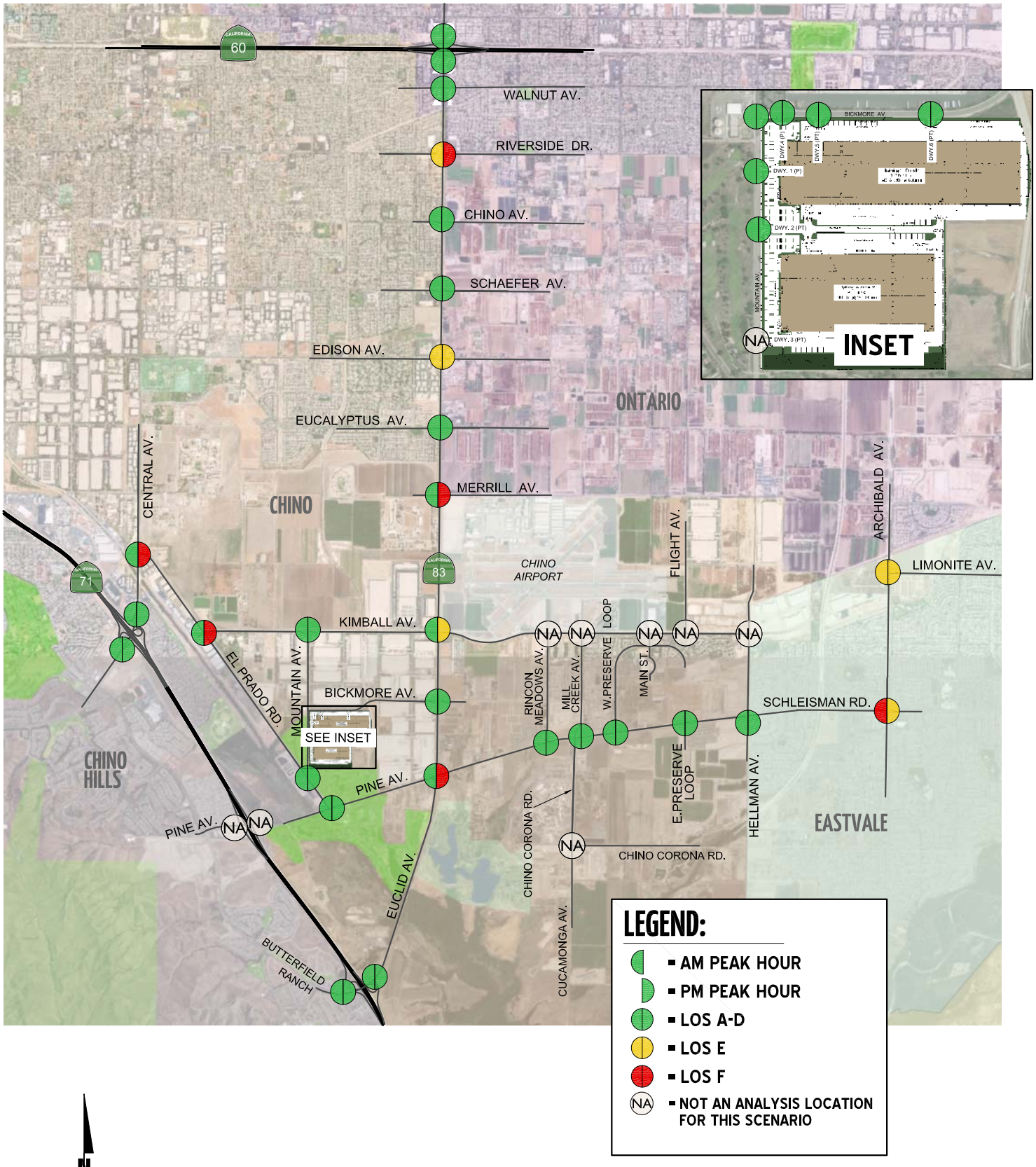
EXHIBIT 7-6: OPENING YEAR CUMULATIVE (2022) WITH PROJECT SUMMARY OF LOS



7.6 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for Opening Year Cumulative (2022) Without and With Project traffic conditions are shown on Table 7-2. As shown on Table 7-2, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with addition of Project traffic. Worksheets for Opening Year Cumulative (2022) Without and With Project traffic conditions off-ramp queuing analysis are provided in Appendices 7.5 and 7.6, respectively.

7.7 FREEWAY FACILITY ANALYSIS

Opening Year Cumulative (2022) Without and With Project mainline directional volumes for the AM and PM peak hours are provided on Exhibits 7-7 and 7-8, respectively. As shown on Table 7-3, the following freeway segments and merge/diverge ramp junctions are anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) for Opening Year Cumulative (2022) Without Project:

- SR-60 Freeway Westbound, West of Euclid Avenue (SR-83) (#24) – LOS E AM and PM peak hours
- SR-60 Freeway Westbound, Euclid Avenue (SR-83) Off-Ramp (#26) – LOS E AM and PM peak hours
- SR-60 Freeway Westbound, East of Euclid Avenue (SR-83) (#27) – LOS E AM and PM peak hours
- SR-60 Freeway Eastbound, East of Euclid Avenue (SR-83) (#31) – LOS E AM peak hour only

With the addition of Project traffic, there are no additional freeway segments or merge/diverge ramp junctions anticipated to operate at an unacceptable LOS during the peak hours, in addition to those previously identified under Opening Year Cumulative (2022) Without Project traffic conditions.

Opening Year Cumulative (2022) Without and With Project basic freeway segment analysis worksheets are provided in Appendix 7.7 and 7.8, respectively.

Table 7-2

Peak Hour Freeway Off-Ramp Queuing Summary for Opening Year Cumulative (2022) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	2022 Without Project				2022 With Project			
			95th Percentile Queue (Feet)[3]		Acceptable?[1]		95th Percentile Queue (Feet)[3]		Acceptable?[1]	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
SR-71 SB Ramps & Central Avenue	SBL	1,530	273	613 [2]	Yes	Yes	297 [2]	636 [2]	Yes	Yes
	SBL/R	740	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 SB Ramps & Pine Avenue	SBL/T	1,370	2040 Analysis Location				2040 Analysis Location			
	SBR	725								
SR-71 SB Ramps & Euclid Avenue (SR-83)	SBL	1,100	233	256	Yes	Yes	233	256	Yes	Yes
	SBL/T	1,560	233	255	Yes	Yes	233	255	Yes	Yes
	SBR	255	0	3	Yes	Yes	0	3	Yes	Yes
SR-71 NB Ramps & Central Avenue	NBL	1,485	35	81	Yes	Yes	35	81	Yes	Yes
	NBL/R	1,070	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 NB Ramps & Pine Avenue	NBL	1,375	2040 Analysis Location				2040 Analysis Location			
	NBL/T	815								
SR-71 NB Ramps & Euclid Avenue (SR-83)	NBL	1,745	28	49	Yes	Yes	28	49	Yes	Yes
	NBR	420	355 [2]	941 [2]	Yes	Yes[3]	412 [2]	967 [2]	Yes	Yes[3]
Euclid Av. (SR-83) & SR-60 WB Ramps	WBL	400	375 [2]	308	Yes	Yes	388 [2]	308	Yes	Yes
	WBL/T/R	1,430	384 [2]	315	Yes	Yes	401 [2]	328 [2]	Yes	Yes
	WBR	400	241	236	Yes	Yes	250	238	Yes	Yes
Euclid Av. (SR-83) & SR-60 EB Ramps	EBL	900	396 [2]	386 [2]	Yes	Yes	396 [2]	386 [2]	Yes	Yes
	EBT/R	1,270	457 [2]	433 [2]	Yes	Yes	477 [2]	442 [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 SR-71 Freeway mainline.

Table 7-3

Freeway Facility Analysis for Opening Year Cumulative (2022) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2022 Without Project				2022 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]
SR-71 Freeway	Southbound	North of Central Avenue	3	9.9	A	19.4	C	10.2	A	19.5	C
		Central Avenue Off-Ramp	3	16.7	B	29.1	D	17.2	B	29.3	D
		Central Avenue Loop On-Ramp	3	9.9	A	14.6	B	9.9	A	14.6	B
		Central Avenue On-Ramp	3	10.4	B	14.6	B	10.4	B	14.6	B
		Central Avenue to Pine Avenue	3	11.1	B	18.2	C	11.1	B	18.2	C
		Pine Avenue Off-Ramp	2	15.3	B	23.4	C	15.3	B	23.4	C
		Pine Avenue On-Ramp	2	13.1	B	12.9	B	13.1	B	12.9	C
		Pine Avenue to Euclid Avenue (SR-83)	2	9.8	A	9.6	A	9.8	A	9.6	A
		Euclid Avenue (SR-83) Off-Ramp	2	14.2	B	13.9	B	14.2	B	13.9	B
		Euclid Avenue (SR-83) Loop On-Ramp	2	10.3	B	10.9	B	10.3	B	11.3	B
		Euclid Avenue (SR-83) On-Ramp	2	16.7	B	17.4	B	16.8	B	17.8	B
		South of Euclid Avenue (SR-83)	2	16.0	B	16.9	B	16.0	B	17.3	B
	Northbound	North of Central Avenue	3	21.6	C	18.6	C	8.0	A	18.9	C
		Central Avenue On-Ramp	3	25.8	C	21.9	C	10.3	B	22.3	C
		Central Avenue Loop On-Ramp	3	19.7	B	17.8	B	14.2	B	17.8	B
		Central Avenue Off-Ramp	3	21.3	C	22.9	C	13.1	B	22.9	C
		Central Avenue to Pine Avenue	3	14.5	B	15.9	B	9.5	A	15.9	B
		Pine Avenue On-Ramp	2	16.8	B	20.0	C	15.3	B	20.0	C
		Pine Avenue Off-Ramp	2	24.0	C	28.2	D	10.4	B	28.2	D
		Pine Avenue to Euclid Avenue (SR-83)	2	18.2	C	22.1	C	6.8	A	22.1	C
		Euclid Avenue (SR-83) On-Ramp	2	20.0	B	24.4	C	9.9	A	24.4	C
		Euclid Avenue (SR-83) Off-Ramp	3	9.5	A	16.8	B	17.2	B	16.9	B
		South of Euclid Avenue (SR-83)	3	11.6	B	20.4	C	10.2	A	20.5	C
SR-60 Freeway	Westbound	West of Euclid Avenue (SR-83)	4	**38.0**	**E**	**35.9**	**E**	**38.0**	**E**	**35.9**	**E**
		Euclid Avenue (SR-83) On-Ramp	4	36.3	D	35.0	D	36.3	D	35.1	D
		Euclid Avenue (SR-83) Off-Ramp	4	**38.6**	**E**	**38.0**	**E**	**38.8**	**E**	**38.1**	**E**
		East of Euclid Avenue (SR-83)	4	**38.6**	**E**	**37.2**	**E**	**38.7**	**E**	**37.2**	**E**
	Eastbound	West of Euclid Avenue (SR-83)	4	34.8	D	28.1	D	34.8	D	28.1	D
		Euclid Avenue (SR-83) Off-Ramp	4	34.9	D	30.8	D	34.9	D	30.8	D
		Euclid Avenue (SR-83) On-Ramp	4	35.8	D	29.7	C	35.9	D	29.8	D
		East of Euclid Avenue (SR-83)	4	**36.6**	**E**	28.8	D	**36.6**	**E**	28.9	D

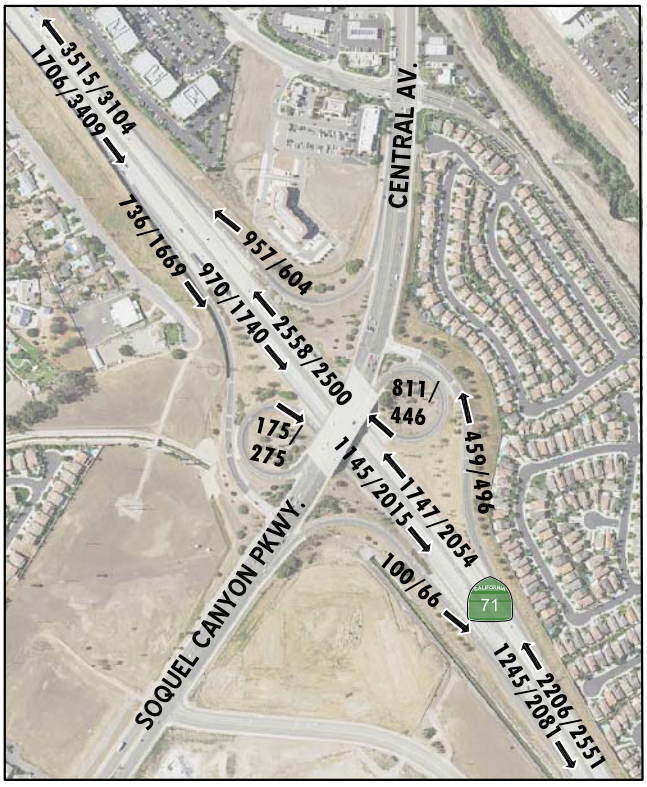
* **BOLD** = Unacceptable Level of Service

