

# **IRON LOFTS MULTIFAMILY RESIDENTIAL TRAFFIC IMPACT ANALYSIS**

City of Riverside  
May 30, 2025  
(Rev. November 19, 2025)



Traffic Engineering • Transportation Planning • Parking • Noise & Vibration  
Air Quality • Global Climate Change • Health Risk Assessment

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May 30, 2025  
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*prepared by*

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Project No. 19630

# TABLE OF CONTENTS

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<b>EXECUTIVE SUMMARY .....</b>	<b>V</b>
<b>1. INTRODUCTION.....</b>	<b>1</b>
Purpose and Objectives .....	1
Project Description.....	1
Scope of Analysis.....	1
Study Area .....	1
Analysis Scenarios.....	2
<b>2. METHODOLOGY.....</b>	<b>7</b>
Level of Service/Operational Analysis Methodology .....	7
Intersections: Highway Capacity Manual Delay Methodology.....	7
Roadway Segment Analysis Methodology .....	7
Performance Standards.....	8
Substantial Operational Deficiency Criteria.....	8
<b>3. EXISTING CONDITIONS.....</b>	<b>10</b>
Existing Roadway System .....	10
Pedestrian Facilities.....	11
Transit Facilities.....	11
General Plan Context .....	11
Bicycle Facilities Master Plan .....	11
Designated Truck Routes .....	11
Existing Roadway Volumes .....	11
Existing Intersection Level of Service.....	12
Existing Roadway Segment Level of Service .....	12
<b>4. PROJECT TRIP FORECASTS .....</b>	<b>24</b>
Project Trip Generation .....	24
Project Trip Distribution & Assignment.....	24
<b>5. FUTURE VOLUME FORECASTS .....</b>	<b>31</b>
Method of Projection .....	31
Ambient Growth.....	31
Other Developments .....	31
Regional Travel Demand Model Growth .....	31
6th Street Vacation .....	32
Commerce Street Realignment .....	32
Analysis Scenario Volumes.....	32
Existing Plus Project .....	32
Opening Year (2026) Without Project .....	32
Opening Year (2026) With Project.....	32
Buildout Year 2045 Without Project.....	32
Buildout Year 2045 With Project .....	32
<b>6. FUTURE LEVELS OF SERVICE ANALYSIS .....</b>	<b>54</b>
Current Commerce Street Alignment (Without Planned 3rd Street Grade Separation Project).....	54
Existing Plus Project.....	54
Opening Year (2026) Without Project .....	54
Opening Year (2026) With Project.....	54
Buildout Year 2045 Without Project.....	54

Buildout Year 2045 With Project .....	54
Planned Commerce Street Re-alignment (With 3rd Street Grade Separation Project) .....	55
Existing Plus Project .....	55
Opening Year (2026) Without Project .....	55
Opening Year (2026) With Project.....	55
Buildout Year 2045 Without Project.....	55
Buildout Year 2045 With Project .....	55
Roadway Segment Level of Service.....	56
Traffic Signal Warrant Analysis.....	56
Railroad Crossing On Mission Inn Avenue West of Commerce Street.....	56
<b>7. SITE ACCESS &amp; ON-SITE CIRCULATION.....</b>	<b>64</b>
Project Design Features.....	64
Site Access Queuing Analysis.....	65
Traffic Signal Warrant Analysis.....	65
Pedestrian, Bicycle and Transit Facility Access To and From Project .....	65
Pedestrian Crossing at Mission Inn Avenue And Commerce Street.....	66
<b>8. SUMMARY OF IMPROVEMENTS .....</b>	<b>70</b>
Off-Site Improvements .....	70
Development Impact Fee .....	70
<b>9. CONCLUSIONS .....</b>	<b>71</b>
Project Trip Generation .....	71
Level of Service Analysis .....	71
Summary of Improvements.....	71

**APPENDICES**

Appendix A Glossary
Appendix B Scoping Agreement
Appendix C Traffic Count Data
Appendix D Intersection Level of Service Worksheets
Appendix E Travel Demand Model Plots
Appendix F Travel Demand Post Processing Worksheets
Appendix G 3rd Street Grade Separation Project Preliminary Layout Plan
Appendix H Traffic Signal Warrant Worksheet
Appendix I Roadway Concept Plan
Appendix J California MUTCD 3B.18
Appendix K Roadway Concept Plan (Project Vicinity)

**LIST OF TABLES**

Table 1. Existing Intersection Levels of Service ..... 13

Table 2. Existing Roadway Segment Levels of Service ..... 14

Table 3. Project Trip Generation..... 25

Table 4. Other Development Trip Generation ..... 34

Table 5. Existing Plus Project Intersection Levels of Service & Project-Related Effect ..... 57

Table 6. Opening Year (2026) Intersection Levels of Service & Project-Related Effect..... 58

Table 7. Buildout Year 2045 Intersection Levels of Service & Project-Related Effect ..... 59

Table 8. Existing Plus Project Intersection Levels of Service & Project-Related Effect With 3rd Street Grade Separation Project ..... 60

Table 9. Opening Year (2026) Intersection Levels of Service & Project-Related Effect With 3rd Street Grade Separation Project ..... 61

Table 10. Buildout Year 2045 Intersection Levels of Service & Project-Related Effect With 3rd Street Grade Separation Project ..... 62

Table 11. Roadway Segment Levels of Service ..... 63

Table 12. Site Access Queuing Analysis ..... 68

**LIST OF FIGURES**

Figure 1. Regional Location Map .....3

Figure 2. Project Location Map.....4

Figure 3. Site Plan .....5

Figure 4. Study Area ..... 6

Figure 5. Existing Lane Geometry and Intersection Traffic Controls..... 15

Figure 6. Existing Pedestrian Facilities ..... 16

Figure 7. Existing Transit Routes ..... 17

Figure 8. City of Riverside Master Plan of Roadways..... 18

Figure 9. City of Riverside General Plan Roadway Cross-Sections..... 19

Figure 10. City of Riverside Master Plan of Trails and Bikeways ..... 20

Figure 11. Existing Average Daily Traffic Volumes ..... 21

Figure 12. Existing AM Peak Hour Intersection Turning Movement Volumes..... 22

Figure 13. Existing PM Peak Hour Intersection Turning Movement Volumes ..... 23

Figure 14. Project Trip Distribution (Outbound)..... 26

Figure 15. Project Trip Distribution (Inbound)..... 27

Figure 16. Project Average Daily Traffic Volumes ..... 28

Figure 17. Project AM Peak Hour Intersection Turning Movement Volumes ..... 29

Figure 18. Project PM Peak Hour Intersection Turning Movement Volumes ..... 30

Figure 19. Other Development Location Map ..... 35

Figure 20. Other Development Average Daily Traffic Volumes..... 36

Figure 21. Other Development AM Peak Hour Intersection Turning Movement Volumes ..... 37

Figure 22. Other Development PM Peak Hour Intersection Turning Movement Volumes..... 38

Figure 23. Existing Plus Project Average Daily Traffic Volumes..... 39

Figure 24. Existing Plus Project AM Peak Hour Intersection Turning Movement Volumes ..... 40

Figure 25.	Existing Plus Project PM Peak Hour Intersection Turning Movement Volumes.....	41
Figure 26.	Opening Year (2026) Without Project Average Daily Traffic Volumes.....	42
Figure 27.	Opening Year (2026) Without Project AM Peak Hour Intersection Turning Movement Volumes.....	43
Figure 28.	Opening Year (2026) Without Project PM Peak Hour Intersection Turning Movement Volumes.....	44
Figure 29.	Opening Year (2026) With Project Average Daily Traffic Volumes.....	45
Figure 30.	Opening Year (2026) With Project AM Peak Hour Intersection Turning Movement Volumes.....	46
Figure 31.	Opening Year (2026) With Project PM Peak Hour Intersection Turning Movement Volumes.....	47
Figure 32.	Buildout Year 2045 Without Project Average Daily Traffic Volumes .....	48
Figure 33.	Buildout Year 2045 Without Project AM Peak Hour Intersection Turning Movement Volumes.....	49
Figure 34.	Buildout Year 2045 Without Project PM Peak Hour Intersection Turning Movement Volumes.....	50
Figure 35.	Buildout Year 2045 With Project Average Daily Traffic Volumes.....	51
Figure 36.	Buildout Year 2045 With Project AM Peak Hour Intersection Turning Movement Volumes.....	52
Figure 37.	Buildout Year 2045 With Project PM Peak Hour Intersection Turning Movement Volumes.....	53
Figure 38.	Project Train Station Access .....	69
Figure 39.	Recommended Lane Geometry and Intersection Traffic Controls.....	72

# EXECUTIVE SUMMARY

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This section summarizes the proposed project, operational findings, and identifies recommendations (if any) as specified in this study.

## Project Description

The 6.97-acre project site is located east of Commerce Street between 5th Street and Mission Inn Avenue in the City of Riverside, California. The project site is currently partially developed with commercial/industrial buildings and zoned as Business & Manufacturing Park Zone (BMP).

The proposed project (TTM 38624) involves removal of the existing buildings and construction of 295 mid-rise multifamily dwelling units and 5 low-rise multifamily dwelling units within a residential complex. Vehicular access for the project site is proposed via two driveways with one on 5th Street and one on Mission Inn Avenue.

The project site requires a General Plan Amendment and Zoning Amendment to rezone the site from Business & Manufacturing Park Zone (BMP) to Mixed-use Urban (MU-U) to accommodate the residential development and a Specific Plan Amendment to amend the Riverside Marketplace Specific Plan to expand the mixed-used Marketplace Sub-area. The proposed plan also includes a street vacation of 6th Street from Commerce Street to the east side of the project.

## Project Trip Generation

The proposed project is forecast to generate a total of approximately 1,213 net new daily trips, including 90 net new trips during the AM peak hour and 72 net new trips during the PM peak hour.

## Level of Service Analysis

The study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for the Existing conditions.

The study intersections are forecast to continue operating within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) conditions.

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year (2045) conditions, except for the following intersection that is forecast to operate at an unacceptable Levels of Service E during the PM peak hour:

4. Vine Street (NS) and Mission Inn Avenue (EW)

To address this, the Proposed Project will implement the City-directed improvements summarized below.

## Summary of Improvements

Project design features, necessary to provide project access, are outlined in the Site Access & On-Site Circulation (Section 7).

The following improvement is recommended and will be installed by the project to ensure westbound queues at the rail crossing on Mission Inn Avenue do not block turning or north-south through movements at Commerce Street for all scenarios:

5. Commerce Street (NS) at Mission Inn Avenue (EW)

- Install "KEEP CLEAR" markings in the intersection for westbound lanes on Mission Inn Avenue.

The Proposed Project will implement the following City-directed improvements:

- Project will install total of four stop signs equipped with solar powered flashing LEDs at all approaches.
- Project shall upgrade the existing crosswalks to the high visibility crosswalks at all approaches.

# 1. INTRODUCTION

---

This section provides an overview of the proposed project and the general scope of the analysis.

## PURPOSE AND OBJECTIVES

The purpose of this study is to evaluate the potential for transportation impacts resulting from the development of the proposed project in the context of the City of Riverside's discretionary authority for conformance with locally established operational standards. Although this is a technical report, effort has been made to prepare the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with technical terms.

This study was prepared in consultation with the City of Riverside staff following the procedures and methodologies for assessing transportation impacts established by the City of Riverside. To assess the project's conformance with local operational standards, this study evaluates the project's effect on traffic operations and, if necessary, identifies recommended improvements or corrective measures to alleviate operational deficiencies substantially caused or worsened by the proposed project.

For compliance with California Environmental Quality Act (CEQA) requirements, a vehicle miles traveled (VMT) assessment is documented separately in the *Iron Lofts Multifamily Residential Vehicle Miles Traveled Assessment* (Ganddini Group, Inc., December 27, 2024).

## PROJECT DESCRIPTION

The 6.97-acre project site is located east of Commerce Street between 5th Street and Mission Inn Avenue in the City of Riverside, California. The project site is currently partially developed with commercial/industrial buildings and zoned as Business & Manufacturing Park Zone (BMP). Figure 1 and Figure 2 show the regional and project location maps.

The proposed project (TTM 38624) involves removal of the existing buildings and construction of 295 mid-rise multifamily dwelling units and 5 low-rise multifamily dwelling units within a residential complex. Vehicular access for the project site is proposed via two driveways with one on 5th Street and one on Mission Inn Avenue. Figure 3 illustrates the project site plan.

The project site requires a General Plan Amendment and Zoning Amendment to rezone the site from Business & Manufacturing Park Zone (BMP) to Mixed-use Urban (MU-U) to accommodate the residential development and a Specific Plan Amendment to amend the Riverside Marketplace Specific Plan to expand the mixed-used Marketplace Sub-area. The proposed plan also includes a street vacation of 6th Street from Commerce Street to the east side of the project.

## SCOPE OF ANALYSIS

The scope of this analysis was determined in consultation with the City of Riverside as documented in the City-approved scoping agreement provided in Appendix B.