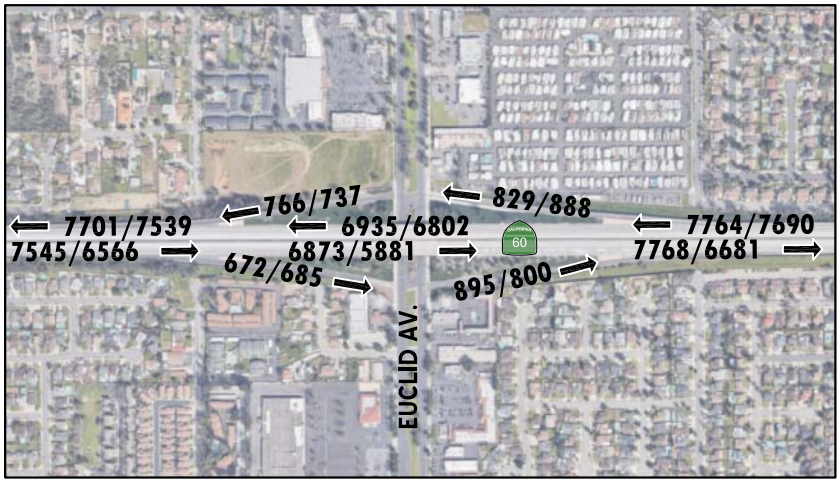
[1] Number of lanes are in the specified direction and is based on existing conditions

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

[3] LOS = Level of Service

EXHIBIT 7-7: OPENING YEAR CUMULATIVE (2022) WITHOUT PROJECT FREEWAY MAINLINE VOLUMES





LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)

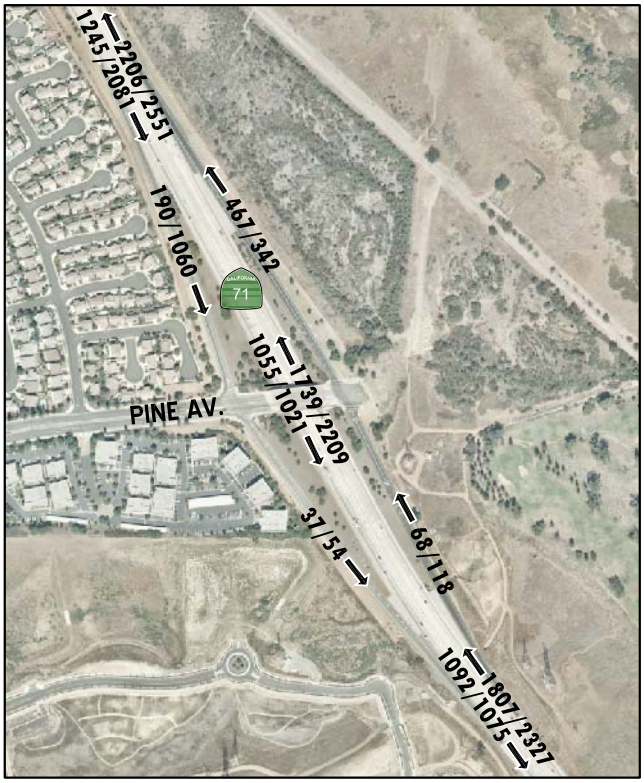


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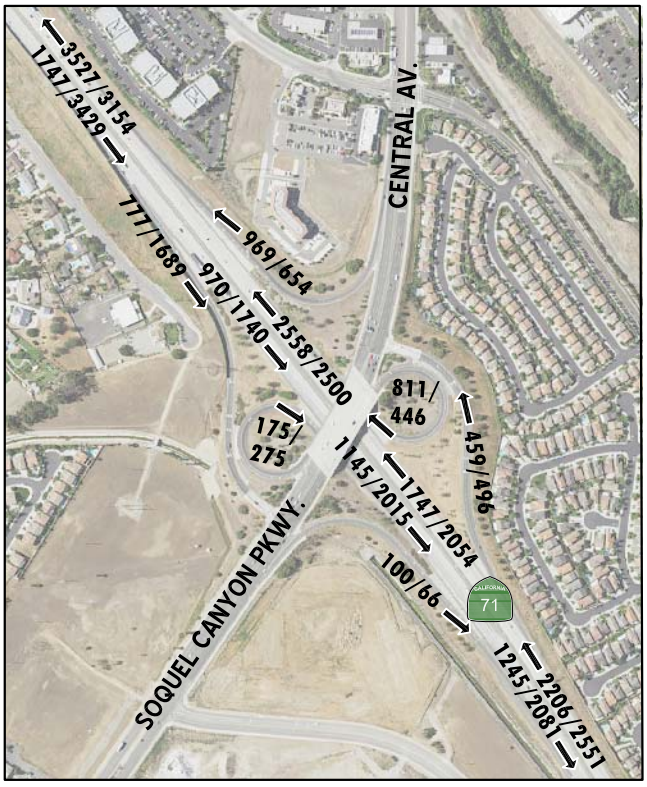
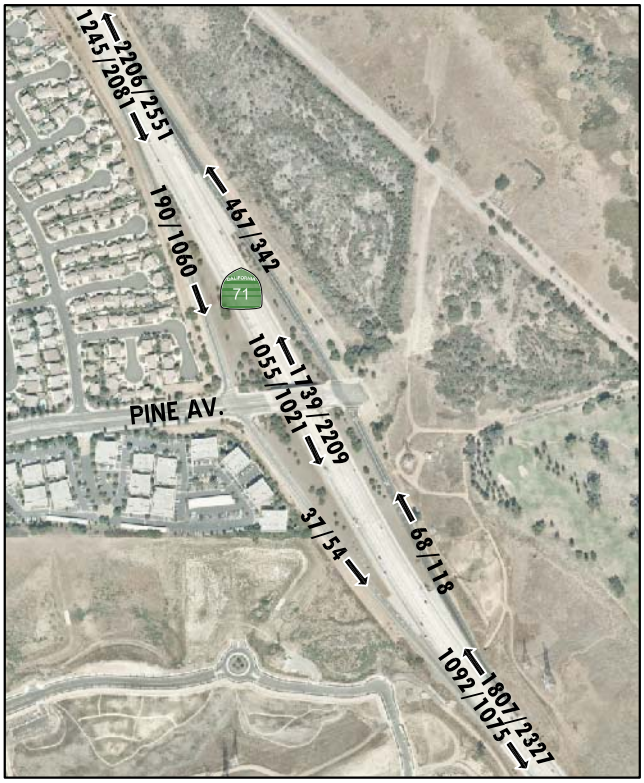
EXHIBIT 7-8: OPENING YEAR CUMULATIVE (2022) WITH PROJECT FREEWAY MAINLINE VOLUMES



LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)



7.8 RECOMMENDED IMPROVEMENTS

7.8.1 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 an acceptable LOS (LOS D or better). The effectiveness of the recommended improvement strategies discussed below to address Opening Year Cumulative (2022) traffic deficiencies is presented on Table 7-4. Worksheets for Opening Year Cumulative (2022) Without and With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 7.9 and Appendix 7.10.

7.8.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 7-2, there are no peak hour queuing issues at the SR-71 Freeway at Euclid Avenue (SR-83) and Euclid Avenue (SR-83) at SR-60 Freeway interchanges for Opening Year Cumulative (2022) Without and With Project traffic conditions. As such, no improvements have been recommended.

7.8.3 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

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 Chino (or other neighboring jurisdictions) on SHS roadway segments. As such, no improvements have been recommended to address the Opening Year Cumulative (2022) Without and With Project deficiencies on the SHS, because there is no feasible mitigation available.

Table 7-4

Intersection Analysis for Opening Year Cumulative (2022) 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
7	Central Av. & El Prado Rd.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	35.0	**81.1**	D	**F**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	30.1	37.5	C	D
	2022 With Project:																	
	-Without Improvements	TS	1	2	1>	1	3	0	1	1	0	1	1	1>	36.9	**87.7**	D	**F**
	-With Improvements	TS	1	2	1>	**2**	3	0	1	1	0	1	1	1>	30.6	40.9	C	D
8	El Prado Rd. & Kimball Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	35.0	**124.9**	C	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	25.4	27.9	C	C
	2022 With Project:																	
	-Without Improvements	TS	1	1	1	1	2	0	1	1	0	0	1	1>	48.8	**132.4**	D	**F**
	-With Improvements	TS	1	1	1	**2**	**1**	0	1	1	0	0	1	1>	25.6	29.4	C	C
22	Euclid Av. (SR-83) & Riverside Dr.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	**59.0**	**83.7**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1>	1	1	**1**	1	2	d	39.9	47.8	D	D
	2022 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	**61.2**	**91.8**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1>	1	1	**1**	1	2	d	40.2	48.7	D	D
25	Euclid Av. (SR-83) & Edison Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	51.6	**60.6**	D	**E**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	1	1	0	38.5	41.3	D	D
	2022 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**56.3**	**64.8**	**E**	**E**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	1	1	0	39.3	42.1	D	D
27	Euclid Av. (SR-83) & Merrill Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	0	0	1	0	0	1	0	45.5	**71.5**	D	**E**
	-With Improvements	TS	1	**3**	1	1	**3**	0	0	1	0	0	1	0	29.2	39.9	C	D
	2022 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	0	0	1	0	0	1	0	47.6	**81.6**	D	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	0	0	1	0	0	1	0	29.9	42.5	C	D
28	Euclid Av. (SR-83) & Kimball Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1>	2	2	1>	2	2	0	1	2	0	42.4	52.2	D	D
	-With Improvements		Not Applicable															
	2022 With Project:																	
	-Without Improvements	TS	1	2	1>	2	2	1>	2	2	0	1	2	0	43.2	**57.1**	D	**E**
	-With Improvements	TS	1	**3**	1>	2	**3**	1>	2	2	0	1	2	0	34.5	41.5	C	D

Table 7-4
Page 2 of 2

Intersection Analysis for Opening Year Cumulative (2022) 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
30	Euclid Av. (SR-83) & Pine Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	45.3	**101.0**	D	**F**
	-With Improvements	TS	1	**3**	**1>>**	1	**3**	0	1	1	1	2	1	0	35.8	39.3	D	D
	2022 With Project:																	
	-Without Improvements	TS	1	2	1>	1	2	0	1	1	1	2	1	0	50.0	**114.4**	D	**F**
	-With Improvements	TS	1	**3**	**1>>**	1	**3**	0	1	1	1	2	1	0	38.6	46.6	D	D
42	Archibald Av. & Limonite Av.																	
	2022 Without Project:																	
	-Without Improvements	TS	0	1	1>	1	1	0	0	0	0	1	0	1>	**76.8**	**63.6**	**E**	**E**
	-With Improvements	TS	0	**2**	1>	1	1	0	0	0	0	1	0	1>	31.7	37.4	C	D
	2022 With Project:																	
	-Without Improvements	TS	0	1	1>	1	1	0	0	0	0	1	0	1>	**77.2**	**66.5**	**E**	**E**
	-With Improvements	TS	0	**2**	1>	1	1	0	0	0	0	1	0	1>	32.1	41.4	C	D
43	Archibald Av. & Schleisman Rd.																	
	2022 Without Project:																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**106.7**	**66.0**	**F**	**E**
	-With Improvements[4]	TS	2	3	1	2	3	1	2	3	1	2	3	1	38.3	33.9	D	C
	2022 With Project:																	
	-Without Improvements	TS	2	3	1	2	3	1	2	3	1	2	3	1	**116.0**	**77.8**	**F**	**E**
	-With Improvements[4]	TS	2	3	1	2	3	1	2	3	1	2	3	1	41.8	35.4	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; d= Defacto 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] TS = Traffic Signal

[4] Improvement consists of modifying the traffic signal to extend the cycle length to 130 seconds.