### Study Area

Figure 4 illustrates the study area. In accordance with the City of Riverside requirements, the study area was determined in consultation with the City of Riverside engineering staff and consists of classified roadway intersections to which the project is forecast to contribute 50 or more peak hour trips. Based on the project trip generation and distribution forecasts presented later in this report, the study area consists of the following study intersections:

## **Intersections**

1. Lime Street (NS) and Mission Inn Avenue (EW) <sup>1</sup>
2. SR-91 Off-ramp (NS) and Mission Inn Avenue (EW)
3. Mulberry Street (NS) and Mission Inn Avenue (EW)
4. Vine Street (NS) and Mission Inn Avenue (EW)
5. Commerce Street (NS) and Mission Inn Avenue (EW)
6. Commerce Street (NS) and 6th Street (EW)
7. Commerce Street (NS) and 5th Street (EW)
8. Commerce Street (NS) and 3rd Street (EW)
9. Park Avenue (NS) and Mission Inn Avenue (EW)
10. Project Driveway (NS) and Mission Inn Avenue (EW)
11. Project Driveway (NS) and 5th Street (EW)
12. Commerce Street (NS) and 5th Street (EW) (future re-alignment)
13. Commerce Street (NS) and 3rd Street (EW) (future re-alignment)

## **Roadway Segments**

1. Commerce Street between Mission Inn Avenue and 3rd Street
2. 5th Street between Commerce Street and Park Avenue
3. 6th Street between Commerce Street and Park Avenue

## **Analysis Scenarios**

This study includes an evaluation of the following analysis scenarios for weekday AM and PM peak hour conditions:

### **Current Commerce Street Alignment (Without Planned 3rd Street Grade Separation Project)**

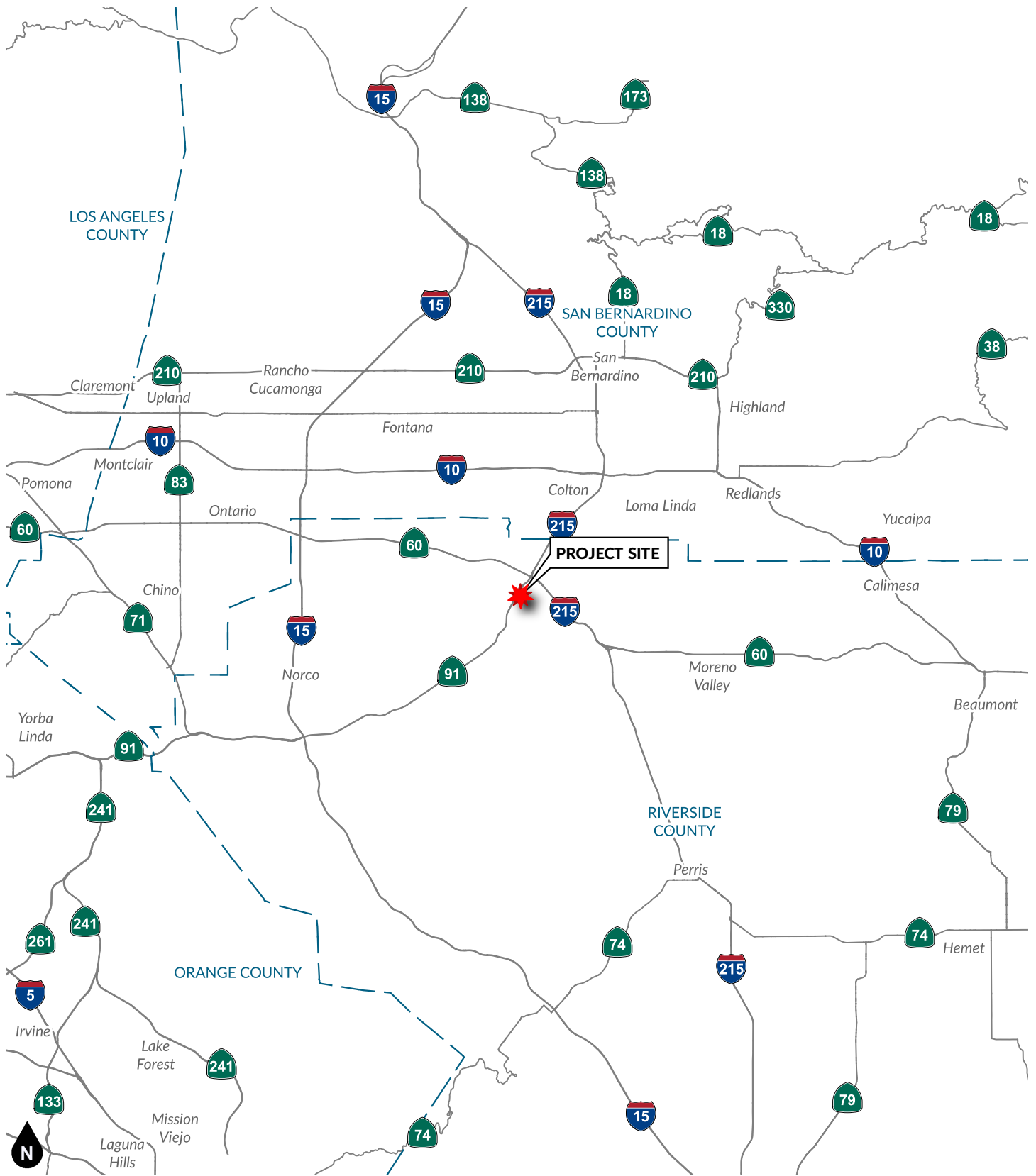
- Existing
- Existing Plus Project
- Opening Year (2026) Without Project
- Opening Year (2026) With Project
- Buildout Year 2045 Without Project
- Buildout Year 2045 With Project

### **Planned Commerce Street Re-alignment (With 3rd Street Grade Separation Project)**

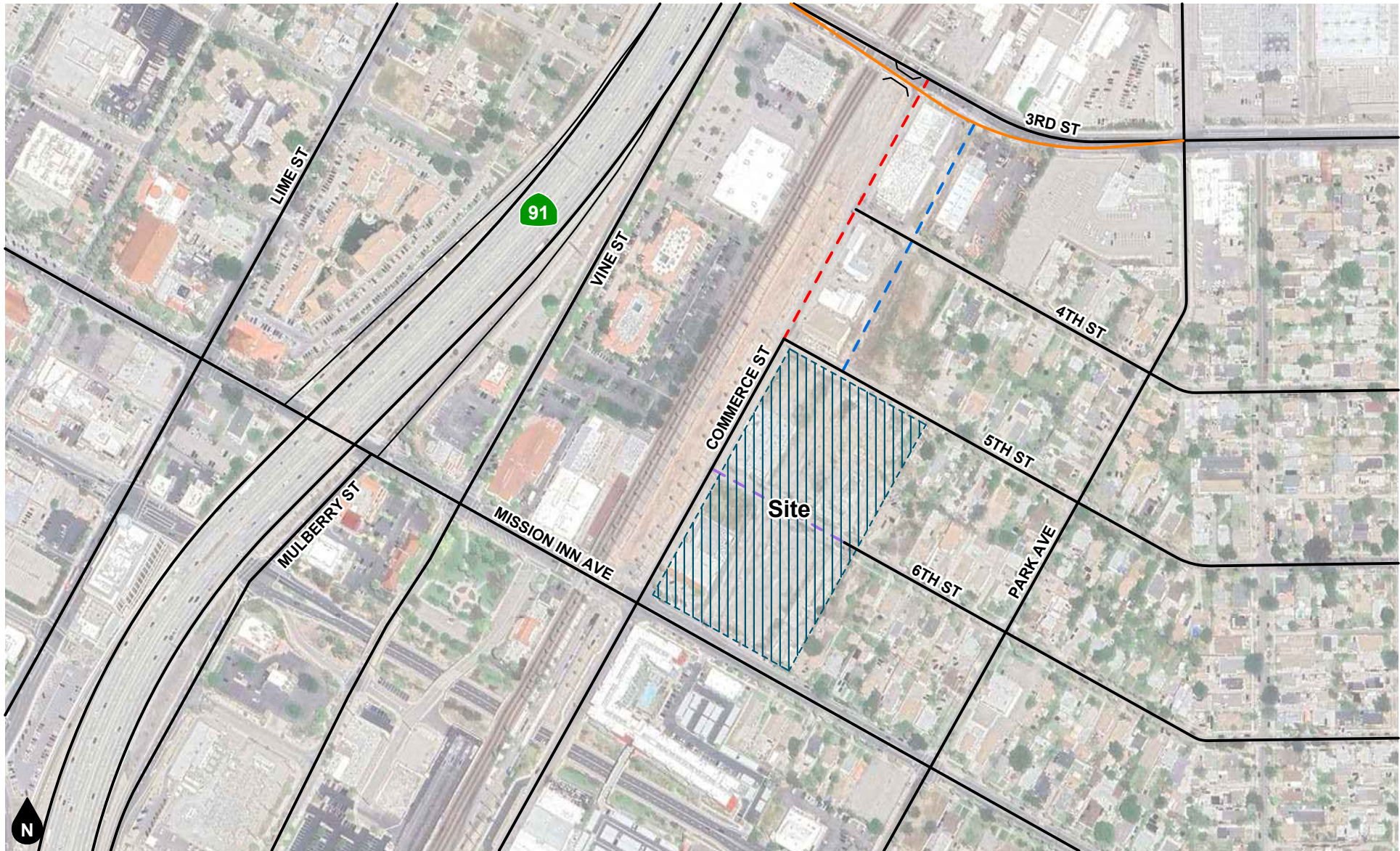
- Existing
- Existing Plus Project
- Opening Year (2026) Without Project
- Opening Year (2026) With Project
- Buildout Year 2045 Without Project
- Buildout Year 2045 With Project

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<sup>1</sup> (NS) = north-south roadway; (EW) = east-west roadway.



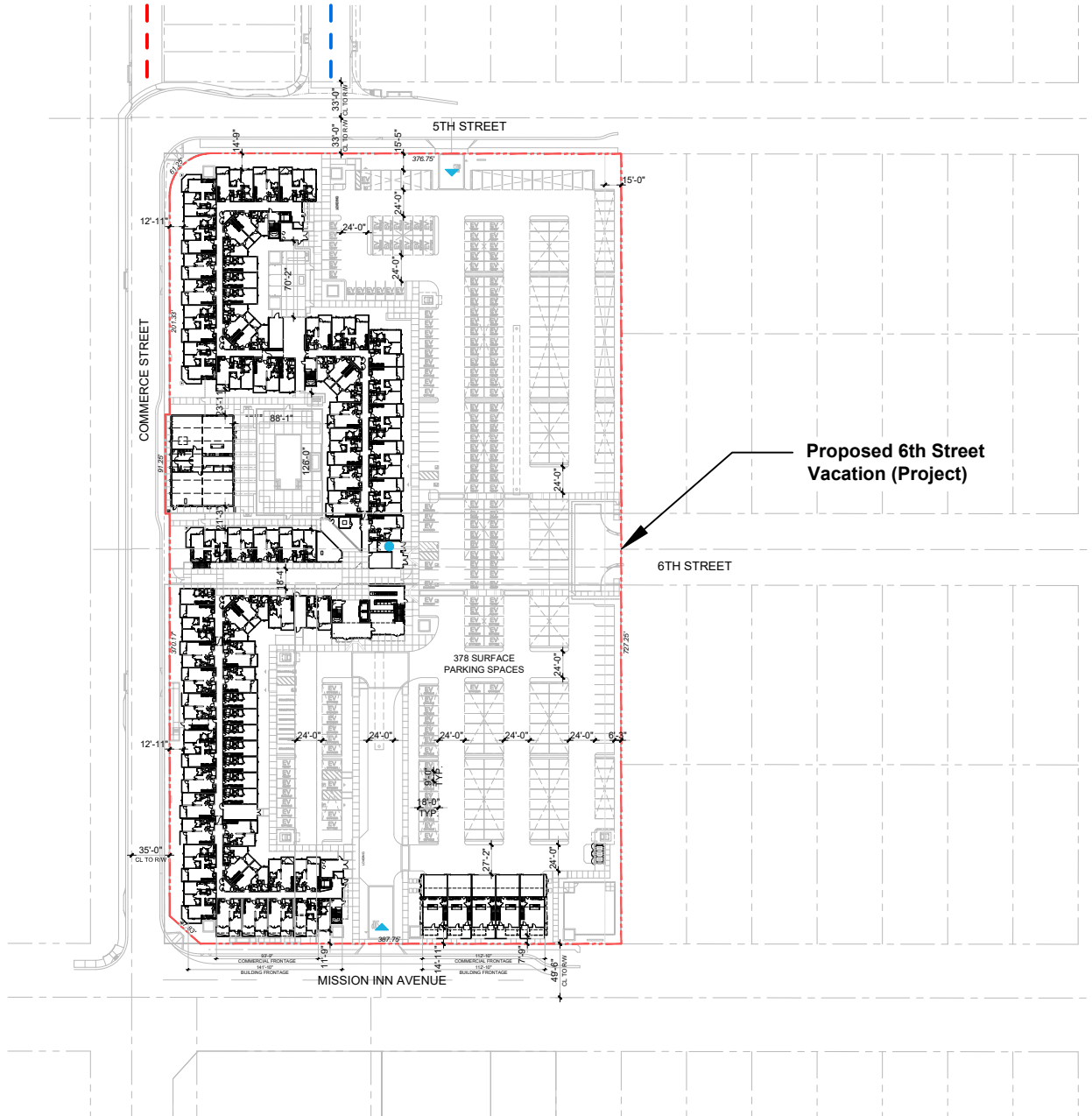
**Figure 1**  
**Regional Location Map**



**Legend**

- Planned 3rd Street Grade Separation Project (City Project)
- - Planned Commerce Street Realignment (City Project)
- - Planned Commerce Street Vacation (City Project)
- - Proposed 6th Street Vacation (Project)