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, freeway mainline operations, and traffic signal warrant 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:

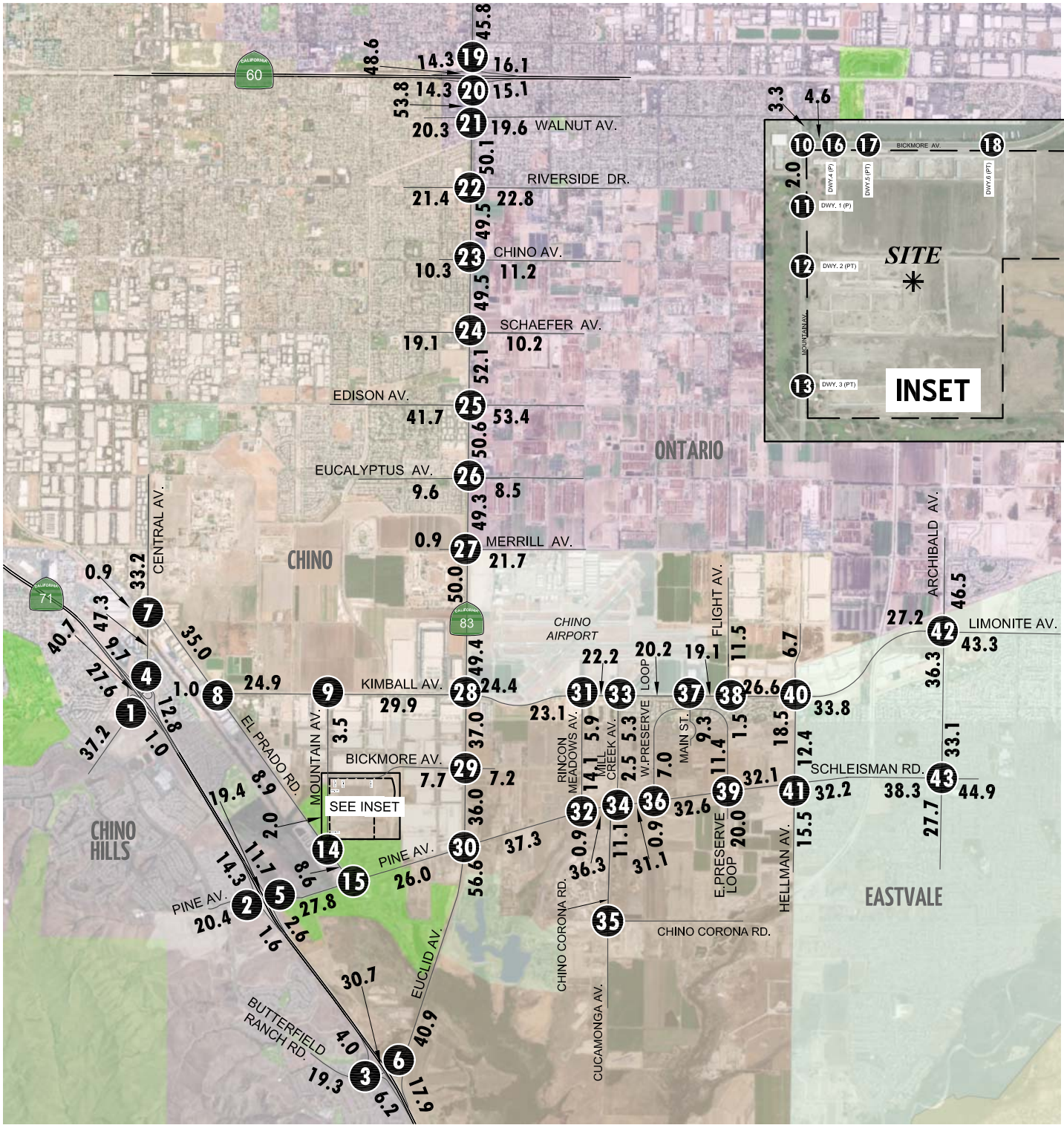
- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed 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 such as the southern extension of Rincon Meadows Avenue on Pine Avenue).
- The Pine Avenue extension between El Prado Road and the SR-71 Freeway is assumed to be in place.
- 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 (e.g., The Preserve Specific Plan roadway network, extension of Kimball Avenue between Hellman Avenue and Archibald Avenue, etc.).

8.2 HORIZON YEAR (2040) TRAFFIC VOLUME FORECASTS

The Horizon Year (2040) Without Project analysis scenario includes the refined post-process volumes obtained from the SBTAM or RivTAM (see Section 4.7 *Horizon Year (2040) Volume Development* of this TIA for a detailed discussion on the post-processing methodology). 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.

The Horizon Year (2040) With Project analysis scenario includes the refined post-process volumes obtained from the SBTAM or RivTAM, plus the traffic generated by the proposed Project (see Section 4.7 *Horizon Year (2040) Volume Development* of this TIA for a detailed discussion on the post-processing methodology). 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.

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



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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EXHIBIT 8-2 (1OF2): HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)

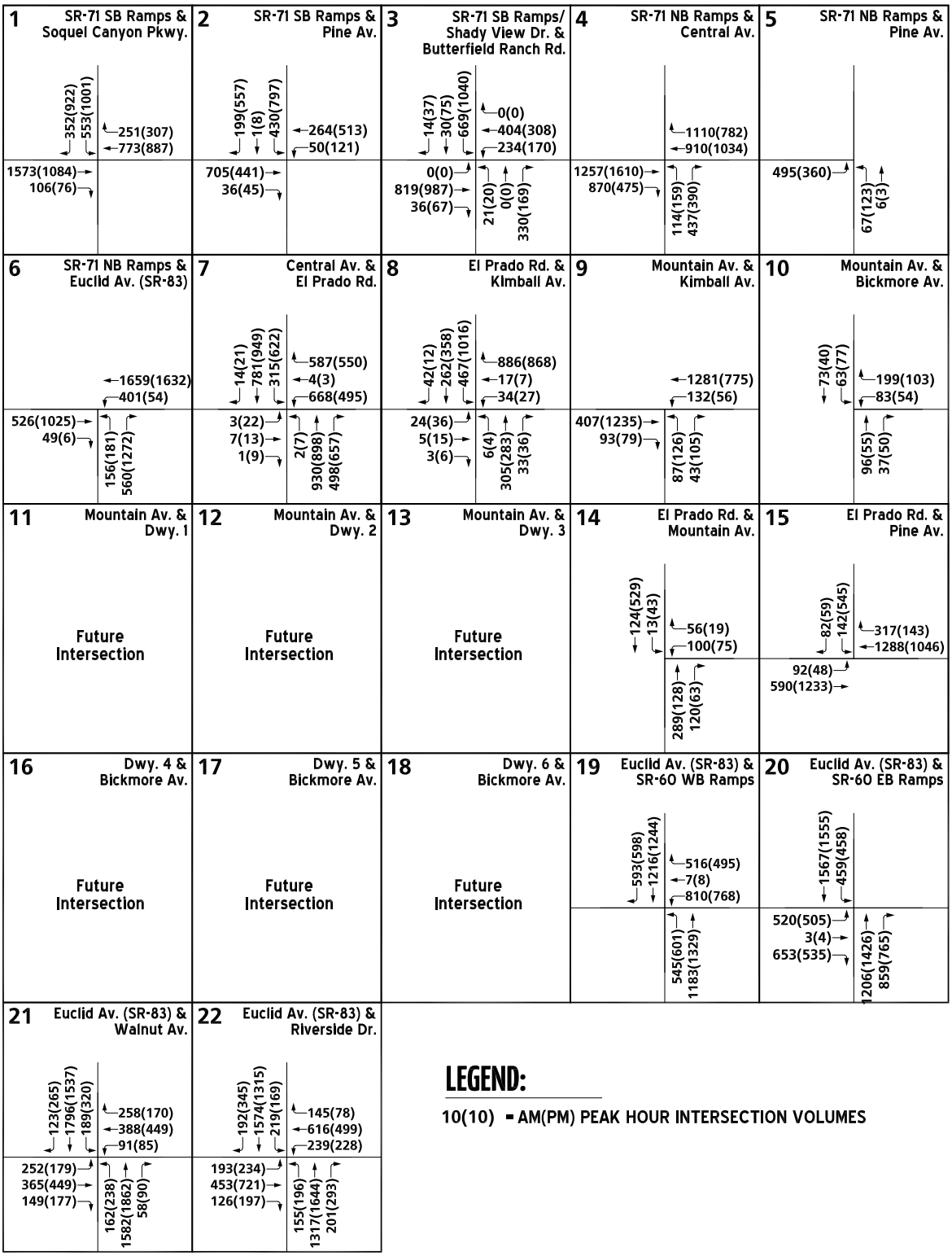


EXHIBIT 8-2 (2OF2): HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES (IN PCE)

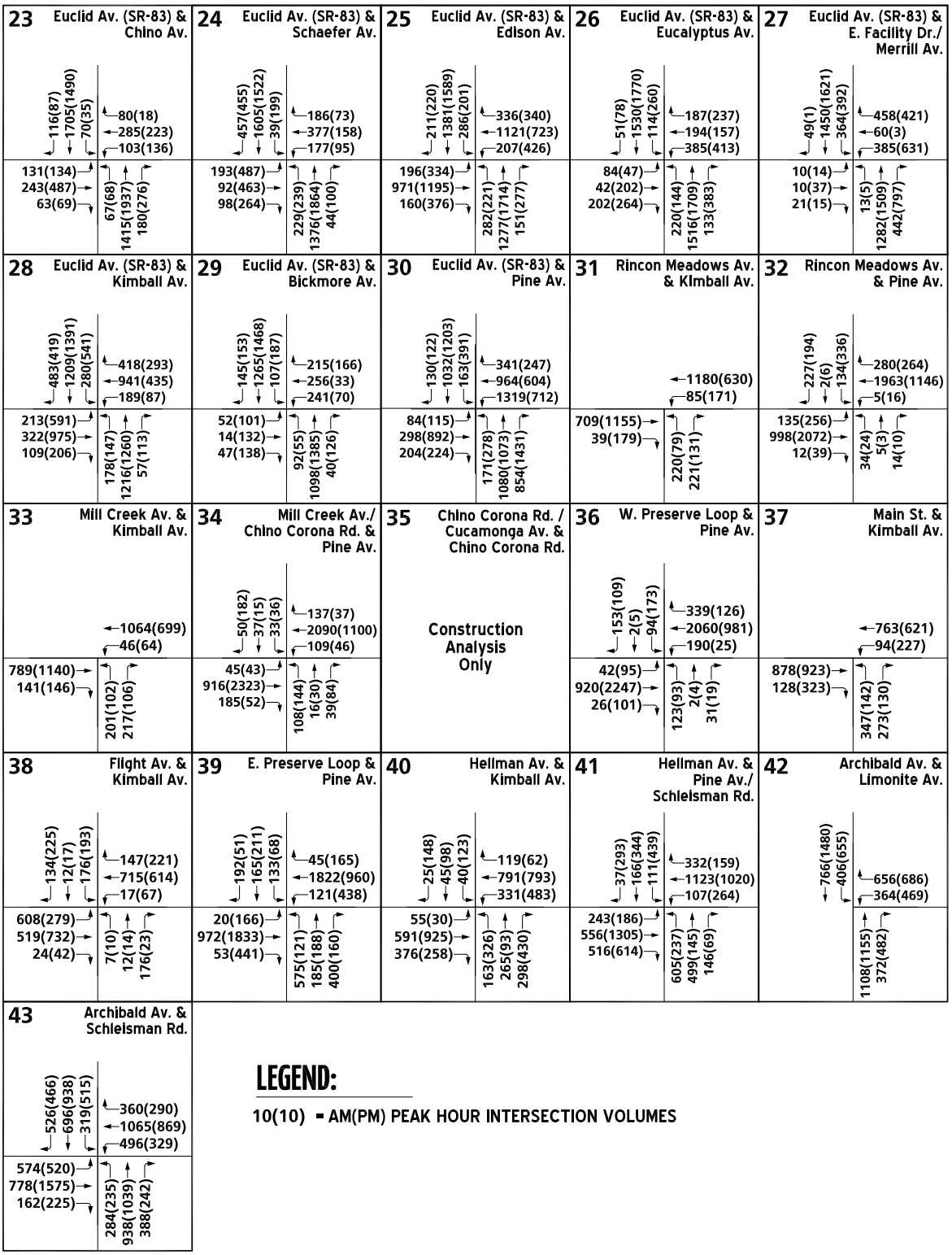
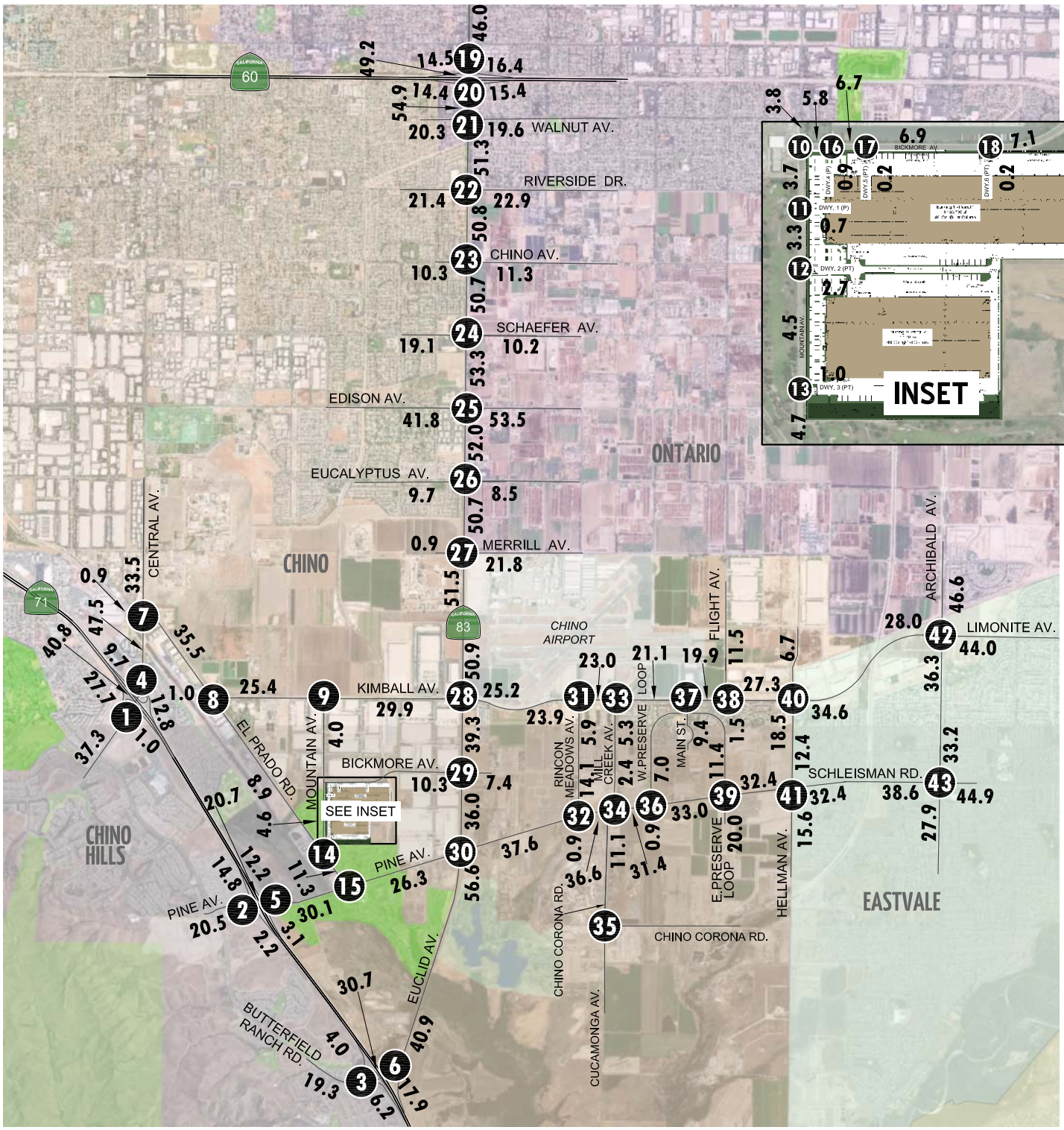


EXHIBIT 8-3: HORIZON YEAR (2040) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT) (IN PCE)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

10349 - adt.dwg

EXHIBIT 8-4 (1OF2): HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)

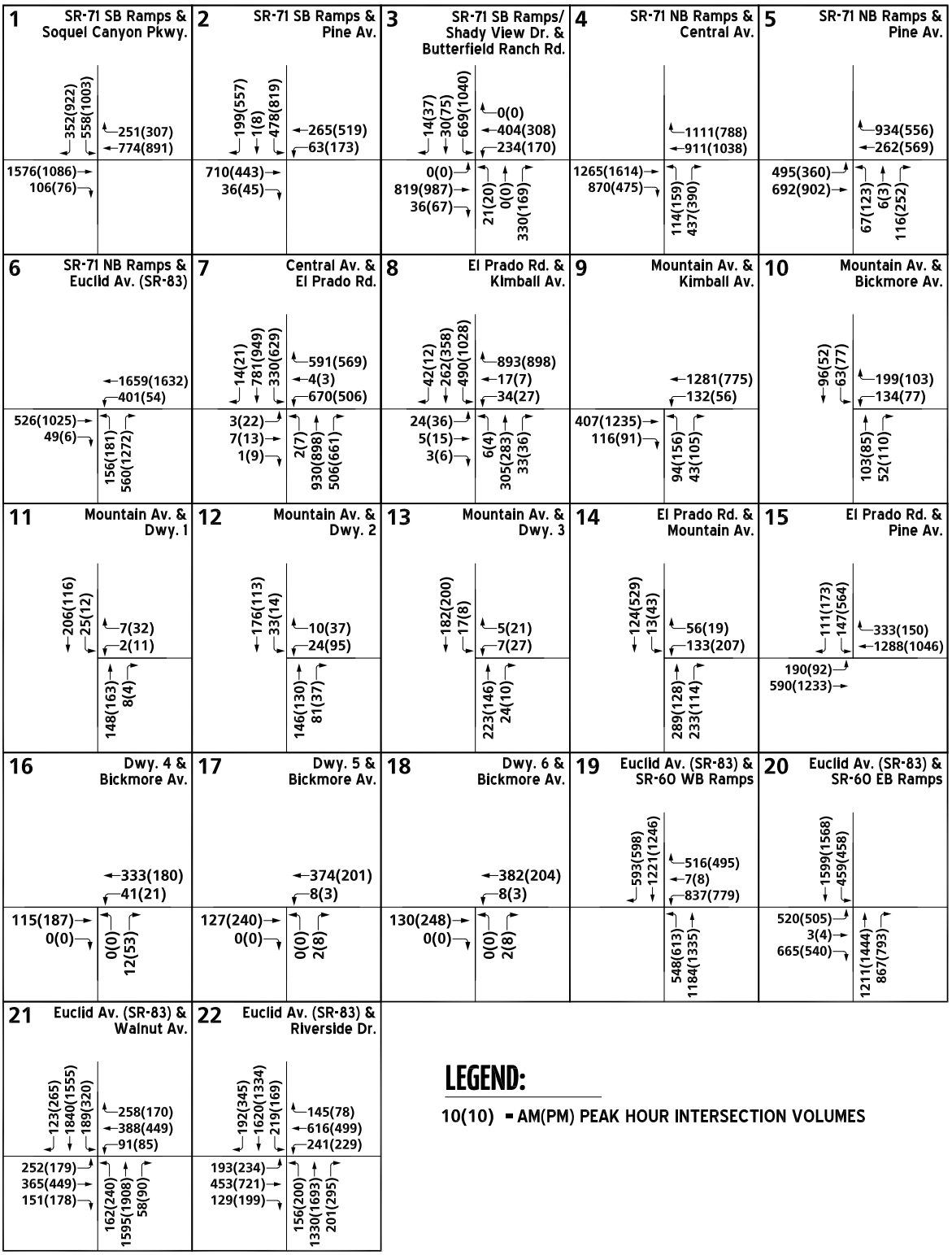
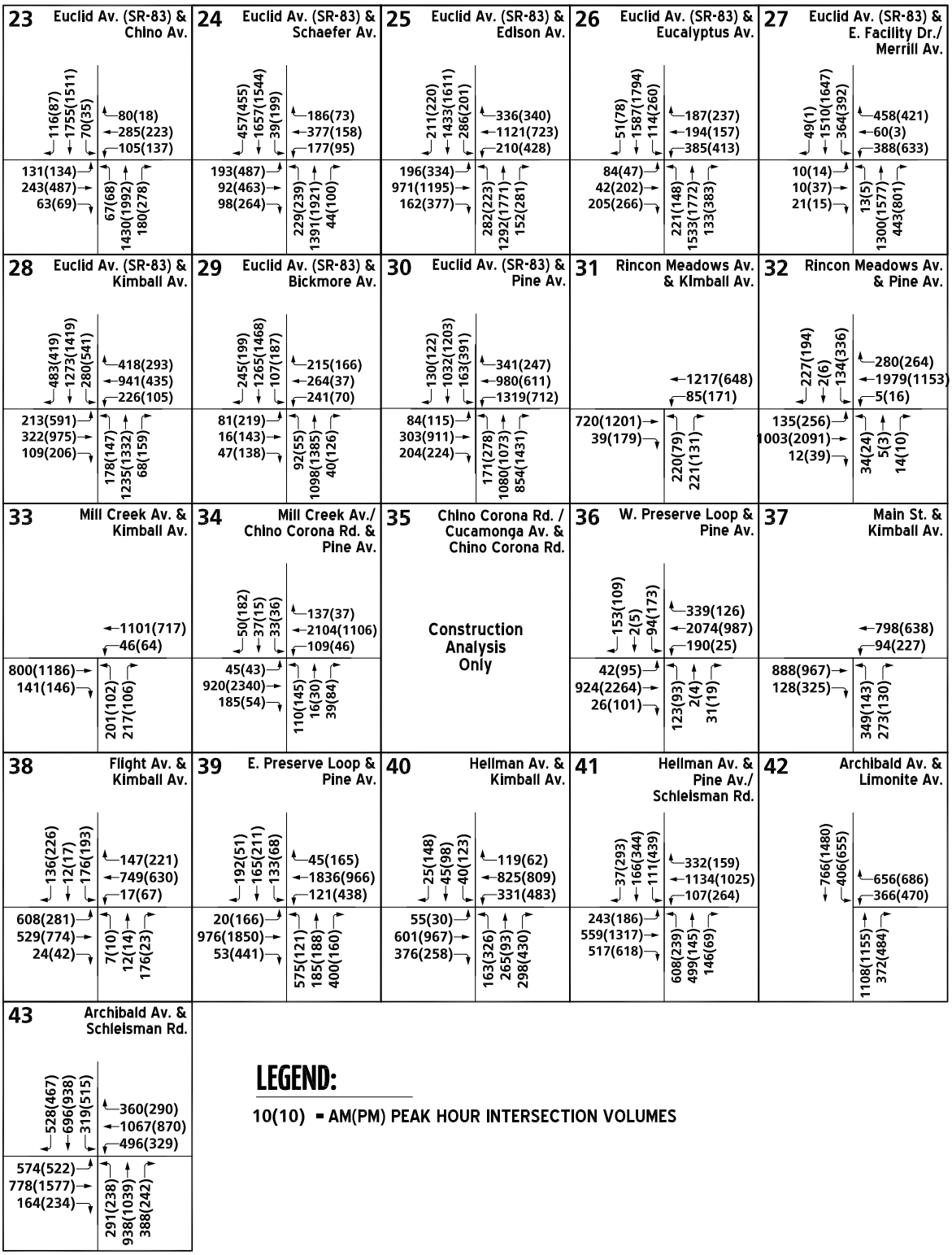


EXHIBIT 8-4 (2OF2): HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES (IN PCE)



8.3 INTERSECTION OPERATIONS ANALYSIS

8.3.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

LOS calculations were conducted for the study intersections to evaluate their operations under Horizon Year (2040) Without Project conditions with roadway and intersection geometrics consistent with Section 8.1 *Roadway Improvements*. As shown on Tables 8-1 and 8-2, the following study area intersections are anticipated to operate at an unacceptable LOS under Horizon Year (2040) Without Project traffic conditions:

- SR-71 Southbound Ramps & Pine Avenue (#2) – LOS F AM peak hour only
- SR-71 Northbound Ramps & Pine Avenue (#5) – LOS F AM and PM peak hours
- El Prado Road & Pine Avenue (#15) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & SR-60 Eastbound Ramps (#20) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Riverside Drive (#22) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Chino Avenue (#23) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Schaefer Avenue (#24) – LOS F AM and PM peak hours
- Euclid Avenue (SR-83) & Edison Avenue (#25) – LOS F AM and PM peak ours
- Euclid Avenue (SR-83) & Eucalyptus Avenue (#26) – LOS E AM peak hour; LOS F PM peak hour
- Euclid Avenue (SR-83) & Merrill Avenue (#27) – LOS F AM and PM peak hours
- Euclid Avenue (SR-830 & Kimball Avenue (#28) – LOS F AM and PM peak hours
- Flight Avenue & Kimball Avenue (#38) – LOS F AM and PM peak hours
- Hellman Avenue & Kimball Avenue (#40) – LOS F PM peak hour only
- Archibald Avenue & Limonite Avenue (#42) – LOS F AM and PM peak hours

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

8.3.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown on Tables 8-1 and illustrated on Exhibit 8-6, the following study area intersection is anticipated to operate at a deficient LOS during one or both peak hours for Horizon Year (2040) With Project traffic conditions with the addition of Project traffic, in addition to the locations identified above for Horizon Year (2040) Without Project traffic conditions:

- El Prado Road & Mountain Avenue (#14) – LOS F PM peak hour only

The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions are included in Appendix 8.2 of this TIA.