**Figure 2**  
**Project Location Map**



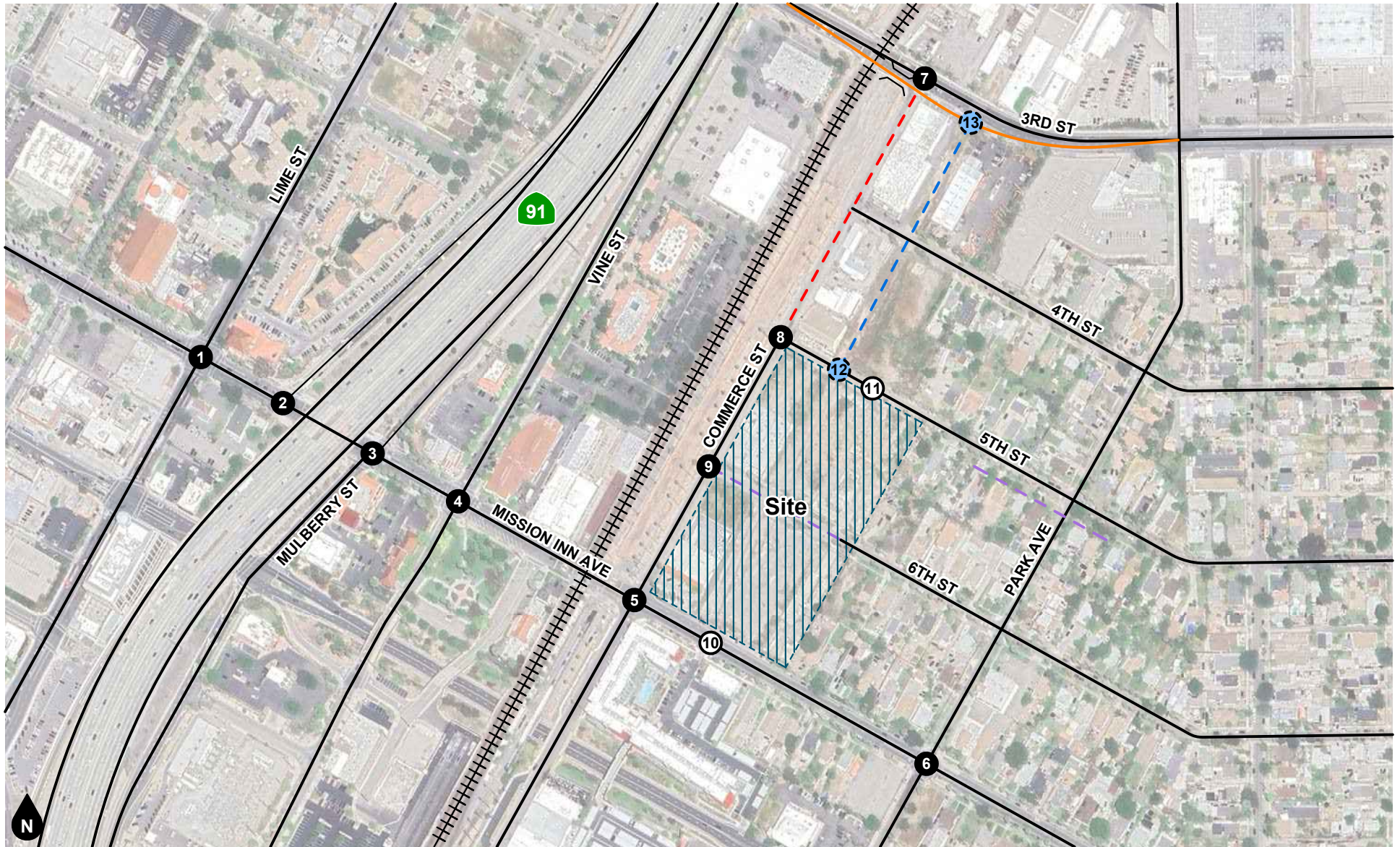
Proposed 6th Street Vacation (Project)

- - - - - Planned Commerce Street Realignment (City Project)
- - - - - Planned Commerce Street Vacation (City Project)



**Figure 3  
Site Plan**

Iron Lofts Multifamily Residential  
Traffic Impact Analysis  
19630



Legend

- Study Intersection
- Project Driveway
- Study Intersection after Street Realignment

- Planned 3rd Street Grade Separation Project (City Project)
- Planned Commerce Street Realignment (City Project)
- Planned Commerce Street Vacation (City Project)
- Proposed 6th Street Vacation (Project)
- Railway Line

**Figure 4**  
**Study Area**

## 2. METHODOLOGY

This section discusses the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies. This traffic impact analysis is based on the *City of Riverside Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service (LOS) Assessment*, July 2020 [“City TIA Guidelines”].

### LEVEL OF SERVICE/OPERATIONAL ANALYSIS METHODOLOGY

Level of Service (LOS) analysis is performed to assess conformance with General Plan and operational standards established by the applicable agencies.

#### **Intersections: Highway Capacity Manual Delay Methodology**

The methodology used to assess the performance of intersections in the City of Riverside is known as the intersection delay methodology based on procedures contained in the *Highway Capacity Manual (HCM)* (Transportation Research Board, 7th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. Intersection delay analysis was performed with default capacity values and adjustment factors recommended in the HCM. The intersection Level of Service is based on the thresholds contained within the HCM.

Level of Service	Intersection Control Delay (Seconds / Vehicle)	
	Unsignalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: *Highway Capacity Manual* (Transportation Research Board, 7th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst minor street approach or major street left-turn movement. The Level of Service analysis was performed in accordance with parameters specified in the City TIA Guidelines. Intersection analysis was performed using the Vistro software.

#### **Roadway Segment Analysis Methodology**

The methodology used to assess roadway segment operations is known as the daily volume-to-capacity method. The methodology compares the average daily traffic (ADT) volume using the roadway segment to the capacity of the roadway segment to calculate the volume-to-capacity (V/C) ratio, which is then correlated to Level of Service based on the following thresholds:

Level of Service	Volume / Capacity
A	0.000 - 0.600
B	0.601 - 0.700
C	0.701 - 0.800
D	0.801 - 0.900
E	0.901 - 1.000
F	> 1.0

Source: Transportation Research Board *Highway Capacity Manual* (7th Edition).

The roadway segment daily capacity analysis is intended to be used as a high-level planning guide to estimate anticipated roadway segment operations based on theoretical maximum two-way average daily traffic (ADT) volumes that a given roadway segment can accommodate within one day given typical peak hour characteristics. The actual capacity of a roadway is influenced by several factors, including street width, alignment, number of travel lanes, number of intersections and driveways, presence of on-street parking, and traffic signal cycle length. The number of turn lanes and intersection controls should be determined based on a more-detailed peak hour intersection analysis at the critical ends. Therefore, roadway segment widening is typically only recommended if the peak hour intersection analysis indicates the need for additional through lanes.

Roadway Classification	Number of Lanes	Maximum Two-way Daily Traffic Volume (ADT) Level of Service		
		C	D	Capacity E
Local	2	2,500 – 2,799	2,800 – 3,099	3,100+
Collector (60' to 80')	2	9,900 – 11,199	11,200 – 12,499	12,500+
Arterial	2	14,400 – 16,199	16,200 – 17,999	18,000+
Arterial (88')	4	16,800 – 19,399	19,400 – 21,199	22,000+
Arterial (100')	4	26,200 – 29,599	29,600 – 32,999	33,000+
Arterial (120')	6	38,700 – 44,099	44,100 – 49,499	49,500+
Arterial (144')	8	50,600 – 57,799	57,800 – 64,999	65,000+

Source: *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment* (City of Riverside, July 2020).

## PERFORMANCE STANDARDS

The City of Riverside has established a minimum acceptable Level of Service C for peak hour intersection operations; except for intersections of Collector or higher classification which should maintain Level of Service (D or better) at peak hours. In accordance with CCM-2.3, freeway interchanges may maintain Level of Service E at peak hours as the acceptable standard on a case-by-case basis.

### **Substantial Operational Deficiency Criteria**

#### **Intersections**

In the City of Riverside, a project is considered to result in a substantial operational deficiency at a study intersection if one or more of the following conditions are satisfied:

A signalized intersection substantial transportation effect is defined to occur if the project causes intersection operations to degrade from an acceptable Level of Service (D or better) to an unacceptable Level of Service (E or F) or the project-related increase in delay is equal to or greater than the delay listed below and propose land uses or intensities above that contained in the General Plan.

LOS A/B	10 seconds
LOS C	8 seconds
LOS D	5 seconds
LOS E	2 seconds
LOS F	1 second.

An unsignalized intersection substantial transportation effect is defined to occur if one or more of the following conditions are met:

- The addition of project trips to a study intersection causes intersection operations to degrade from an acceptable Level of Service (D or better) to an unacceptable Level of Service (E or F), or
- The project-related increase in delay is equal to or greater than the delay listed above at an intersection that is already operating at an unacceptable Level of Service without the Project; and
- The intersection meets peak hour signal warrants either caused by project volumes or project volumes are added at an intersection that meets peak hour signal warrants in the baseline scenario(s). Peak hour signal warrants should be determined based on the latest California Manual on Uniform Traffic Control Devices (CA MUTCD).

Where improvements are identified to address cumulative Level of Service deficiencies, a project fair share cost estimate is provided based on the volume of project traffic using the impacted facility divided by the total “new” traffic (i.e., ambient growth and other developments). The City of Riverside does not have a “Fair Share Program”; however, the fair share estimate is to facilitate discussion with the City and will be used by the City for consideration purposes only.

### **Roadway Segments**

Based on the City-established performance standards, roadway segment improvements should be considered if the project exceeds the following operational goals:

- Any study roadway segment operating at an acceptable Level of Service (D or better) without project traffic in which the addition of project traffic causes the segment to degrade to an unacceptable Level of Service (E or F) should identify improvements to maintain acceptable Level of Service.
- Any roadway segment that operates at an unacceptable Level of Service in the no project scenario where the project increases traffic in excess of five percent (5%) of the roadway capacity should identify improvements to improve operations.

### 3. EXISTING CONDITIONS

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This section describes the existing transportation setting of the project study area.

#### EXISTING ROADWAY SYSTEM

Figure 5 shows the lane geometry and intersection traffic controls for existing conditions based on a field survey of the study area. Regional access to the project site is provided by State Route 91 approximately 0.2 miles to the northwest and State Route 60 approximately 1.3 miles to the northeast of the project site. Local north-south circulation is provided by Commerce Street, Park Avenue, Vine Street, Mulberry Street, and Lime Street; and east-west circulation is provided by Mission Inn Avenue, 5th Street and 3rd Street.

**Commerce Street:** This two-lane undivided roadway trends in a northeast-southwest direction and is unclassified in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is not restricted in the study area. Currently, there are no designated bicycle facilities or sidewalks in the study area.

**Park Avenue:** This two-lane undivided roadway trends in a northeast-southwest direction and is classified as a 66-foot Collector (two-lane) in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is not permitted on the west side of the street at any time and is not permitted on Tuesdays on the east side of the street in the study area. Currently, there are no designated bicycle facilities in the study area. Sidewalks are provided on both sides of the roadway in the study area.

**Vine Street:** This two-lane undivided roadway trends in a northeast-southwest direction and is unclassified in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is permitted on one side of the street northeast Mission Inn Avenue and is restricted on both sides of the street southwest of Mission Inn Avenue. Currently, there are sharrow bicycle markings southwest of Mission Inn Avenue in the study area. Sidewalks are generally provided on both sides of the roadway in the study area.

**Mulberry Street:** This two to three-lane undivided one-way roadway trends in a northeast-southwest direction and is unclassified in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking and sidewalks are provided on the side of the street southwest of Mission Inn Avenue. Currently, there are no bicycle facilities in the project.

**Lime Street:** This four-lane divided (two-way turn lane) roadway trends in a northeast-southwest direction and is classified as an 88-foot Arterial (four-lane) in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is restricted in the study area. Currently, there are no designated bicycle facilities in the study area; however, marked Class II bike lanes are proposed for this roadway on the master plan. Sidewalks are provided on both sides of the roadway. The posted speed in the study area is 35 miles per hour.

**Mission Inn Avenue:** This two-lane undivided to four-lane divided roadway trends in a southeast-northwest direction and is classified as a 100-foot Arterial (four-lane) in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking appears to be permitted on both sides of the roadway southeast of Commerce Street and on one side of the street southeast of Vine Street; however, parking is not permitted on Tuesdays. Currently, there are sharrow bicycle markings northwest of Vine Street in the study area. Sidewalks are generally provided on both sides of the roadway, except for undeveloped property frontage. The posted speed in the study area is 25 to 35 miles per hour.

**6th Street:** This two-lane undivided roadway trends in a southeast-northwest direction and is unclassified in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is not

permitted on Tuesdays in the study area. Currently, there are no designated bicycle facilities or sidewalks in the study area.

**5th Street:** This two-lane undivided roadway trends in a southeast-northwest direction and is unclassified in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is not permitted on Tuesdays in the study area. Currently, there are no designated bicycle facilities or sidewalks in the study area.

**3rd Street:** This three-lane divided to four-lane undivided roadway trends in a southeast-northwest direction and is classified as an 88-foot Arterial (four-lane) in the City of Riverside General Plan Community Mobility Element in the study area. On-street parking is not restricted in the study area. Bike lanes and sidewalks are provided on both sides of the roadway. The posted speed in the study area is 30 to 40 miles per hour.

## PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown in Figure 6. As shown in Figure 6, sidewalks are not provided along the project site frontage.

## TRANSIT FACILITIES

Figure 7 shows the existing Riverside Transit Agency (RTA) system map in the project vicinity. Route 10 runs along Mission Inn Avenue. The closest bus stop to the project is at the southeast corner of Mission Inn Avenue and Park Avenue. The Metrolink train station is southwest of Mission Inn Avenue between Vine Street and Commerce Street, within one-half mile of the project site. There is a pedestrian bridge over the train tracks to allow access between the southbound track adjacent to Vine Street and the northbound track adjacent to Commerce Street.

## GENERAL PLAN CONTEXT

Figure 8 shows the City of Riverside Master Plan of Roadways. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Riverside standard roadway cross-sections are illustrated in Figure 9.

## BICYCLE FACILITIES MASTER PLAN

The City of Riverside Master Plan of Trails and Bikeways is shown in Figure 10. As shown in Figure 10, there are proposed bike facilities on Lime Street and existing bike sharrow lanes on Mission Inn Avenue and Vine Street.

## DESIGNATED TRUCK ROUTES

In the City of Riverside, trucks are generally not restricted to specific roadways. On certain roads, trucks weighing over a specified weight limit are prohibited, except when making deliveries. The restricted streets are prescribed by City Code 10.56.010 for vehicles over 6,000 pounds and 10.56.020 for vehicles over 10,000 pounds. Trucks over 6,000 pounds are generally not permitted on Fourth, Fifth and Sixth Streets.

## EXISTING ROADWAY VOLUMES

Figure 11 shows the existing average daily traffic volumes. The existing average daily traffic volumes have been factored from peak hour intersection turning movement volumes at locations using the following formula for each intersection leg:

PM Peak Hour (Approach Volume + Exit Volume) x 12.1 = Leg Volume<sup>2</sup>

Figure 12 and Figure 13 show the existing AM and PM peak hour intersection turning movement volumes. Existing peak hour intersection turning movement volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in November 2024 during typical weekday conditions. The weekday AM peak period was counted between 7:00 AM and 9:00 AM and the weekday PM peak period was counted between 4:00 PM and 6:00 PM; these periods capture the peak times for commuter traffic when the roadway system is typically experiencing peak demand. The actual peak hour within each two-hour count period is determined based on the sum of the four consecutive 15-minute periods with the highest total volume entering the intersection. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM and may vary at other intersections depending on the four consecutive 15-minute periods that have the highest total volume. Intersection turning movement count worksheets are provided in Appendix C.