Table 8-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
1	SR-71 SB Ramps & Soquel Canyon Rd.	TS	16.0	36.7	B	D	16.1	36.8	B	D	D
2	SR-71 SB Ramps & Pine Av.	TS	**121.0**	40.1	**F**	D	**122.4**	**55.9**	**F**	**E**	D
3	SR-71 SB Ramps & Butterfield Ranch Rd.	TS	**58.3**	**65.9**	**E**	**E**	**58.3**	**65.9**	**E**	**E**	D
4	SR-71 NB Ramps & Central Av.	TS	10.0	8.7	B	A	10.0	8.7	B	A	D
5	SR-71 NB Ramps & Pine Av.	AWS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**	D
6	SR-71 NB Ramps & Euclid Av. (SR-83)	TS	20.1	13.9	C	B	20.1	13.9	C	B	D
7	Central Av. & El Prado Rd.	TS	30.3	**59.8**	C	**E**	31.8	**61.5**	C	**E**	D
8	El Prado Rd. & Kimball Av.	TS	34.6	**121.4**	C	**F**	38.6	**124.2**	D	**F**	D
9	Mountain Av. & Kimball Av.	TS	9.3	14.8	A	B	9.5	15.3	A	B	D
10	Mountain Av. & Bickmore Av.	CSS	11.7	11.1	B	B	13.0	11.9	B	B	D
11	Mountain Av. & Driveway 1	**CSS**	Future Intersection				9.7	9.7	A	A	D
12	Mountain Av. & Driveway 2	**CSS**	Future Intersection				10.9	10.9	B	B	D
13	Mountain Av. & Driveway 3	**CSS**	Future Intersection				10.2	10.2	B	B	D
14	El Prado Rd. & Mountain Av.	CSS	14.5	20.6	B	C	17.3	**64.7**	C	**F**	D
15	El Prado Rd. & Pine Av.	AWS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**	D
16	Driveway 4 & Bickmore Av.	**CSS**	Future Intersection				9.6	9.6	A	A	D
17	Driveway 5 & Bickmore Av.	**CSS**	Future Intersection				9.6	9.6	A	A	D
18	Driveway 6 & Bickmore Av.	**CSS**	Future Intersection				9.7	9.7	A	A	D
19	Euclid Av. (SR-83) & SR-60 WB Ramps	TS	**73.5**	**69.5**	**E**	**E**	**77.9**	**73.0**	**E**	**E**	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps	TS	**100.8**	**81.7**	**F**	**F**	**103.8**	**87.1**	**F**	**F**	D
21	Euclid Av. (SR-83) & Walnut Av.	TS	55.3	59.0	E	E	58.2	62.9	E	E	E
22	Euclid Av. (SR-83) & Riverside Dr.	TS	**129.9**	**>200.0**	**F**	**F**	**136.2**	**>200.0**	**F**	**F**	D
23	Euclid Av. (SR-83) & Chino Av.	TS	**56.5**	**121.9**	**E**	**F**	**61.8**	**128.0**	**E**	**F**	D
24	Euclid Av. (SR-83) & Schaefer Av.	TS	**155.8**	**172.7**	**F**	**F**	**165.1**	**180.7**	**F**	**F**	D
25	Euclid Av. (SR-83) & Edison Av.	TS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	D
26	Euclid Av. (SR-83) & Eucalyptus Av.	TS	**69.2**	**155.8**	**E**	**F**	**75.9**	**162.8**	**E**	**F**	D
27	Euclid Av. (SR-83) & Merrill Av.	TS	**117.6**	**>200.0**	**F**	**F**	**120.8**	**>200.0**	**F**	**F**	D
28	Euclid Av. (SR-83) & Kimball Av.	TS	**101.3**	**152.6**	**F**	**F**	**114.1**	**163.3**	**F**	**F**	D
29	Euclid Av. (SR-83) & Bickmore Av.	TS	49.4	40.5	D	D	52.4	49.5	D	D	D
30	Euclid Av. (SR-83) & Pine Av.	TS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	D
31	Rincon Meadows Av. & Kimball Av.	TS	31.4	26.4	C	C	36.0	27.5	D	C	D
32	Rincon Meadows Av. & Pine Av.	**TS**	**57.7**	**107.7**	**E**	**F**	**59.6**	**109.8**	**E**	**F**	D
33	Mill Creek Av. & Kimball Av.	TS	26.2	15.3	C	B	30.3	16.0	C	B	D
34	Mill Creek Av./Chino-Corona Rd. & Pine Av.	TS	**175.6**	**62.4**	**F**	**E**	**178.8**	**64.2**	**F**	**E**	D
35	Cucamonga Av. & Chino Corona Rd.	AWS	Construction Location Only				Construction Location Only				D
36	W. Preserve Loop & Pine Av.	TS	**72.7**	36.0	**E**	D	**74.4**	36.9	**E**	D	D
37	Main St. & Kimball Av.	TS	24.6	25.0	C	C	25.5	26.1	C	C	D
38	Flight Av. & Kimball Av.	CSS	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**	D
39	E. Preserve Loop & Pine Av.	TS	**160.3**	**>200.0**	**F**	**F**	**161.3**	**>200.0**	**F**	**F**	D
40	Hellman Av. & Kimball Av.	TS	32.9	**>200.0**	C	**F**	33.4	**>200.0**	C	**F**	D

Table 8-1

Intersection Analysis for Horizon Year (2040) Conditions

#	Intersection	Traffic Control[2]	2040 Without Project				2040 With Project				Acceptable LOS
			Delay[1] (secs.)		Level of Service		Delay[1] (secs.)		Level of Service		
			AM	PM	AM	PM	AM	PM	AM	PM	
41	Hellman Av. & Pine Av./Schleisman Rd.	TS	41.6	46.7	D	D	41.8	47.0	D	D	D
42	Archibald Av. & Limonite Av.	TS	**>200.0**	**>200.0**	**F**	**F**	**>200.0**	**>200.0**	**F**	**F**	D
43	Archibald Av. & Schleisman Rd.	TS	**>200.0**	**152.3**	**F**	**F**	**>200.0**	**152.8**	**F**	**F**	D

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

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

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

[3] Includes additional lanes consistent with the planned Pine Avenue extension.

[4] Intersection geometrics reflect the completion of Pine Avenue Stages 1-3.

[5] Assumes signalization of the intersection and the buildout of the east leg.

[6] Assumes the buildout of the west leg.

[7] Assumes new interchange improvements at I-15 Freeway and Limonite Avenue.

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

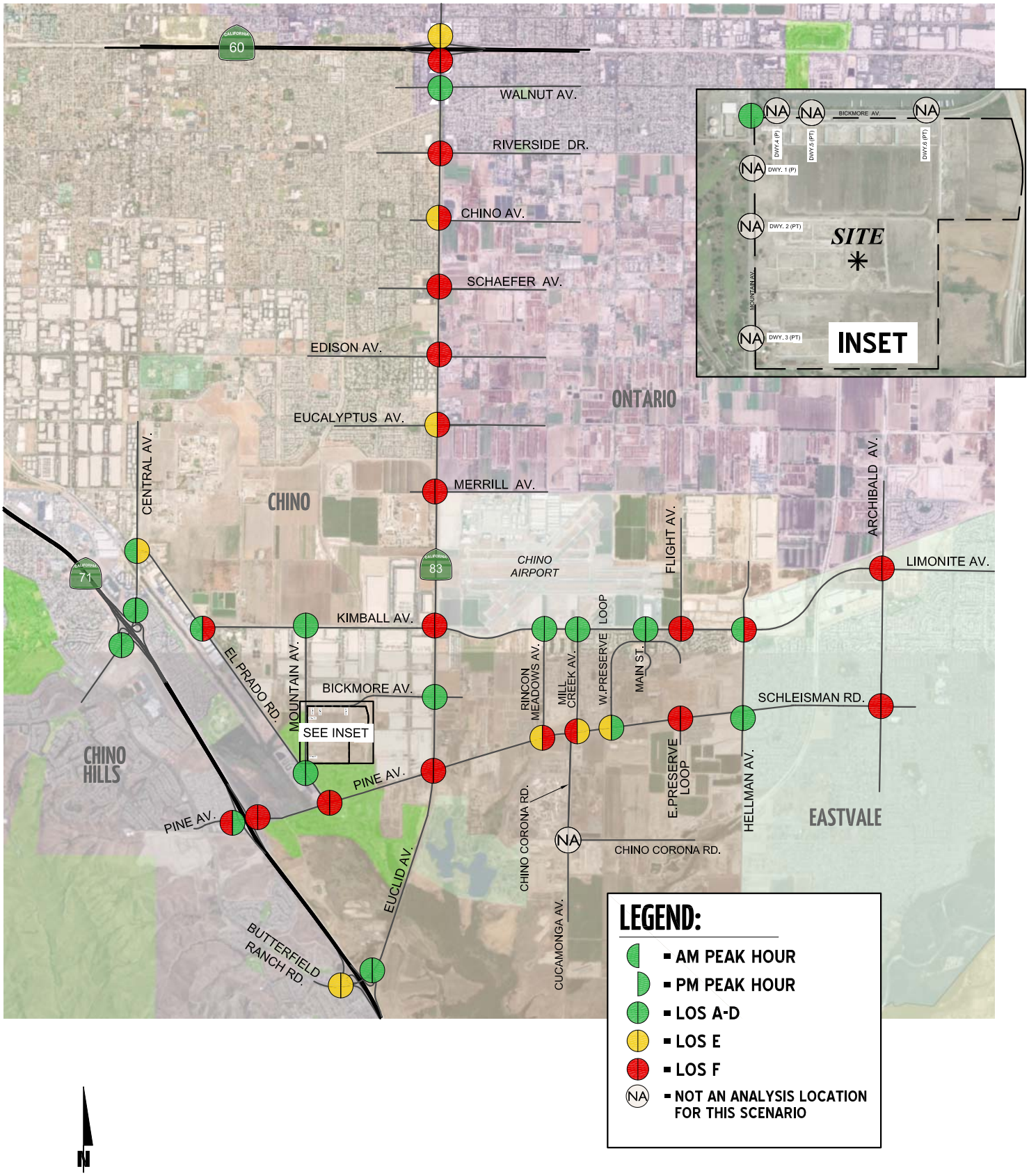
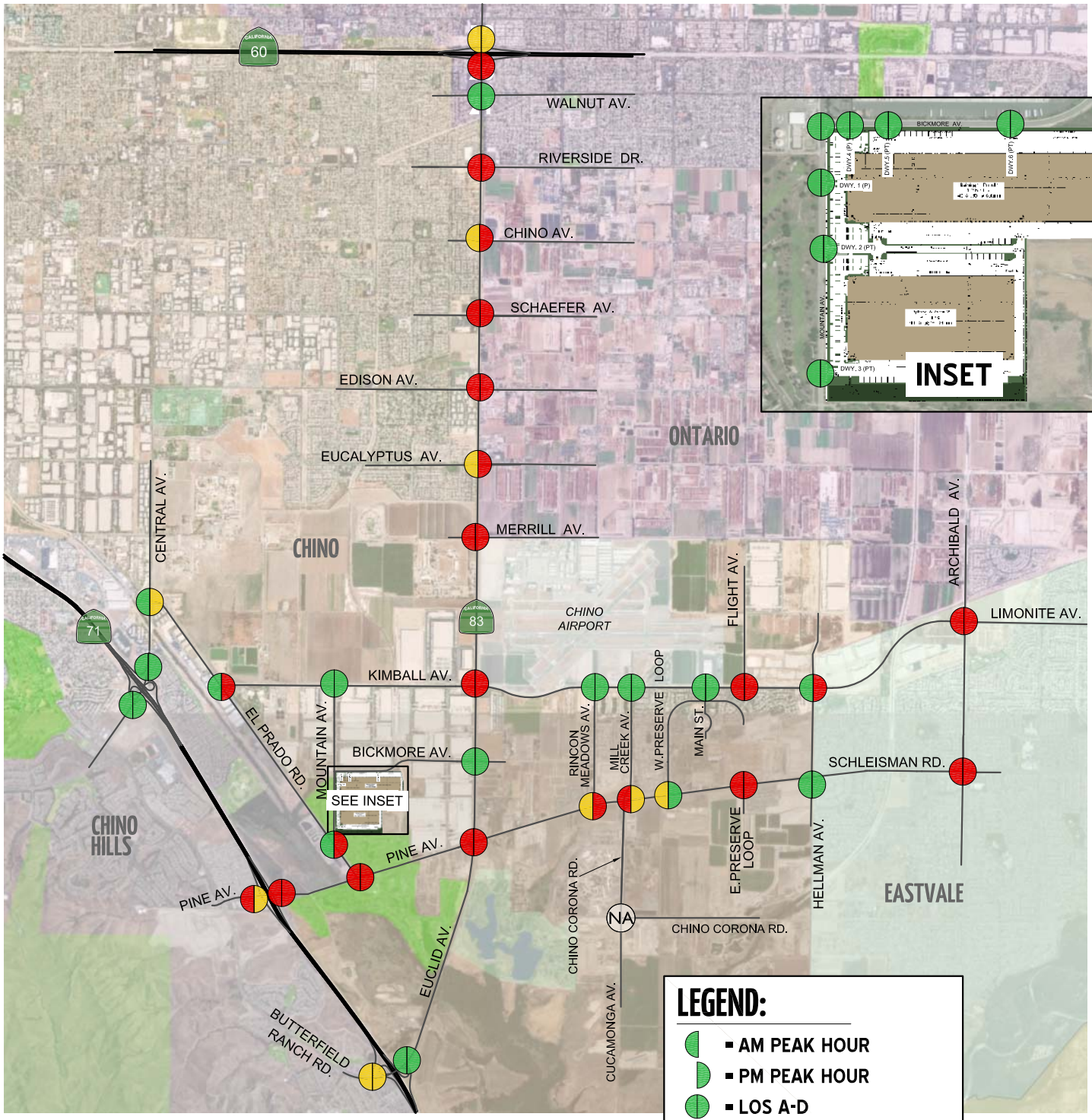