### **EXISTING INTERSECTION LEVEL OF SERVICE**

The study intersection Levels of Service for Existing conditions are shown in Table 1. Detailed Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better) during peak hours.

### **EXISTING ROADWAY SEGMENT LEVEL OF SERVICE**

The roadway segment capacity analysis for Existing conditions is shown Table 2. As Shown in Table 2, the study roadway segments currently operate within acceptable Levels of Service (D or better).

---

<sup>2</sup> Average PM peak hour K factor (ADT/PM peak hour volume) based on 24-hour on Commerce Street north of Mission Inn Avenue.

**Table 1  
Existing Intersection Levels of Service**

Study Intersection	Traffic Control <sup>1</sup>	AM Peak Hour		PM Peak Hour	
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS
1. Lime Street at Mission Inn Avenue	TS	34.9	C	26.7	C
2. SR-91 Off Ramp at Mission Inn Avenue	TS	25.7	C	24.6	C
3. Mulberry Street at Mission Inn Avenue	TS	31.9	C	36.6	D
4. Vine Street at Mission Inn Avenue	AWS	9.4	A	14.4	B
5. Commerce Street at Mission Inn Ave	CSS	10.9	B	13.3	B
6. Park Avenue at Mission Inn Ave	AWS	8.5	A	9.8	A
7. Commerce Street at 3rd Street	CSS	12.2	B	28.8	D
8. Commerce Street at 5th Street	CSS	8.7	A	8.8	A
9. Commerce Street at 6th Street	CSS	8.9	A	8.9	A
10. Project Driveway at Mission Inn Ave	CSS	9.4	A	10.9	B

Notes:

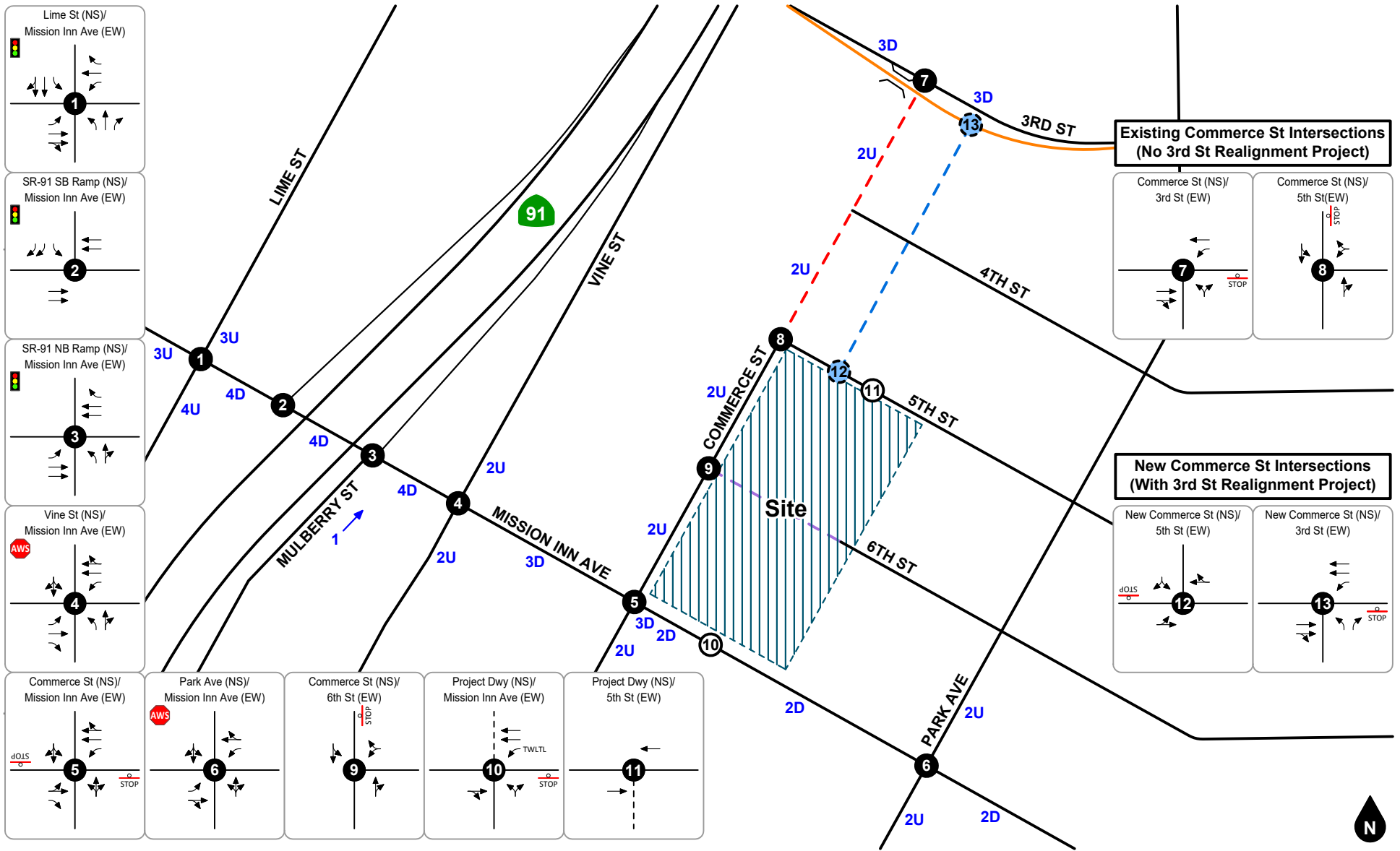
1. TS = Traffic Signal; AWS = All Way Stop; CSS = Cross Street Stop
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn movement.
3. LOS = Level of Service

**Table 2  
Existing Roadway Segment Levels of Service**

ID	Roadway	Segment		Classification	Lanes	Capacity	Existing		
		From	To				ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>
1.	Commerce St	Mission Inn Ave	3rd Street	Local	2	2,500	1,010	0.40	A
2.	5th Street	Commerce Street	Park Avenue	Local	2	2,500	90	0.04	A
3.	6th Street	Commerce Street	Park Avenue	Local	2	2,500	120	0.05	A

Notes:

1. Roadway classifications from the City of Riverside General Plan Circulation Element, and the corresponding roadway capacity from the Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment, July 2020.
2. ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; LOS = Level of Service



**Figure 5**  
**Existing Lane Geometry**  
**and Intersection Traffic Controls**

- Legend**
- Traffic Signal
  - All Way Stop
  - Stop Sign
  - # Lane Divided Roadway
  - # Lane Undivided Roadway
  - # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Existing Lane
  - Project Driveway

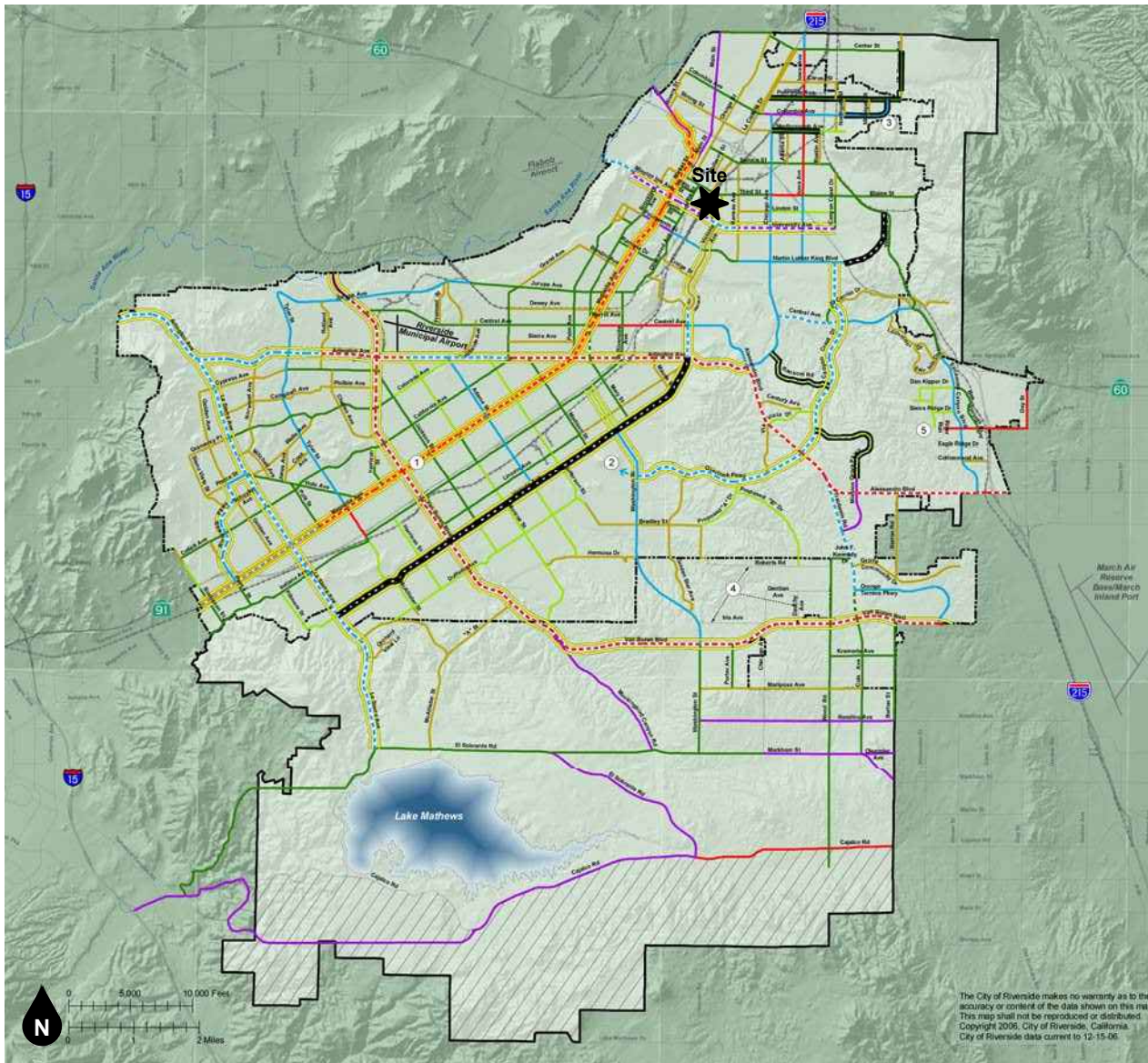
- TWLTL Two-Way Left-Turn Lane
- Planned 3rd Street Grade Separation Project (City Project)
- Planned Commerce Street Realignment (City Project)
- Planned Commerce Street Vacation (City Project)
- Proposed 6th Street Vacation (Project)



Legend  
 — Sidewalk  
 — Cross Walk

**Figure 6**  
**Existing Pedestrian Facilities**





**LEGEND**

- 66 FT LOCAL 2 LANES \*
- 66 FT COLLECTOR 2 LANES
- 80 FT COLLECTOR 2 LANES
- 88 FT ARTERIAL 4 LANES
- 100 FT ARTERIAL 4 LANES
- 110 FT ARTERIAL 4 LANES
- 120 FT ARTERIAL 6 LANES
- 144 FT ARTERIAL 8 LANES
- - - - SCENIC BOULEVARD  
REQUIRES SPECIAL LANDSCAPING;  
ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED.
- == SPECIAL BOULEVARD  
TWO-LANE DIVIDED ROADWAY OF  
VARIABLE GEOMETRIC DESIGN
- SPECIAL BOULEVARD  
VARIABLE WIDTHS AND DESIGN, CONTACT PUBLIC WORKS  
FOR DETAIL. SEE OBJECTIVE CCM-3 AND POLICIES CCM-3.1  
THROUGH CCM-3.5.
- PARKWAYS  
FOR INFORMATION ON PARKWAYS SEE  
LAND USE ELEMENT.
- ▨ CETAP CORRIDOR AREA  
CORRIDOR OPTIONS SUBJECT TO SPECIAL STUDY.
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE  
OF INFLUENCE

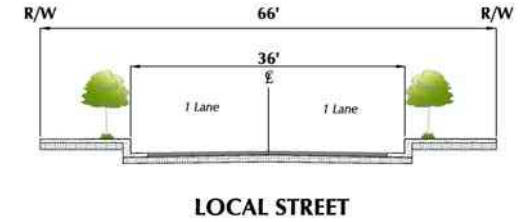
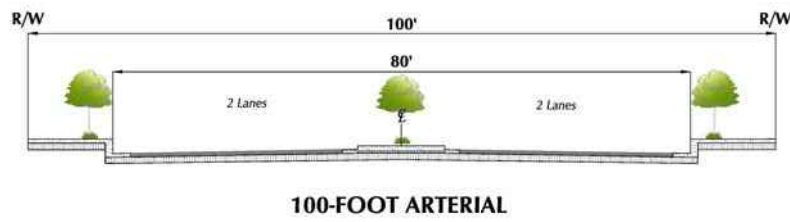
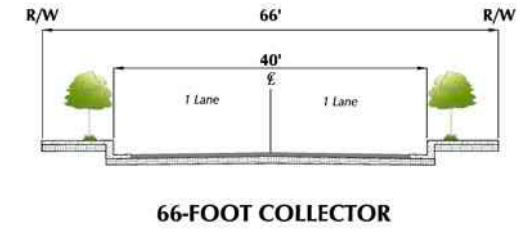
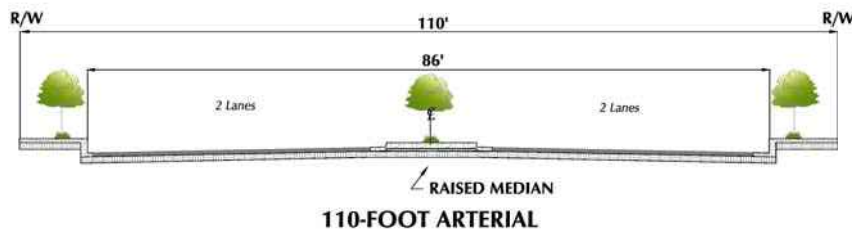
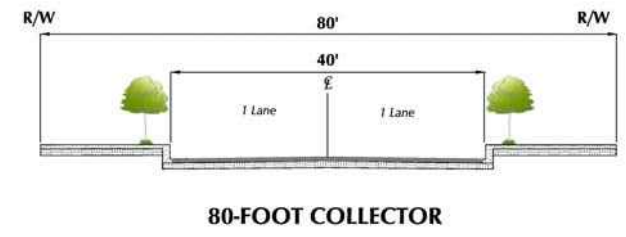
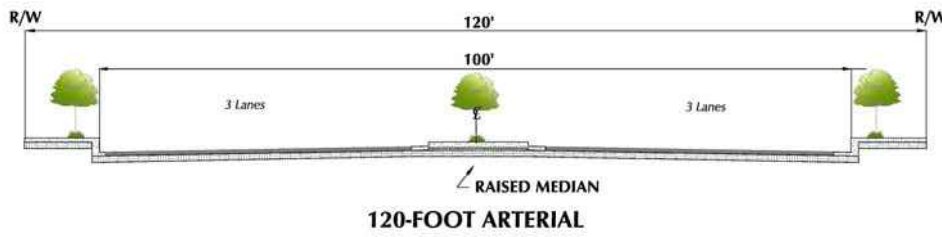
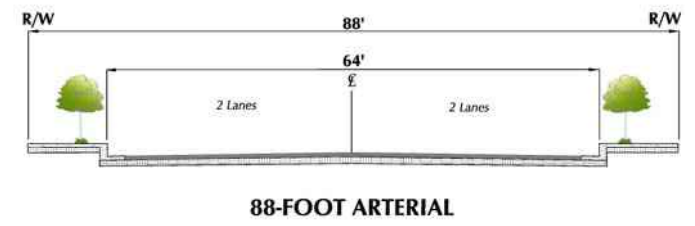
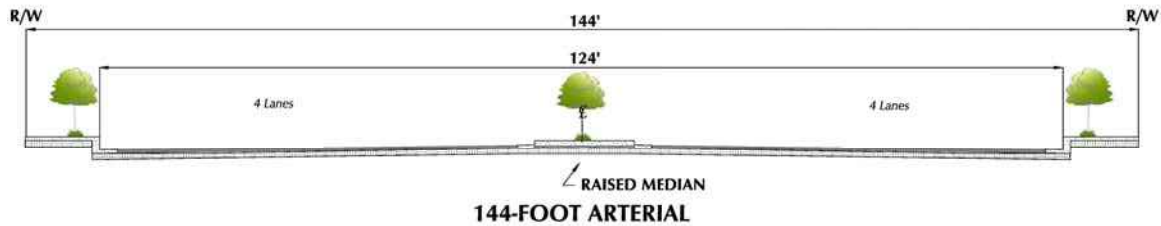
**NOTE:**

- \* LOCAL STREETS ARE NOT SHOWN ON THIS  
PLAN EXCEPT WHERE NEEDED FOR CLARITY.
- ① MAGNOLIA AVENUE SHALL BE A SPECIAL BLVD, WITH  
4 LANES EASTERLY OF HARRISON STREET.
- ② OVERLOOK PARKWAY SHALL BE A 2-LANE,  
110-FOOT ARTERIAL WITH A WIDE MEDIAN PARKWAY.  
THE ALIGNMENT OF OVERLOOK PARKWAY WESTERLY  
OF WASHINGTON IS NOT YET DETERMINED PENDING  
PREPARATION OF SPECIFIC PLAN LEVEL STUDY.
- ③ COLUMBIA AVENUE IS SHOWN BY HUNTER BUSINESS  
PARK SPECIFIC PLAN AS A 134-FOOT ARTERIAL.  
ACTUAL STREET WIDTH, DUE TO RAILROAD  
OVERCROSSINGS, WILL BE DETERMINED BY  
PUBLIC WORKS.
- ④ THESE STREETS SHALL BE 66-FOOT LOCAL  
ROADWAYS SERVING AS ALTERNATE ROUTES.
- ⑤ THE STREETS IN SYCAMORE CANYON  
BUSINESS PARK SPECIFIC PLAN VARY IN SIZE.  
SEE THE SPECIFIC PLAN FOR DETAILS.

**Figure 8**  
**City of Riverside Master Plan of Roadways**

Source: City of Riverside

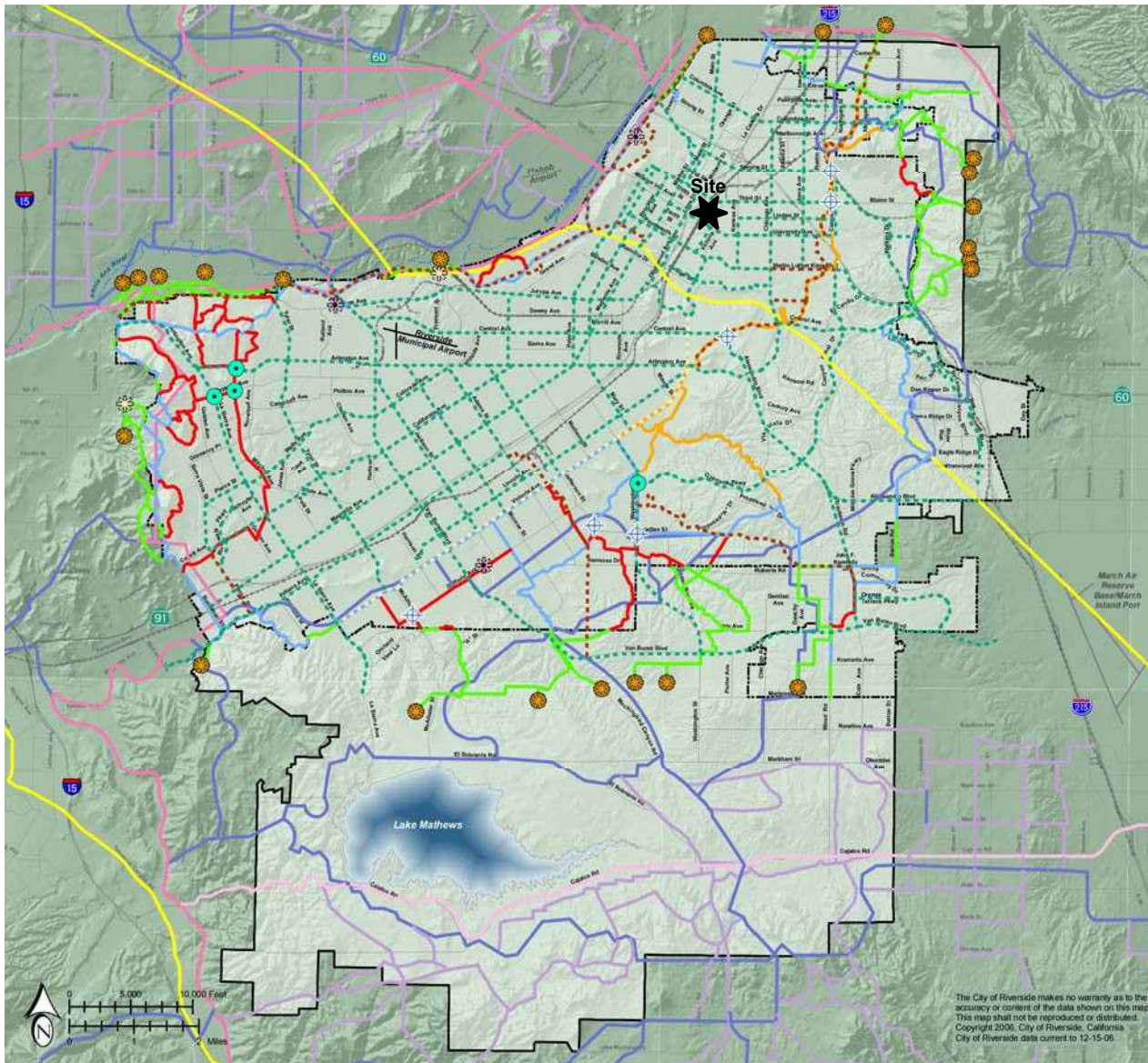




**Figure 9**  
**City of Riverside General Plan Roadway Cross-Sections**

Source: City of Riverside





**LEGEND**

**CITY TRAIL POINTS**

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

**CITY TRAILS**

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

**CITY BIKEWAYS**

- CLASS 1
- CLASS 1&2
- CLASS 2

**RIVERSIDE COUNTY TRAILS**

- CLASS 1 BIKE PATH
- CLASS 1 BIKE PATH/REGIONAL TRAIL
- COMMUNITY TRAIL
- REGIONAL TRAIL
- HISTORIC TRAIL

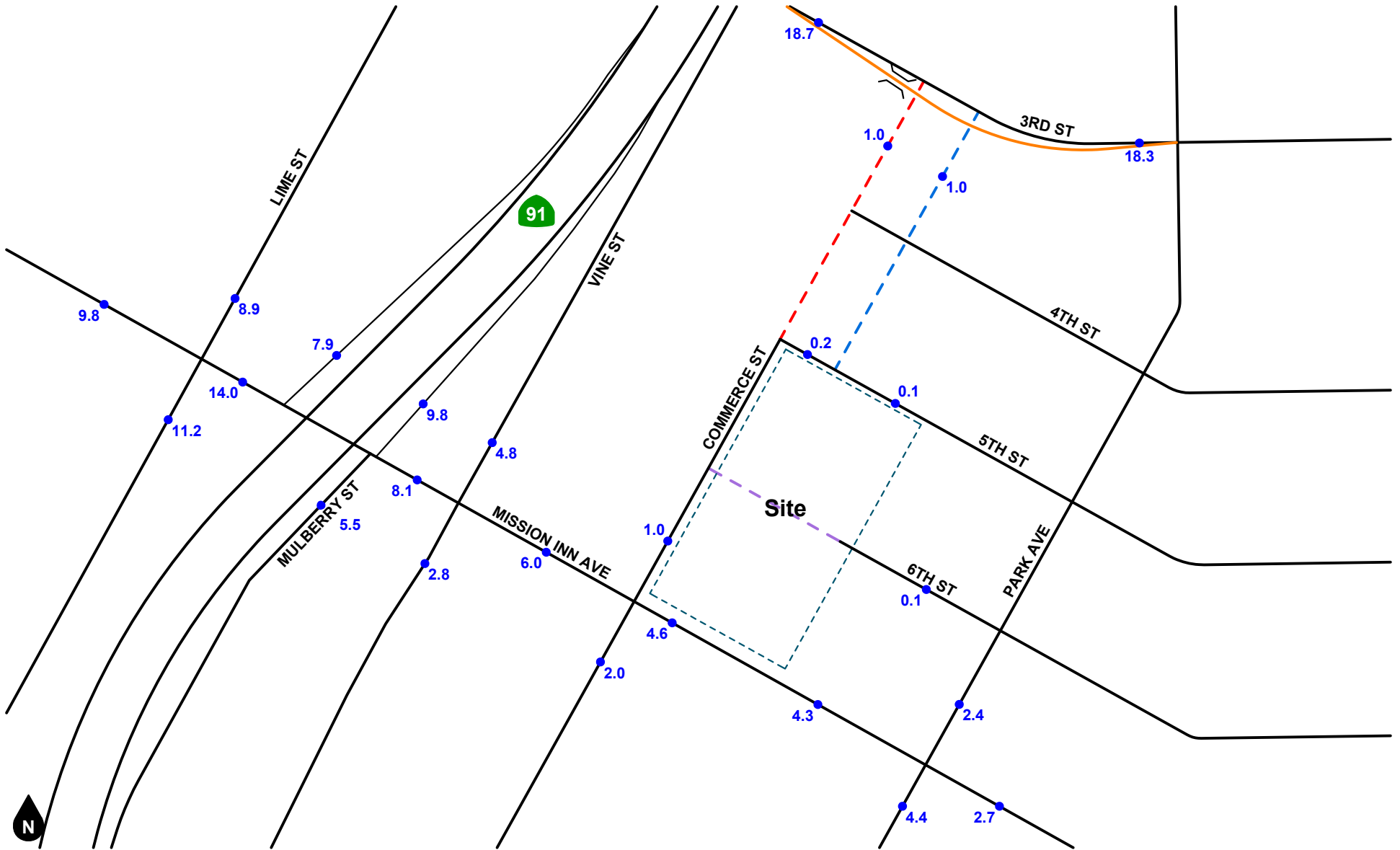
- RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE OF INFLUENCE

The City of Riverside makes no warranty as to the accuracy or content of the data shown on this map. This map shall not be reproduced or distributed. Copyright 2006, City of Riverside, California. City of Riverside data current to 12-15-06.