EXHIBIT 8-6: HORIZON YEAR (2040) WITH PROJECT SUMMARY OF LOS



8.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

The following study area intersections are anticipated to meet either ADT or peak hour volume-based traffic signal warrants for Horizon Year (2040) Without Project traffic conditions in addition to those previously warranted under Existing traffic conditions:

- SR-71 Northbound Ramps & Pine Avenue (#5)
- Rincon Meadows Avenue & Pine Avenue (#32)

Worksheets for Horizon Year (2040) Without Project traffic conditions signal warrants are provided in Appendix 8.3.

There are no additional study area intersections anticipated to meet either ADT or peak hour volume-based traffic signal warrants for Horizon Year (2040) With Project traffic conditions, in addition to those warranted previously (see Appendix 8.4).

8.5 OFF-RAMP QUEUING ANALYSIS

Queuing analysis findings for Horizon Year (2040) traffic conditions are presented on Table 8-2. As shown on Table 8-2, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for Horizon Year (2040) Without Project traffic conditions. Similarly, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows with addition of Project traffic. Worksheets for Horizon Year (2040) traffic conditions off-ramp queuing analysis are provided in Appendices 8.5 and 8.6.

8.6 FREEWAY FACILITY ANALYSIS

Horizon Year (2040) mainline directional volumes for the AM and PM peak hours are provided on Exhibits 8-7 and 8-8. As shown on Table 8-3, the following freeway segments and 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:

- SR-71 Freeway Southbound, South of Euclid Avenue (SR-83) (#12) – LOS E AM peak hour only
- SR-60 Freeway Westbound, West of Euclid Avenue (SR-83) (#24) – LOS E AM and PM peak hours
- SR-60 Freeway Westbound, Euclid Avenue (SR-83) Off-Ramp (#26) – LOS E AM peak hour; LOS F PM peak hour
- SR-60 Freeway Westbound, East of Euclid Avenue (SR-83) (#27) – LOS E AM peak hour; LOS F PM peak hour
- SR-60 Freeway Eastbound, West of Euclid Avenue (SR-83) (#28) – LOS F PM peak hour only
- SR-60 Freeway Eastbound, Euclid Avenue (SR-83) Off-Ramp (#29) – LOS E AM peak hour; LOS F PM peak hour
- SR-60 Freeway Eastbound, Euclid Avenue (SR-83) On-Ramp (#30) – LOS F PM peak hour only
- SR-60 Freeway Eastbound, East of Euclid Avenue (SR-83) (#31) – LOS F PM peak hour only

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)[3]		Acceptable?[1]		95th Percentile Queue (Feet)[3]		Horizon Year (2040)	
			AM Peak Hour	PM Peak Hour	AM	PM	AM Peak Hour	PM Peak Hour	AM	PM
SR-71 SB Ramps & Central Avenue	SBL	1,530	297 [2]	656 [2]	Yes	Yes	295 [2]	658 [2]	Yes	Yes
	SBL/R	740	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 SB Ramps & Pine Avenue	SBL/T	1,370	236	599 [2]	Yes	Yes	272	622 [2]	Yes	Yes
	SBR	725	30	240	Yes	Yes	30	242	Yes	Yes
SR-71 SB Ramps & Euclid Avenue (SR-83)	SBL	1,100	232	470 [2]	Yes	Yes	232	470 [2]	Yes	Yes
	SBL/T	1,560	233	484 [2]	Yes	Yes	233	484 [2]	Yes	Yes
	SBR	255	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 NB Ramps & Central Avenue	NBL	1,485	54	85	Yes	Yes	54	85	Yes	Yes
	NBL/R	1,070	0	0	Yes	Yes	0	0	Yes	Yes
SR-71 NB Ramps & Pine Avenue	NBL	1,375	15	35	Yes	Yes	15	35	Yes	Yes
	NBL/T	815	20	90	Yes	Yes	33	105	Yes	Yes
SR-71 NB Ramps & Euclid Avenue (SR-83)	NBL	1,745	70	63	Yes	Yes	70	63	Yes	Yes
	NBR	420	157 [2]	1,226 [2,3]	Yes	Yes	157 [2]	1,226 [2,3]	Yes	Yes
Euclid Av. (SR-83) & SR-60 WB Ramps	WBL	400	493 [2,3]	420 [2,3]	Yes	Yes	503 [2,3]	428 [2,3]	Yes	Yes
	WBL/T/R	1,430	510 [2]	447 [2]	Yes	Yes	537 [2]	447 [2]	Yes	Yes
	WBR	400	388 [2]	326 [2]	Yes	Yes	395 [2]	334 [2]	Yes	Yes
Euclid Av. (SR-83) & SR-60 EB Ramps	EBL	900	518 [2]	489 [2]	Yes	Yes	518 [2]	489 [2]	Yes	Yes
	EBT/R	1,270	883 [2]	687 [2]	Yes	Yes	903 [2]	695 [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 SR-71 Freeway mainline.

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]
SR-71 Freeway	Southbound	North of Central Avenue	3	12.2	B	19.1	C	12.6	B	19.3	C
		Central Avenue Off-Ramp	3	19.0	B	26.4	C	19.4	B	26.6	C
		Central Avenue Loop On-Ramp	3	8.6	A	14.1	B	8.9	A	14.2	B
		Central Avenue On-Ramp	3	15.5	B	21.4	C	15.8	B	21.5	C
		Central Avenue to Pine Avenue	3	17.9	B	28.5	D	18.2	C	28.8	D
		Pine Avenue Off-Ramp	2	23.1	C	45.0	D	23.4	C	45.0	D
		Pine Avenue On-Ramp	2	18.7	B	17.3	B	18.8	B	17.7	B
		Pine Avenue to Euclid Avenue (SR-83)	2	15.3	B	13.2	B	15.4	B	13.4	B
		Euclid Avenue (SR-83) Off-Ramp	2	20.4	C	18.9	B	20.5	C	19.4	B
		Euclid Avenue (SR-83) Loop On-Ramp	2	21.3	C	17.4	B	21.4	C	17.9	B
		Euclid Avenue (SR-83) On-Ramp	2	34.9	D	28.1	C	35.1	D	28.6	D
		South of Euclid Avenue (SR-83)	2	**35.5**	**E**	27.7	D	**35.6**	**E**	28.2	D
	Northbound	North of Central Avenue	3	17.6	B	18.1	C	17.6	B	18.4	C
		Central Avenue On-Ramp	3	20.5	C	21.6	C	20.6	C	21.9	C
		Central Avenue Loop On-Ramp	3	17.2	B	17.0	B	17.2	B	17.3	B
		Central Avenue Off-Ramp	3	23.2	C	24.8	C	23.3	C	25.0	C
		Central Avenue to Pine Avenue	3	16.3	B	17.1	B	16.3	B	17.4	B
		Pine Avenue On-Ramp	2	15.0	B	17.5	B	15.0	B	17.5	B
		Pine Avenue Off-Ramp	2	24.2	C	32.6	D	24.6	C	32.8	D
		Pine Avenue to Euclid Avenue (SR-83)	2	18.5	C	26.6	D	18.8	C	26.8	D
		Euclid Avenue (SR-83) On-Ramp	2	20.5	C	29.6	D	20.7	C	29.8	D
		Euclid Avenue (SR-83) Off-Ramp	3	13.1	B	24.7	C	13.3	B	24.8	C
		South of Euclid Avenue (SR-83)	3	15.9	B	28.9	D	16.1	B	29.0	D
SR-60 Freeway	Westbound	West of Euclid Avenue (SR-83)	4	**35.5**	**E**	**42.9**	**E**	**35.5**	**E**	**42.9**	**E**
		Euclid Avenue (SR-83) On-Ramp	4	35.4	D	40.8	D	35.4	D	40.8	D
		Euclid Avenue (SR-83) Off-Ramp	4	**41.3**	**E**	**43.4**	**F**	**41.5**	**E**	**43.4**	**F**
		East of Euclid Avenue (SR-83)	4	**38.1**	**E**	**45.0**	**F**	**38.2**	**E**	**45.0**	**F**
	Eastbound	West of Euclid Avenue (SR-83)	4	32.9	D	**45.0**	**F**	33.0	D	**45.0**	**F**
		Euclid Avenue (SR-83) Off-Ramp	4	**36.4**	**E**	**50.1**	**F**	**36.5**	**E**	**50.1**	**F**
		Euclid Avenue (SR-83) On-Ramp	4	34.9	D	**55.3**	**F**	35.0	D	**55.3**	**F**
		East of Euclid Avenue (SR-83)	4	34.7	D	**38.4**	**F**	34.8	D	**38.4**	**F**

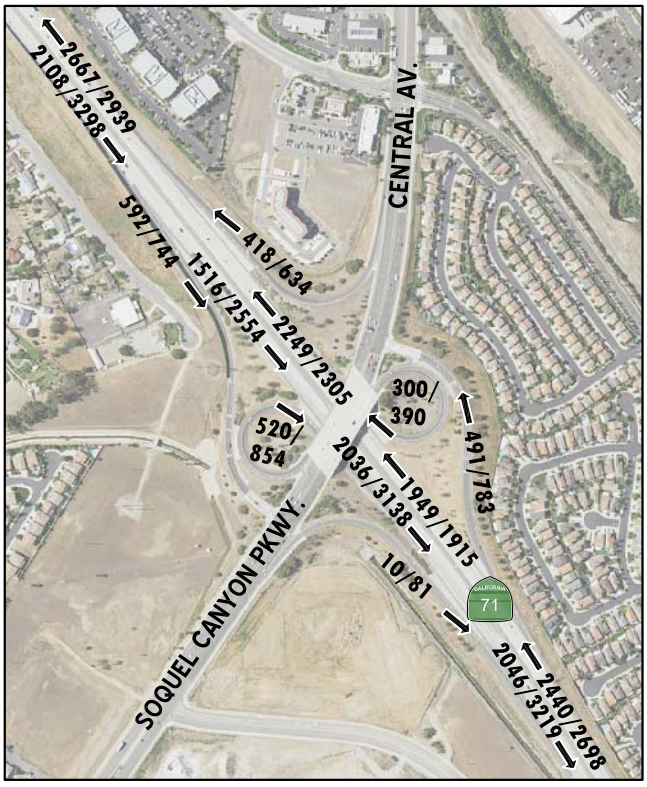
* **BOLD** = Unacceptable Level of Service

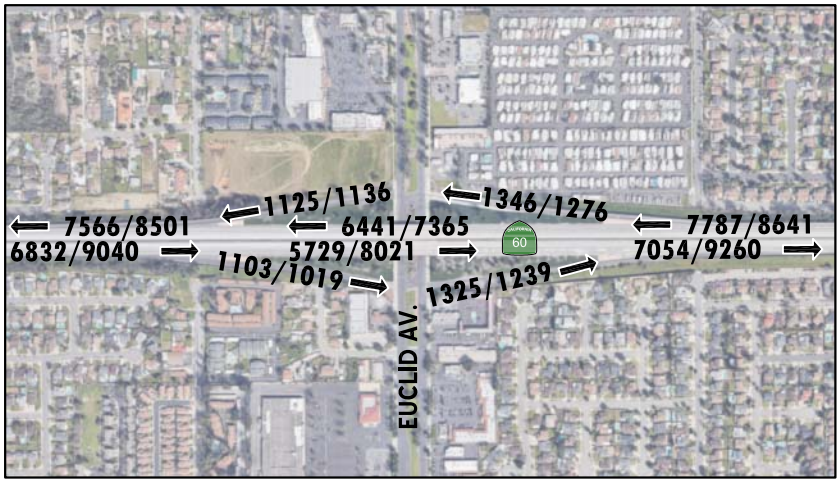
[1] Number of lanes are in the specified direction and is based on existing conditions.