**Figure 10**  
**City of Riverside Master Plan of Trails and Bikeways**

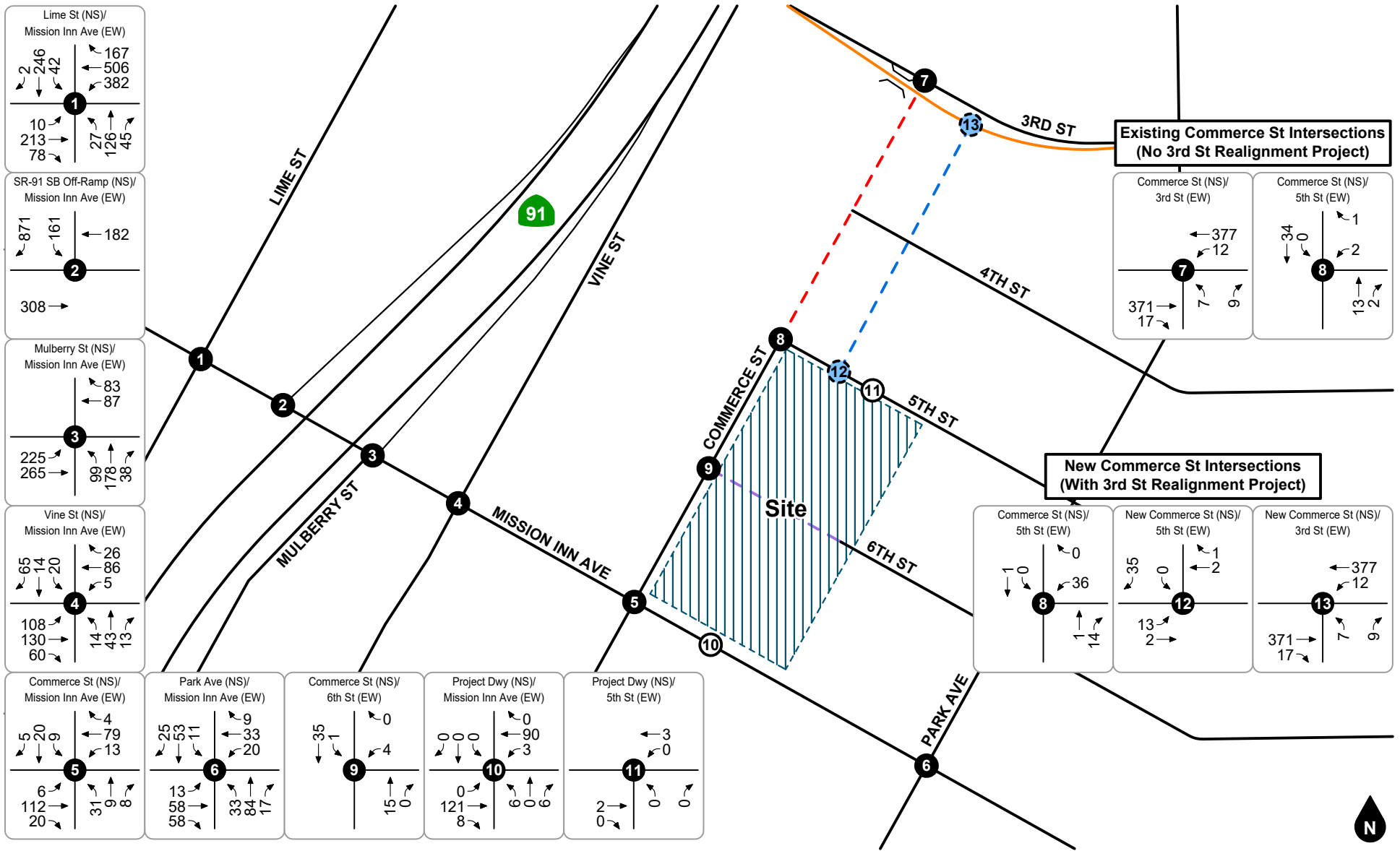
Source: City of Riverside



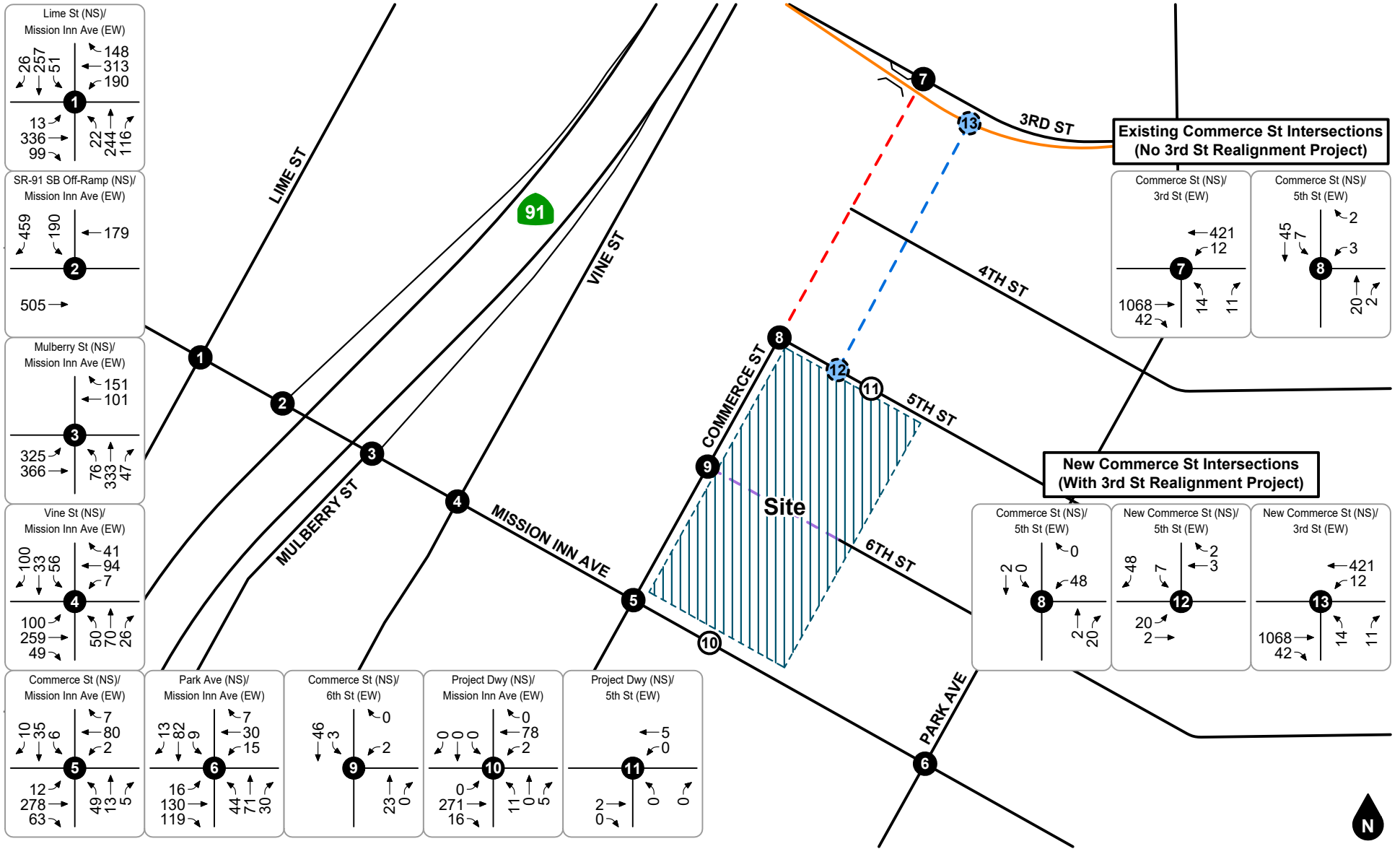


- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 11**  
Existing Average Daily Traffic Volumes



**Figure 12**  
Existing AM Peak Hour Intersection Turning Movement Volumes



- Legend**
- #** Study Intersection
  - #** Project Driveway
  - #** Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 13**  
**Existing PM Peak Hour Intersection Turning Movement Volumes**

## 4. PROJECT TRIP FORECASTS

---

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated in the figures contained in this section.

### PROJECT TRIP GENERATION

Table 3 shows the existing, proposed and net new project trip generation forecast is based on average rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) for Land Use Codes 869 (Discount Home Furnishing Superstore), 221 (Multifamily Housing – Mid-rise, Close to transit) and 220 (Multifamily Housing – Low-rise, Close to transit).

As shown in Table 3, the proposed project is forecast to generate a total of approximately 1,213 net new daily trips, including 90 net new trips during the AM peak hour and 72 net new trips during the PM peak hour.

### PROJECT TRIP DISTRIBUTION & ASSIGNMENT

Figure 14 and Figure 15 show the forecast outbound and inbound directional distribution patterns for the project generated trips, respectively. The project trip distribution patterns were developed using engineering judgment in consultation with the City engineering staff based on a review of existing traffic data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, The project-generated average daily traffic volumes are shown in Figure 16. The project-generated AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 17 and Figure 18.

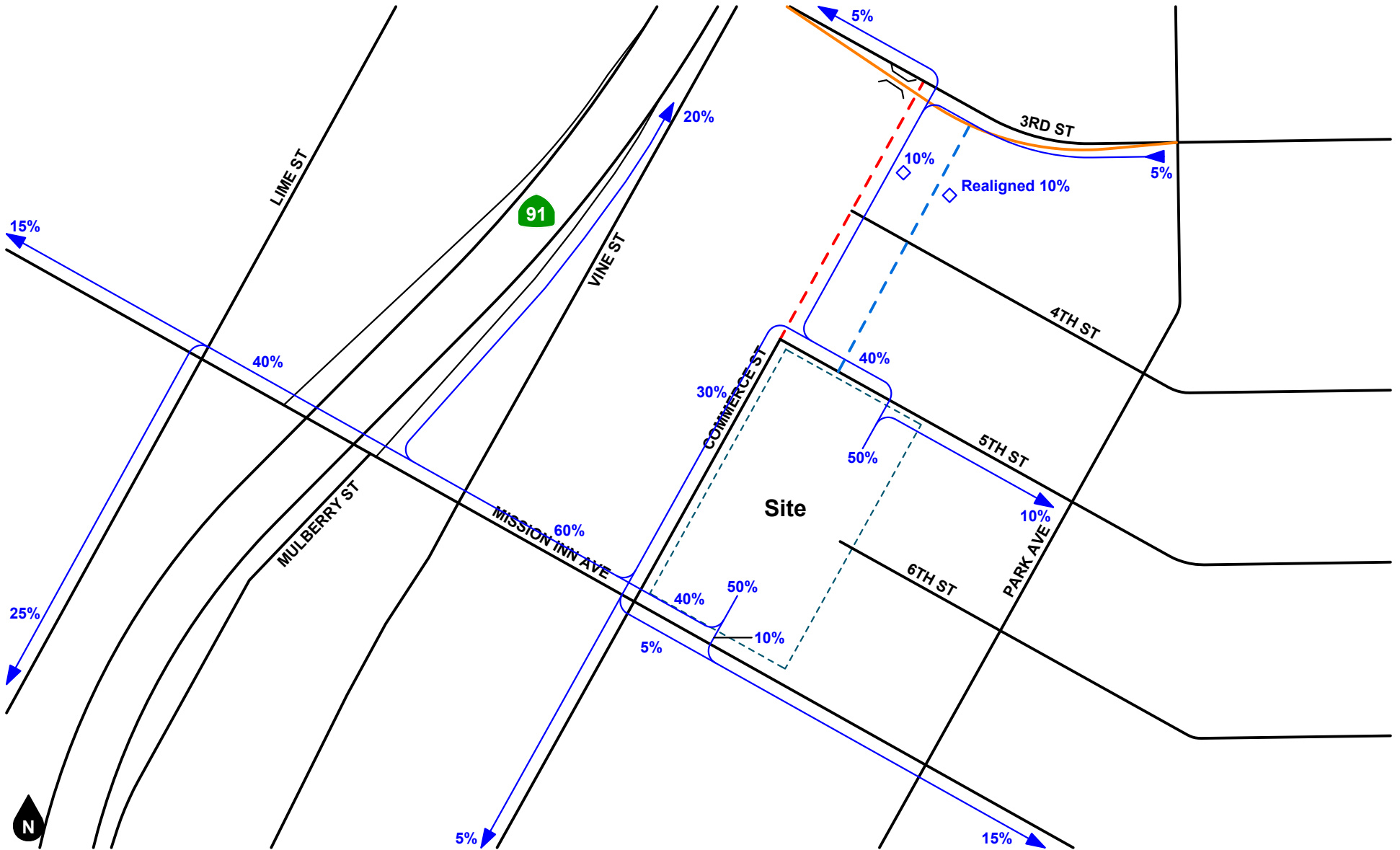
**Table 3  
Project Trip Generation**

Trip Generation Rates									
Land Use	Source <sup>1</sup>	Land Use Variable <sup>2</sup>	AM Peak Hour			PM Peak Hour			Daily Rate
			% In	% Out	Rate	% In	% Out	Rate	
Discount Home Furnishing Superstore	ITE 869	TSF	64%	36%	0.57	53%	47%	1.57	20.00
Multifamily Housing (Low-Rise, Close to Rail Transit)	ITE 220	DU	29%	71%	0.38	60%	40%	0.61	4.72
Multifamily Housing (Mid-Rise, Close to Rail Transit)	ITE 221	DU	36%	64%	0.32	65%	35%	0.29	4.75

Trips Generated									
Land Use	Source	Quantity	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
<u>Existing to be removed</u>									
Discount Home Furnishing Superstore	ITE 869	-10.620 TSF	-4	-2	-6	-9	-8	-17	-212
<u>Proposed development</u>									
Multifamily Housing (Mid-Rise, Close to Rail Transit)	ITE 221	295 DU	34	60	94	56	30	86	1,401
Multifamily Housing (Low-Rise, Close to Rail Transit)	ITE 220	5 DU	1	1	2	2	1	3	24
Subtotal Proposed Development			<b>35</b>	<b>61</b>	<b>96</b>	<b>58</b>	<b>31</b>	<b>89</b>	<b>1,425</b>
<b>TOTAL NET NEW VEHICLE TRIPS GENERATED</b>			<b>+ 31</b>	<b>+ 59</b>	<b>+ 90</b>	<b>+ 49</b>	<b>+ 23</b>	<b>+ 72</b>	<b>+ 1,213</b>

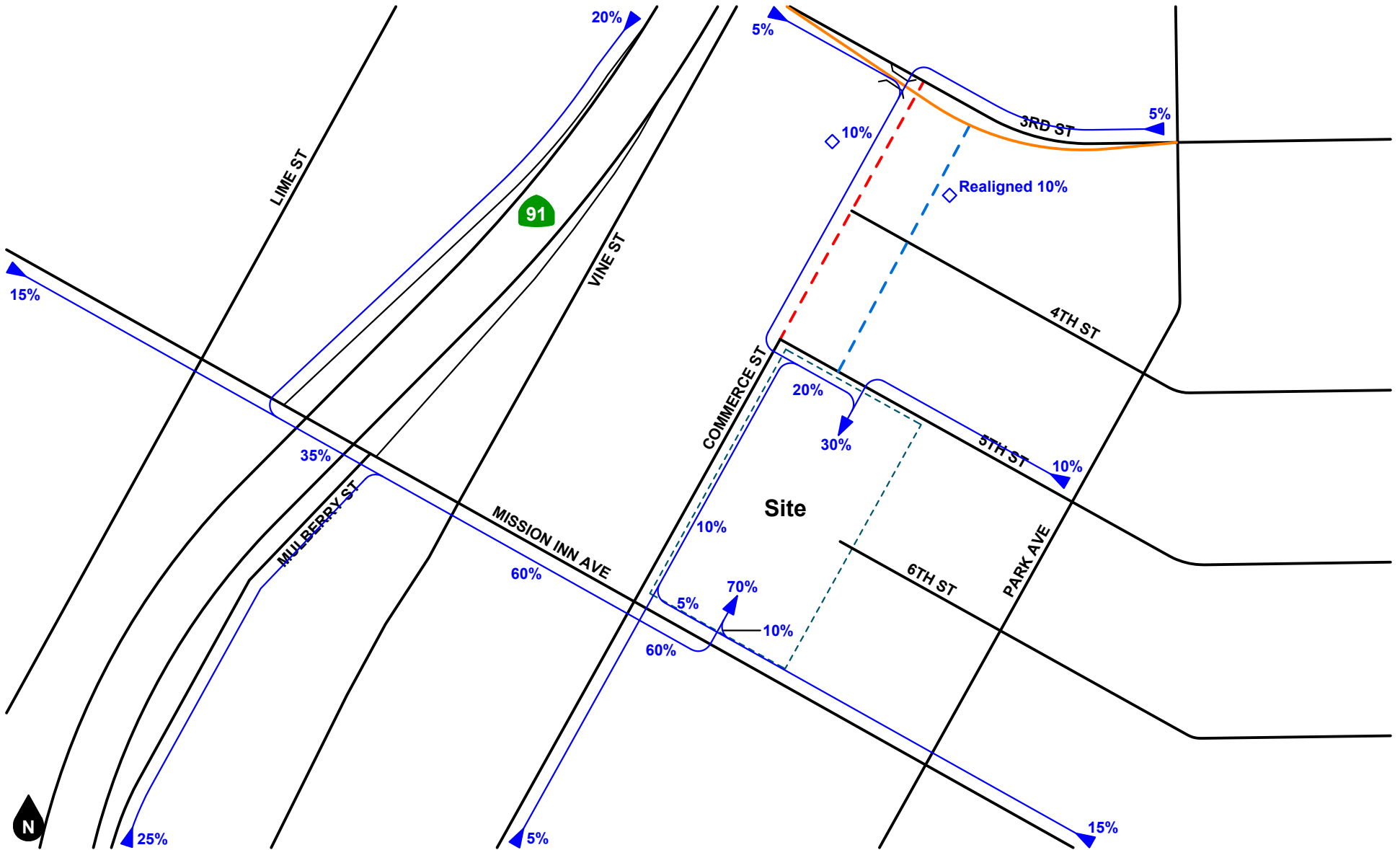
Notes:

1. ITE = Institute of Transportation Engineers *Trip Generation Manual* (11th Edition, 2021); ### = Land Use Code.  
All rates based on General Urban/Suburban setting.
2. DU = Dwelling Unit; TSF = Thousand Square Feet.



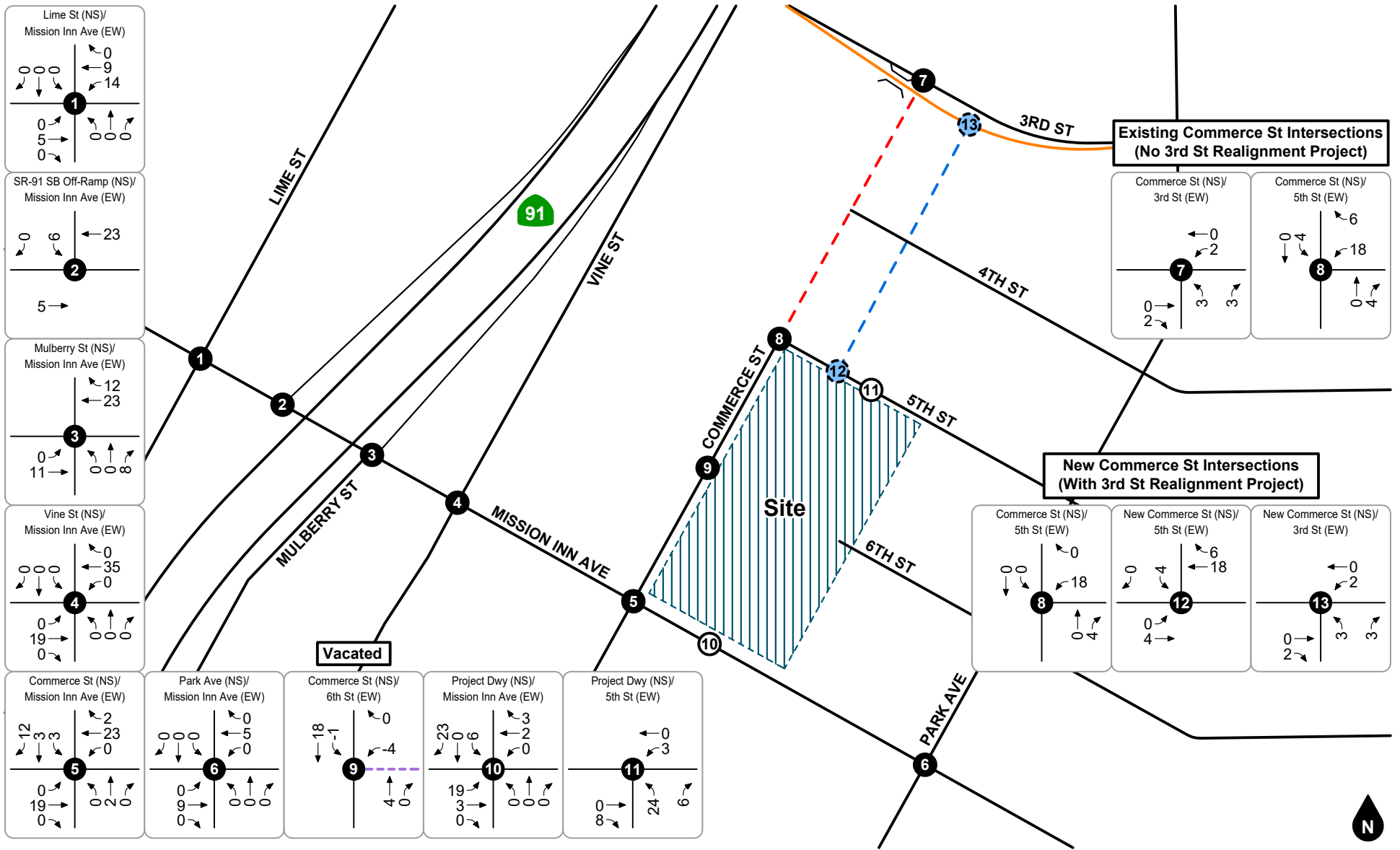
- Legend**
- 10% Percent From Project
  - Planned 3rd Street Grade Separation Project (By Others)
  - Planned Commerce Street Realignment (By Others)
  - Planned Commerce Street Vacation (By Others)
  - Movements north of the project will divert to the realigned Commerce Street when roadway construction is finished

**Figure 14**  
**Project Trip Distribution (Outbound)**



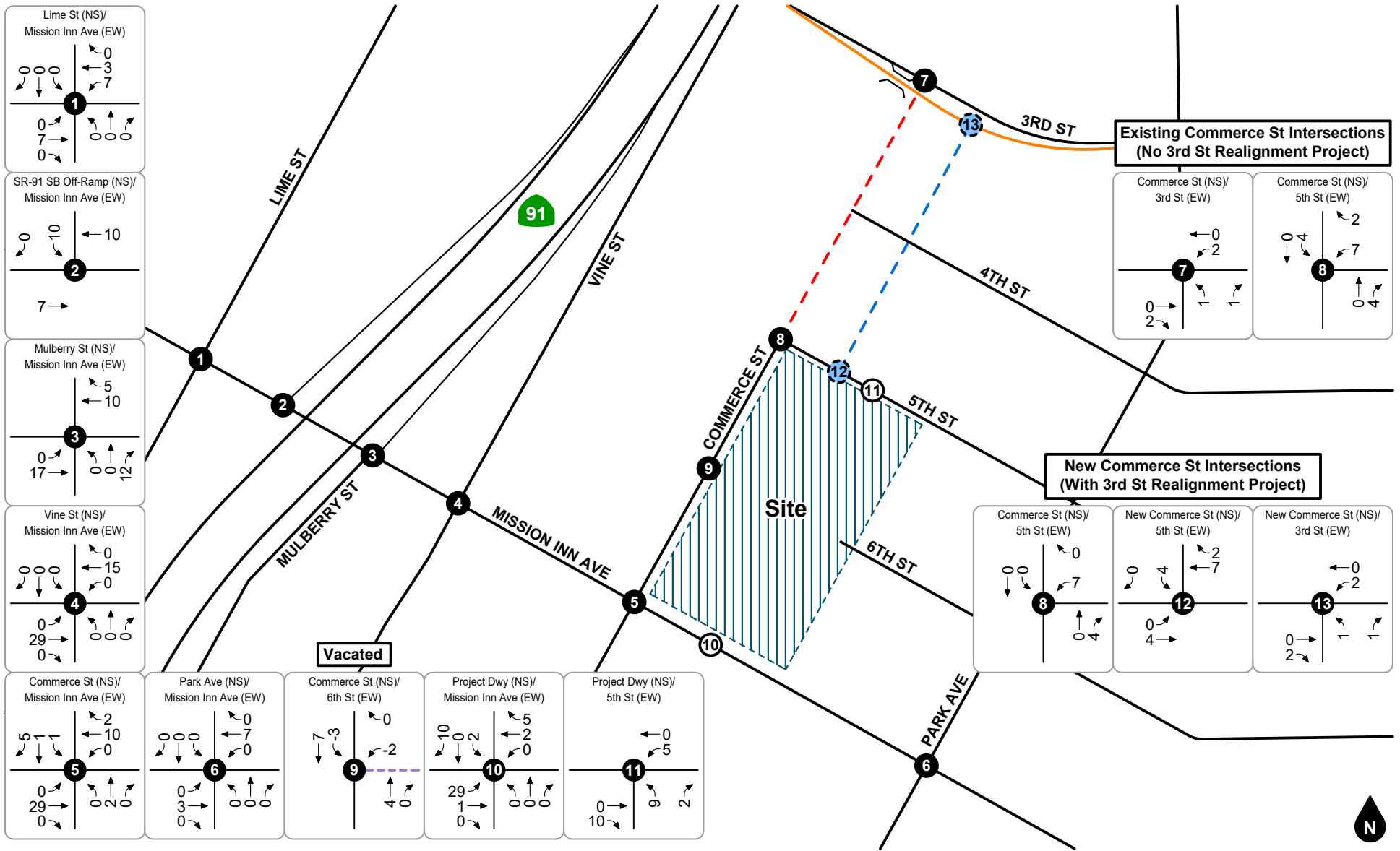
**Figure 15**  
**Project Trip Distribution (Inbound)**





- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 17**  
**Project AM Peak Hour Intersection Turning Movement Volumes**



**Figure 18**  
**Project PM Peak Hour Intersection Turning Movement Volumes**

## 5. FUTURE VOLUME FORECASTS

---

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated in the figures contained in this section.

### **METHOD OF PROJECTION**

To assess future conditions, existing volumes were combined with project trips, ambient growth, and other development trips. The project completion date for analysis purposes in this report is 2026.

### **Ambient Growth**

To account for ambient growth, Opening Year (2026) roadway volumes were developed by increasing existing (year 2024) volumes by a growth rate of two percent (2.0%) per year over a two (2) year period for a total growth factor of 1.04. The ambient growth was applied to all movements at the study intersections.

### **Other Developments**

To account for growth associated with other development projects, trips generated by other pending or approved but unconstructed developments in the City of Riverside were reviewed and added to the study area as appropriate. The other development trip generation summary is shown in Table 4. The regional ambient growth is assumed to account for any additional trips generated by other developments not specifically listed in Table 4. Figure 19 shows the other development location map.

Average daily traffic volumes generated by other developments are shown in Figure 20. Figure 21 and Figure 22 show the forecast AM peak hour and PM peak hour intersection turning movement volumes for trips generated by other developments.

### **Regional Travel Demand Model Growth**

The Buildout Year 2045 average daily traffic volumes were determined using the Riverside County Transportation Model (RIVCOM) base Year (2018) and future Year (2045) average daily travel demand model plots. The difference, between the base traffic volumes and the future traffic volumes, defines the incremental growth in the forecasted volumes over the 27-year period between 2018 and 2045. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between the current year (2024) and year 2045 based on the linear growth determined between the base year and future year forecast. Since the increment between the current year and Year 2045 is 21 years of the 27-year time frame, a factor of 0.79 (i.e., 21/28) was used.

To derive Year 2045 AM and PM peak hour intersection turning movement volumes, the traffic volume growth forecasts from the base year and future year AM and PM travel demand model plots were further refined using a spreadsheet program developed by the Federal Highway Administration and consistent with traffic volume forecasting procedures outlined in the National Cooperative Highway Research Program Report 255. The spreadsheet program uses a linear programming algorithm to calculate future turning movements based on the relationship of existing intersection turning movements and forecast model growth. The forecast turning movements developed by the spreadsheet program were reviewed for reasonableness and adjusted as necessary to ensure growth over near-term forecasts. The end results of the post-processing procedures are future intersection turning movement volumes suitable for analysis. Travel demand model plots are included in Appendix E and post-processing worksheets are provided in Appendix F.

## **6th Street Vacation**

The proposed plan also includes a street vacation of 6th Street from Commerce Street to the east side of the project. To account for the closure of 6th Street on the east side of the proposed project, the existing traffic has been redistributed to the adjacent streets and intersections.