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

[3] LOS = Level of Service

EXHIBIT 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)

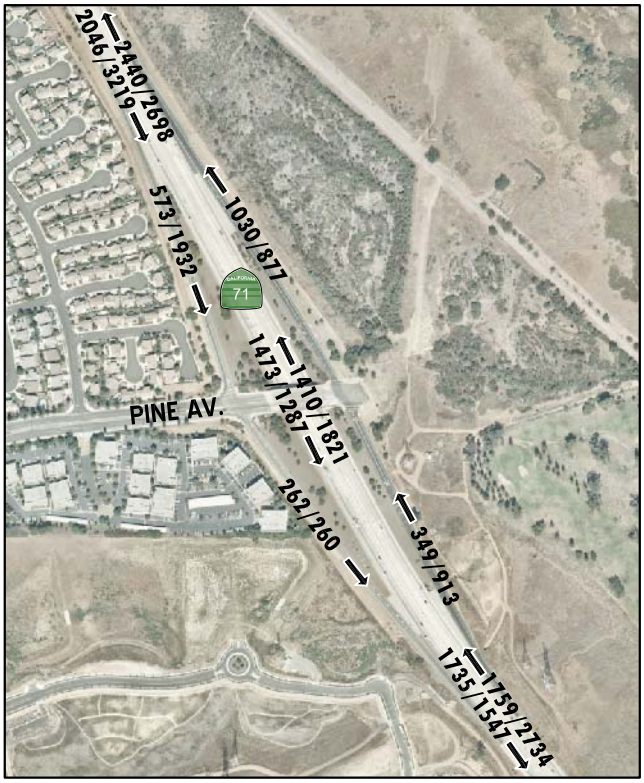


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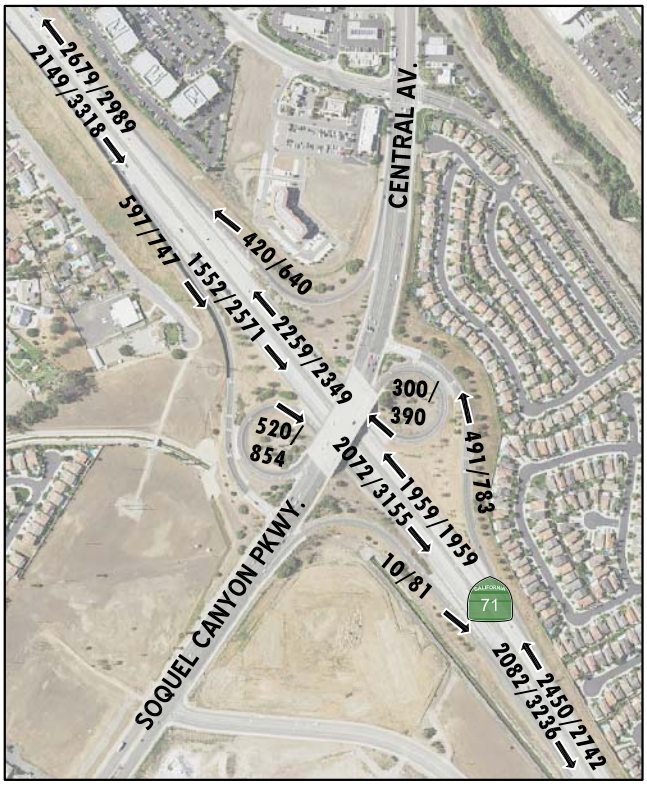
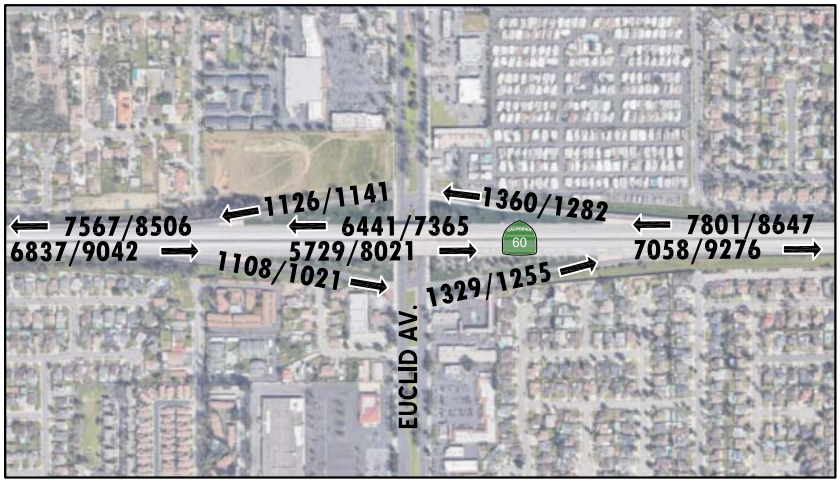
EXHIBIT 8-8: HORIZON YEAR (2040) WITH PROJECT FREEWAY MAINLINE VOLUMES

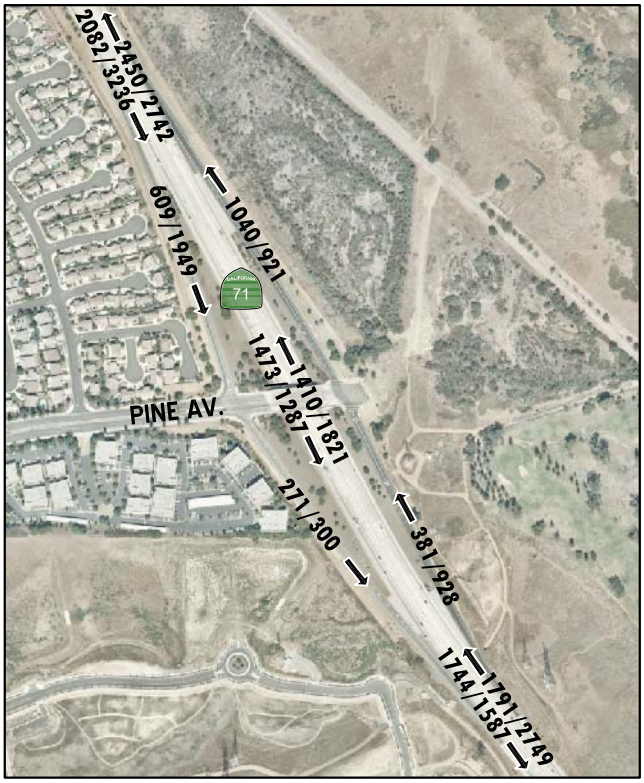




LEGEND:

⟵ 100/200 = AM/PM PEAK HOUR VOLUMES

NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)



N

There are no additional freeway segments or merge/diverge ramp junctions that are anticipated to operate at an unacceptable LOS during the peak hours with the addition of Project traffic. Horizon Year (2040) basic freeway segment analysis worksheets are provided in Appendix 8.7 and 8.8, respectively.

8.7 HORIZON YEAR (2040) DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

8.7.1 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 an acceptable LOS (LOS D or better). The effectiveness of the recommended improvement strategies discussed below to address Horizon Year (2040) traffic deficiencies is presented on Table 8-4.

Although the following intersections are anticipated to operate at a deficient LOS for Horizon Year (2040) traffic conditions, the Project is anticipated to contribute less than 50 peak hour trips:

- SR-71 Southbound Ramps & Butterfield Ranch Road (#2)
- Central Avenue & El Prado Road (#7)
- El Prado Road & Kimball Avenue (#8)
- Euclid Avenue (SR-83) & SR-60 Westbound Ramps (#19)
- Euclid Avenue (SR-83) & Pine Avenue (#30)
- Rincon Meadows Avenue & Pine Avenue (#32)
- Mill Creek Avenue/Chino Corona Road & Pine Avenue (#34)
- W. Preserve Loop & Pine Avenue (#36)
- E. Preserve Loop & Pine Avenue (#39)
- Archibald Avenue & Schleisman Road (#43)

As such, the impact at these locations are less than significant and improvements have not been recommended at these locations.

The Project Applicant shall participate in the funding of off-site improvements, including traffic signals that are needed to serve cumulative traffic conditions through the payment of City of Chino DIF (if the improvements are included in the DIF program) or on a fair share basis (if the improvements are not included in the DIF program). These fees shall be collected by the City of Chino, 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. Each of the improvements discussed above have been identified as being included as part of City DIF fee program or fair share contribution in Section 9 *Local and Regional Funding Mechanisms* of this TIA.

Worksheets for Horizon Year (2040) Without and With Project conditions, with improvements, HCM calculation worksheets are provided in Appendix 8.9 and Appendix 8.10, respectively.

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
2	SR-71 SB Ramps & Pine Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	0	0	0	0	1	1	0	1	1	1	2	0	**121.0**	**40.1**	**F**	**D**
	-With Improvements	TS	0	0	0	**1**	1	**0**	0	**2**	**0**	1	2	0	22.2	27.1	C	C
	2040 With Project:																	
	-Without Improvements	TS	0	0	0	0	1	1	0	1	1	1	2	0	**122.4**	**55.9**	**F**	**E**
	-With Improvements	TS	0	0	0	**1**	1	**0**	0	**2**	**0**	1	2	0	23.1	29.7	C	C
5	SR-71 NB Ramps & Pine Av.																	
	2040 Without Project:																	
	-Without Improvements[4]	AWS	1	1	0	0	0	0	**1**	**1**	0	0	**1**	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements[4]	**TS**	**0**	1	**1**	0	0	0	**2**	**1**	0	0	**2**	**1**	18.4	21.5	B	C
	2040 With Project:																	
	-Without Improvements[4]	AWS	1	1	0	0	0	0	**1**	**1**	0	0	**1**	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements[4]	**TS**	**0**	1	**1**	0	0	0	**2**	**1**	0	0	**2**	**1**	24.2	22.6	C	C
14	El Prado Rd. & Mountain Av.																	
	2040 Without Project:																	
	-Without Improvements	CSS	0	1	0	0	1	0	0	0	0	0	1	0	14.5	20.6	B	C
	-With Improvements		Not Applicable															
	2040 With Project:																	
	-Without Improvements	CSS	0	1	0	0	1	0	0	0	0	0	1	0	17.3	**64.7**	C	**F**
	-With Improvements	**TS**	0	1	0	0	1	0	0	0	0	0	1	0	10.5	10.6	B	B
15	El Prado Rd. & Pine Av.																	
	2040 Without Project:																	
	-Without Improvements[4]	AWS	0	0	0	0	1	0	**1**	**2**	0	0	**2**	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements[4]	**TS**	0	0	0	0	1	0	**1**	**2**	0	0	**2**	0	20.8	31.6	C	C
	2040 With Project:																	
	-Without Improvements[4]	AWS	0	0	0	0	1	0	**1**	**2**	0	0	**2**	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements[4]	**TS**	0	0	0	0	1	0	**1**	**2**	0	0	**2**	0	37.7	54.3	D	D
20	Euclid Av. (SR-83) & SR-60 EB Ramps																	
	2040 Without Project:																	
	-Without Improvements	TS	0	2	1	1	2	0	1	1	0	0	0	0	**100.8**	**81.7**	**F**	**F**
	-With Improvements	TS	0	2	1	**2**	2	0	1	1	**1**	0	0	0	30.0	22.1	C	C
	2040 With Project:																	
	-Without Improvements	TS	0	2	1	1	2	0	1	1	0	0	0	0	**103.8**	**87.1**	**F**	**F**
	-With Improvements	TS	0	2	1	**2**	2	0	1	1	**1**	0	0	0	30.7	22.1	C	C
22	Euclid Av. (SR-83) & Riverside Dr.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	**129.9**	**>200.0**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	1>	1	**2**	**1**	1	2	d	37.0	45.8	D	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1>	1	1	0	1	2	d	**136.2**	**>200.0**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	1>	1	**2**	**1**	1	2	d	37.2	46.4	D	D

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
23	Euclid Av. (SR-83) & Chino Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	0	1	0	**56.5**	**121.9**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	**1**	1	0	25.9	36.3	C	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	0	1	0	**61.8**	**128.0**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	**1**	1	0	26.1	37.7	C	D
24	Euclid Av. (SR-83) & Schaefer Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**155.8**	**172.7**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	1	**2**	1	1	1	1	0	52.2	41.5	D	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**165.1**	**180.7**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	1	**2**	1	1	1	1	0	54.9	42.9	D	D
25	Euclid Av. (SR-83) & Edison Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**>200.0**	**>200.0**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	**1>**	**2**	**3**	1	**2**	**2**	**1>**	41.9	43.2	D	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**>200.0**	**>200.0**	**F**	**F**
	-With Improvements	TS	**2**	**3**	1	**2**	**3**	**1>**	**2**	**3**	1	**2**	**2**	**1>**	42.7	44.1	D	D
26	Euclid Av. (SR-83) & Eucalyptus Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**69.2**	**155.8**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	**2**	1	**1**	25.9	45.2	C	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	1	1	1	1	1	1	0	**75.9**	**162.8**	**E**	**F**
	-With Improvements	TS	1	**3**	1	1	**3**	1	1	1	1	**2**	1	**1**	26.6	47.3	C	D
27	Euclid Av. (SR-83) & Merrill Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1	1	2	0	0	1	0	0	1	0	**117.6**	**>200.0**	**F**	**F**
	-With Improvements	TS	1	**3**	**1>**	1	**3**	0	**1**	1	0	**2**	1	**1>**	25.3	46.1	C	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1	1	2	0	0	1	0	0	1	0	**120.8**	**>200.0**	**F**	**F**
	-With Improvements	TS	1	**3**	**1>**	1	**3**	0	**1**	1	0	**2**	1	**1>**	25.5	50.4	C	D
28	Euclid Av. (SR-83) & Kimball Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	1>	2	2	1>	2	2	0	1	2	0	**101.3**	**152.6**	**F**	**F**
	-With Improvements	TS	1	**3**	1>	2	**3**	1>	2	2	0	**2**	2	0	35.0	52.7	C	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	1>	2	2	1>	2	2	0	1	2	0	**114.1**	**163.3**	**F**	**F**
	-With Improvements	TS	1	**3**	1>	2	**3**	1>	2	2	0	**2**	2	0	35.9	54.9	D	D

Table 8-4

Intersection Analysis for Horizon Year (2040) Conditions With Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1] Northbound L	T	R	Southbound L	T	R	Eastbound L	T	R	Westbound L	T	R	Delay[2] (secs.) AM	PM	Level of Service AM	PM
38	Flight Av. & Kimball Av.																	
	2040 Without Project:																	
	-Without Improvements	CSS	0	1	0	0	1	0	1	2	0	1	1	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements	**TS**	0	1	0	**1**	1	0	1	2	0	1	**2**	**1**	43.2	19.2	D	B
	2040 With Project:																	
	-Without Improvements	CSS	0	1	0	0	1	0	1	2	0	1	1	0	**>100.0**	**>100.0**	**F**	**F**
	-With Improvements	**TS**	0	1	0	**1**	1	0	1	2	0	1	**2**	**1**	45.2	19.5	D	B
40	Hellman Av. & Kimball Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	1	2	0	**1**	2	d	1	**1**	1>	**2**	**2**	**1**	32.9	**>200.0**	C	**F**
	-With Improvements	TS	**2**	2	0	**1**	2	d	1	**2**	1>	**2**	**2**	**1**	31.6	43.0	C	D
	2040 With Project:																	
	-Without Improvements	TS	1	2	0	**1**	2	d	1	**1**	1>	**2**	**2**	**1**	33.4	**>200.0**	C	**F**
	-With Improvements	TS	**2**	2	0	**1**	2	d	1	**2**	1>	**2**	**2**	**1**	31.9	44.3	C	D
42	Archibald Av. & Limonite Av.																	
	2040 Without Project:																	
	-Without Improvements	TS	**1**	1	1>	1	1	0	**1**	**1**	0	1	**1**	1>	**>200.0**	**>200.0**	**F**	**F**
	-With Improvements	TS	**1**	**3**	1>	**2**	**3**	0	**2**	**2**	0	**2**	**2**	1>	40.5	52.4	D	D
	2040 With Project:																	
	-Without Improvements	TS	**1**	1	1>	1	1	0	**1**	**1**	0	1	**1**	1>	**>200.0**	**>200.0**	**F**	**F**
	-With Improvements	TS	**1**	**3**	1>	**2**	**3**	0	**2**	**2**	0	**2**	**2**	1>	41.0	54.0	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; d = Defacto 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; AWS = All-Way Stop; TS = Traffic Signal; **TS** = Improvement

[4] Includes additional lanes consistent with the planned Pine Avenue extension.

8.7.2 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON OFF-RAMP QUEUES

As shown previously on Table 8-2, there are no peak hour queuing issues at the SR-71 Freeway at Euclid Avenue (SR-83) and Euclid Avenue (SR-83) at SR-60 Freeway interchanges for Horizon Year (2040) Without and With Project traffic conditions. As such, no improvements have been recommended.

8.7.4 RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

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 Chino (or other neighboring jurisdictions) on SHS roadway segments. As such, no improvements have been recommended to address the Horizon Year (2040) Without and With Project deficiencies on the SHS, because there is no feasible mitigation available.

9 LOCAL AND REGIONAL FUNDING MECHANISMS

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

9.1 CITY OF CHINO DEVELOPMENT IMPACT FEE PROGRAM

The City of Chino has created its own local Development Impact Fee (DIF) program to impose and collect fees from new residential, commercial and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's General Plan Circulation Element. The City's DIF includes regional improvements to comply with Measure "I". The fee schedule was recently adopted on July 16, 2019. The fee schedule and project transportation impacts fees are shown on Table 9-1. Under the City's DIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the DIF program.

TABLE 9-1: ESTIMATED FEE OBLIGATION

Fee Reference	Light Industrial ($ PER SQ. FT.)
Streets, Signals and Bridges (Schedule 5.2)	2.188/SF

* City-wide DIF rates adopted July 16, 2019.

Fee Calculation

Building	Category	Unit Cost	Units/Sq.Ft.	Local Circulation
Building 1	Industrial	$2.188	1,168,710	$2,557,137
Building 2	Industrial	$2.188	914,040	$1,999,920
			Total Transportation Impact Fees	**$4,557,057**

The timing to use the DIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Periodic traffic counts, review of traffic accidents, and a review of traffic trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of implementing the improvements listed in its facilities list. The City also uses this data to ensure that the improvements listed on the facilities list are constructed before the LOS falls below the

LOS performance standards adopted by the City. In this way, the improvements are constructed before the LOS falls below the City's LOS performance thresholds.

The 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 pursuant to the City's ordinance. The Project Applicant's payment of the requisite DIF at the rates then in effect, pursuant to the City DIF Program, would satisfy the Project's proportional mitigation requirements at potentially affected DIF-funded facilities.

9.2 MEASURE "I" FUNDS

In 2004, the voters of San Bernardino County approved the 30-year extension of Measure "I", a one-half of one percent sales tax on retail transactions, through the year 2040, for transportation projects including, but not limited to, infrastructure improvements, commuter rail, public transit, and other identified improvements. The Measure "I" extension requires that a regional traffic impact fee be created to ensure development is paying its fair share. A regional Nexus study was prepared by the San Bernardino County Transportation Authority (SBCTA) and concluded that each jurisdiction should include a regional fee component in their local programs in order to meet the Measure "I" requirement. The regional component assigns specific facilities and cost sharing formulas to each jurisdiction and was most recently updated in November 2011. Revenues collected through these programs are used in tandem with Measure "I" funds to deliver projects identified in the Nexus Study. While Measure "I" is a self-executing sales tax administered by SBCTA, it bears discussion here because the funds raised through Measure "I" have funded in the past and will continue to fund new transportation facilities in San Bernardino County.

9.3 FAIR SHARE CONTRIBUTION

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

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations, for each peak hour, has been provided on Table 9-2 for the applicable deficient study area intersections.

Table 9-2

Project Fair Share Calculations for Intersections

#	Intersection		Existing	Project	2040 With Project Volume	Total New Traffic	Project % of New Traffic
2	SR-71 SB Ramps & Pine Av.						
		AM:	716	67	1,751	1,035	6.473%
		PM:	1,482	82	2,564	1,082	**7.579%**
5	SR-71 NB Ramps & Pine Av.						
		AM:	510	127	2,572	2,062	6.159%
		PM:	437	158	2,766	2,329	**6.784%**
8	El Prado Rd. & Kimball Av.						
		AM:	1,801	30	2,114	313	**9.585%**
		PM:	2,248	42	2,711	463	9.071%
22	Euclid Av. (SR-83) & Riverside Dr.						
		AM:	3,696	65	5,496	1,800	**3.611%**
		PM:	3,753	77	5,996	2,243	3.433%
23	Euclid Av. (SR-83) & Chino Av.						
		AM:	2,877	67	4,525	1,648	4.066%
		PM:	3,116	79	5,039	1,923	**4.108%**
24	Euclid Av. (SR-83) & Schaefer Av.						
		AM:	2,746	67	4,940	2,194	**3.054%**
		PM:	3,302	79	5,999	2,697	2.929%
25	Euclid Av. (SR-83) & Edison Av.						
		AM:	3,143	73	6,653	3,510	2.080%
		PM:	3,926	88	7,704	3,778	**2.329%**
26	Euclid Av. (SR-83) & Eucalyptus Av.						
		AM:	2,717	78	4,735	2,018	**3.865%**
		PM:	2,972	93	5,756	2,784	3.341%
27	Euclid Av. (SR-83) & Merrill Av.						
		AM:	2,828	82	4,626	1,798	**4.561%**
		PM:	3,143	100	5,546	2,403	4.161%
30	Euclid Av. (SR-83) & Pine Av.						
		AM:	3,519	21	6,661	3,142	0.668%
		PM:	3,639	26	7,318	3,679	**0.707%**
32	Rincon Meadows Av. & Pine Av.						
		AM:	2,231	21	3,830	1,599	**1.313%**
		PM:	2,140	26	4,392	2,252	1.155%
36	W. Preserve Loop & Pine Av.						
		AM:	2,506	18	4,000	1,494	1.205%
		PM:	2,252	23	4,001	1,749	**1.315%**
38	Flight Av. & Kimball Av.						
		AM:	1,310	46	2,594	1,284	3.583%
		PM:	1,440	61	2,497	1,057	**5.771%**
42	Archibald Av. & Limonite Av.						
		AM:	2,711	46	5,732	3,021	**1.523%**
		PM:	2,762	61	7,203	4,441	1.374%

Table 9-2

Project Fair Share Calculations for Intersections

#	Intersection	Existing	Project	2040 With Project Volume	Total New Traffic	Project % of New Traffic
43	Archibald Av. & Schleisman Rd.					
	AM:	4,151	13	6,600	2,449	0.531%
	PM:	3,985	18	7,261	3,276	**0.549%**

BOLD = Denotes highest fair share percentage.

[1] Fair share based on total traffic only.

10 REFERENCES

1. **San Bernardino Associated Governments.** *Congestion Management Program for County of San Bernardino.* County of San Bernardino : s.n., Updated June 2016.
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3. **Institute of Transportation Engineers.** *Trip Generation.* 10th Edition. 2017.
4. **WSP.** *High Cube Warehouse Trip Generation Study.* January 29, 2019.
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