## **Commerce Street Realignment**

The 3rd Street Grade Separation project includes a bridge for the grade separation of train and vehicle traffic, roadway improvements on 3rd Street and the realignment of Commerce Street away from the bridge structure. The preliminary layout of the 3rd Street Grade Separation project is included in Appendix G.

For the 3rd Street Grade Separation project conditions, the Commerce Street traffic north of 5th Street is diverted to the new Commerce Street realignment.

## **ANALYSIS SCENARIO VOLUMES**

The scenarios listed below are for the current Commerce Street alignment and for the planned Commerce Street realignment which is to occur with the 3rd Street Grade Separation project.

### **Existing Plus Project**

The Existing Plus Project volume forecast was developed by adding project-generated trips and 6th Street vacation redistribution trips to the Existing volumes. Existing Plus Project average daily traffic volumes are shown in Figure 23. Existing Plus Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 24 and Figure 25.

### **Opening Year (2026) Without Project**

The Opening Year (2026) Without Project volume forecast was developed by applying the ambient growth factor to existing volumes and adding trips generated by other developments. Opening Year (2026) Without Project average daily traffic volumes are shown in Figure 26. Opening Year (2026) Without Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 27 and Figure 28.

### **Opening Year (2026) With Project**

The Opening Year (2026) With Project volume forecast was developed by adding project-generated trips and 6th Street vacation redistribution trips to the Opening Year (2026) Without Project volumes. Opening Year (2026) With Project average daily traffic volumes are shown in Figure 29. Opening Year (2026) With Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 30 and Figure 31.

### **Buildout Year 2045 Without Project**

The Buildout Year 2045 Without Project volume forecast was developed based on the regional travel demand model growth as described above. Buildout Year 2045 Without Project average daily traffic volumes are shown in Figure 32. Buildout Year 2045 Without Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 33 and Figure 34.

### **Buildout Year 2045 With Project**

The Buildout Year 2045 With Project volume forecast was developed by adding project-generated trips and 6th Street vacation redistribution trips to the Buildout Year 2045 Without Project volumes. Buildout Year

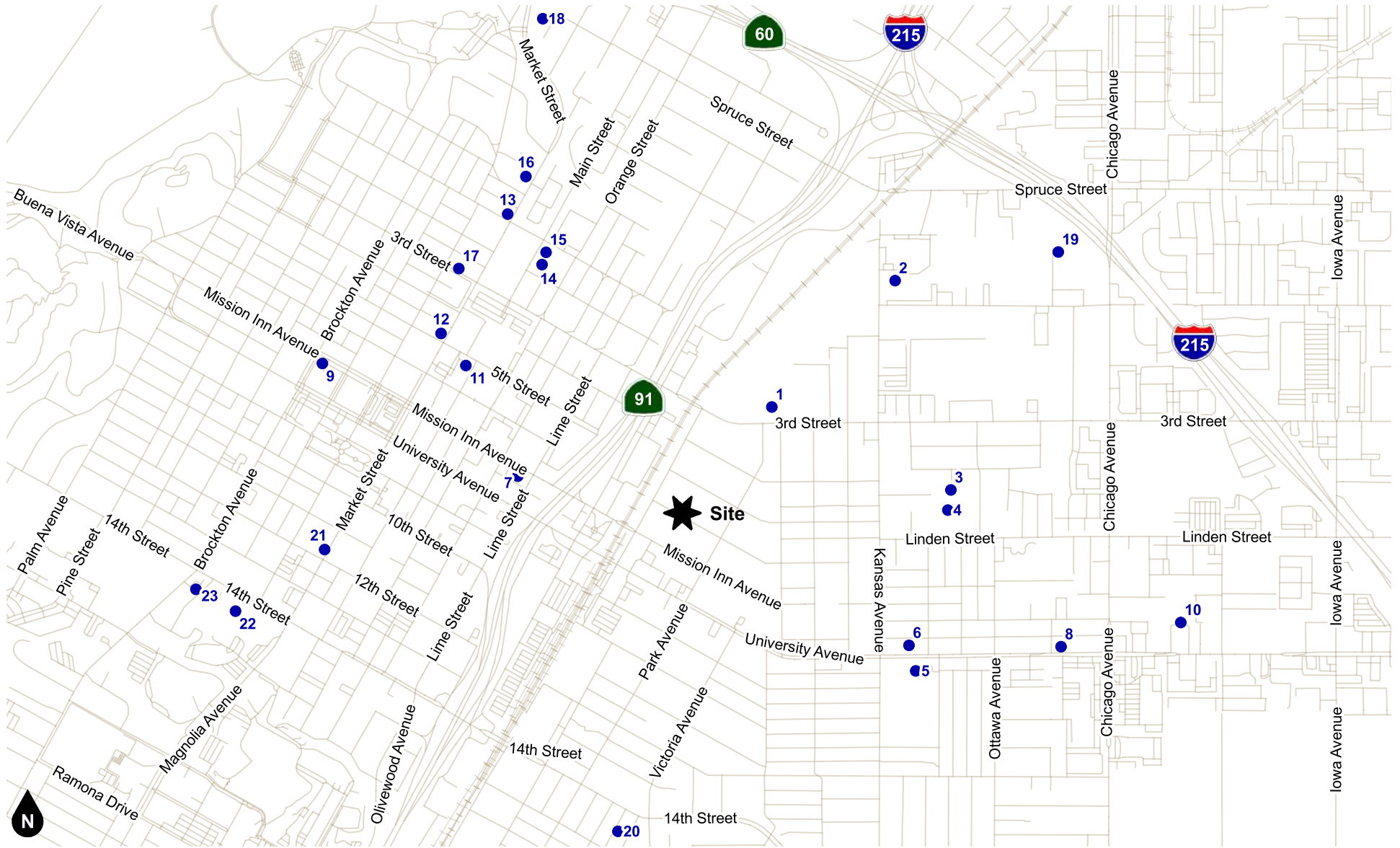
2045 With Project average daily traffic volumes are shown in Figure 35. Buildout Year 2045 With Project AM peak hour and PM peak hour intersection turning movement volumes are shown in Figure 36 and Figure 37.

**Table 4  
Other Development Trip Generation**

ID	Name/Address	Land Use	Source	Quantity	Trips Generated						Daily
					AM Peak Hour			PM Peak Hour			
					In	Out	Total	In	Out	Total	
1	2375 Third St.	General Light Industrial	ITE 110	26,076 TSF	17	2	19	2	15	17	127
2	2069 Massachusetts Ave.	Warehousing	ITE 150	199,850 TSF	26	8	34	10	26	36	342
3	Patterson St. and Minnesota St.	Multifamily Housing (Low-Rise, Not Close to Rail Transit)	ITE 220	33 DU	3	10	13	11	6	17	222
4	1970 Patterson St.	Multifamily Housing (LRNCT)	ITE 220	57 DU	5	18	23	18	11	29	384
5	2060 University Ave	Library	ITE 590	15,000 TSF	11	4	15	59	63	122	1081
6	2039 University Ave.	Strip Retail Plaza (<40k)	ITE 822	5,000 TSF	7	5	12	16	17	33	272
7	3466 Mission Inn Ave.	Hotel	ITE 310	225 RM	58	46	104	68	65	133	1798
8	4088 Mission Inn Ave.	Multifamily Housing (LRNCT)	ITE 220	18 DU	2	5	7	6	3	9	121
		Strip Retail Plaza (<40k)	ITE 822	1,477 TSF	2	1	3	5	5	10	80
		Subtotal			4	6	10	11	8	19	201
9	4088 Mission Inn Ave.	Fast Casual Restaurant	ITE 930	1,006 TSF	1	0	1	7	6	13	98
10	1575 University Ave	Multifamily Housing (LRNCT)	ITE 220	257 DU	25	78	103	83	48	131	1732
		Strip Retail Plaza (<40k)	ITE 822	4,431 TSF	6	4	10	15	14	29	241
		Subtotal			31	82	113	98	62	160	1973
11	3521 Main St.	Fast Casual Restaurant	ITE 930	2,050 TSF	1	2	3	14	12	26	199
12	3491 Market St.	Strip Retail Plaza (<40k)	ITE 822	3,400 TSF	5	3	8	11	11	22	185
13	3491 Market St.	Multifamily Housing (LRNCT)	ITE 220	4 DU	0	2	2	1	1	2	27
14	3102 Main St.	Multifamily Housing (LRNCT)	ITE 220	85 DU	8	26	34	27	16	43	573
15	3102 Main St.	Convenience Store Gas Station	ITE 945	1,500 TSF	30	31	61	36	37	73	936
16	2941 Market St.	Single-Family Attached Housing	ITE 215	17 DU	2	6	8	6	4	10	122
17	3861 Third St	Affordable Housing - Income Limits	ITE 223	38 DU	6	13	19	10	7	17	183
18	2450 Market St.	Senior Adult Housing - Multifamily	ITE 252	75 DU	5	10	15	11	8	19	243
19	2610 Durahart St.	Small Office Building	ITE 712	4,000 TSF	5	2	7	3	6	9	58
		Strip Retail Plaza (<40k)	ITE 822	2,000 TSF	3	2	5	7	6	13	109
		Truck-Trailer Storage Yard	DATA <sup>3</sup>	52 PRK	1	3	4	3	2	5	68
		Subtotal			9	7	16	13	14	27	235
20	2790 Fourteenth St.	Strip Retail Plaza (<40k)	ITE 822	1,183 TSF	2	1	3	4	4	8	64
21	4135 Market St	Multifamily Housing (LRNCT)	ITE 220	30 DU	3	9	12	10	5	15	202
22	3112 Kansas Ave	Hospital	ITE 610	374 BED	482	187	669	209	423	632	8348
23	4414 Brockton Ave	Medical-Dental Office Building (Within/Near Hospital Campus)	ITE 720	18,000 TSF	39	9	48	13	38	51	573
		Automobile Parts and Service	ITE 943	4,500 TSF	6	3	9	4	5	9	75
		Subtotal			45	12	57	17	43	60	648

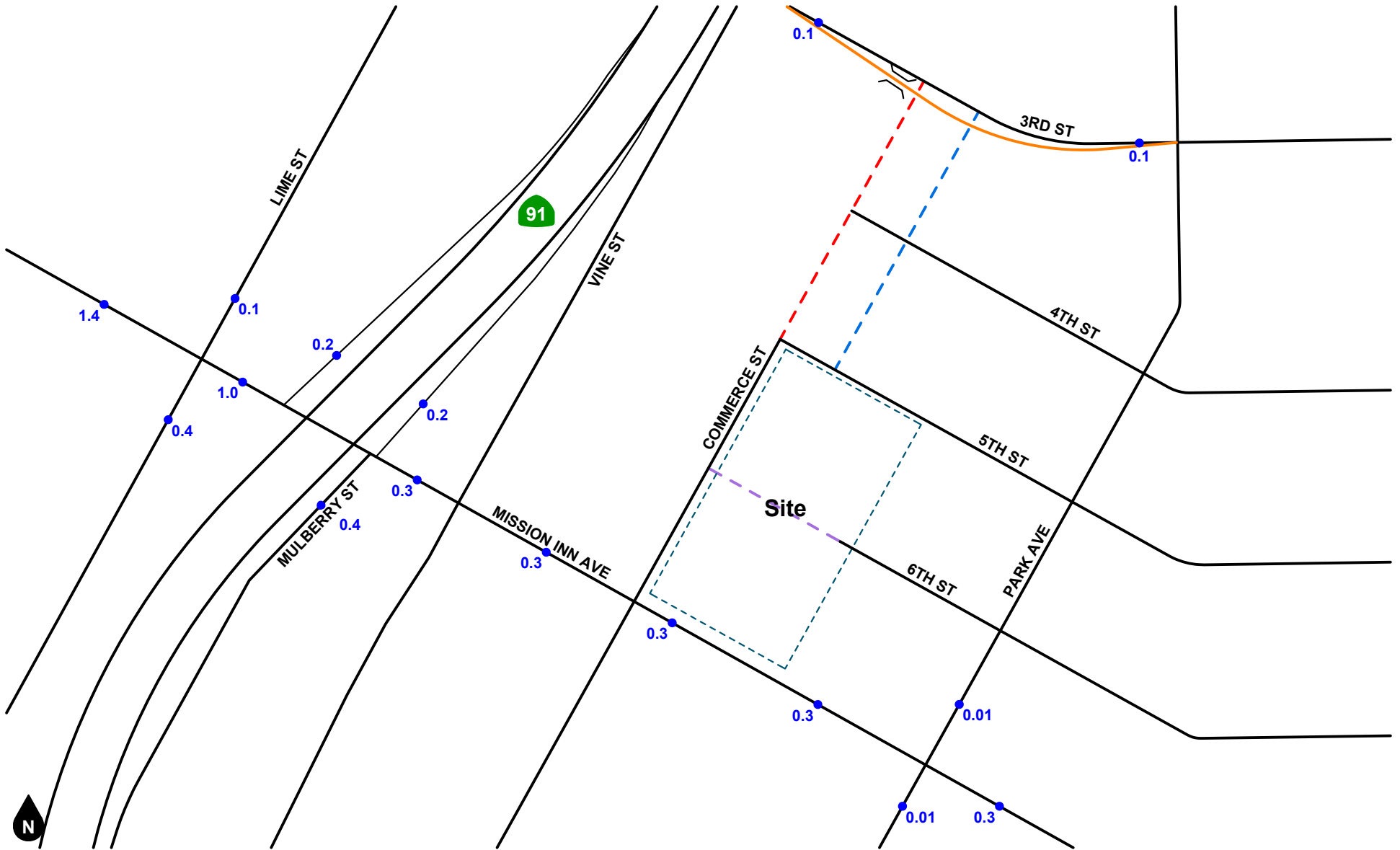
Notes:

1. ITE = Institute of Transportation Engineers Trip Generation Manual (11th Edition, 2021); ### = Land Use Code.  
All rates based on General Urban/Suburban setting.
2. DU = Dwelling Unit; TSF = Thousand Square Feet; RM = Hotel Rooms; BED = Hospital Beds, PRK = Truck-trailer parking spaces; LRNCT = Low-Rise Not Close to Transit.
3. DATA = Trip Generation from counts of truck-trailer yards.



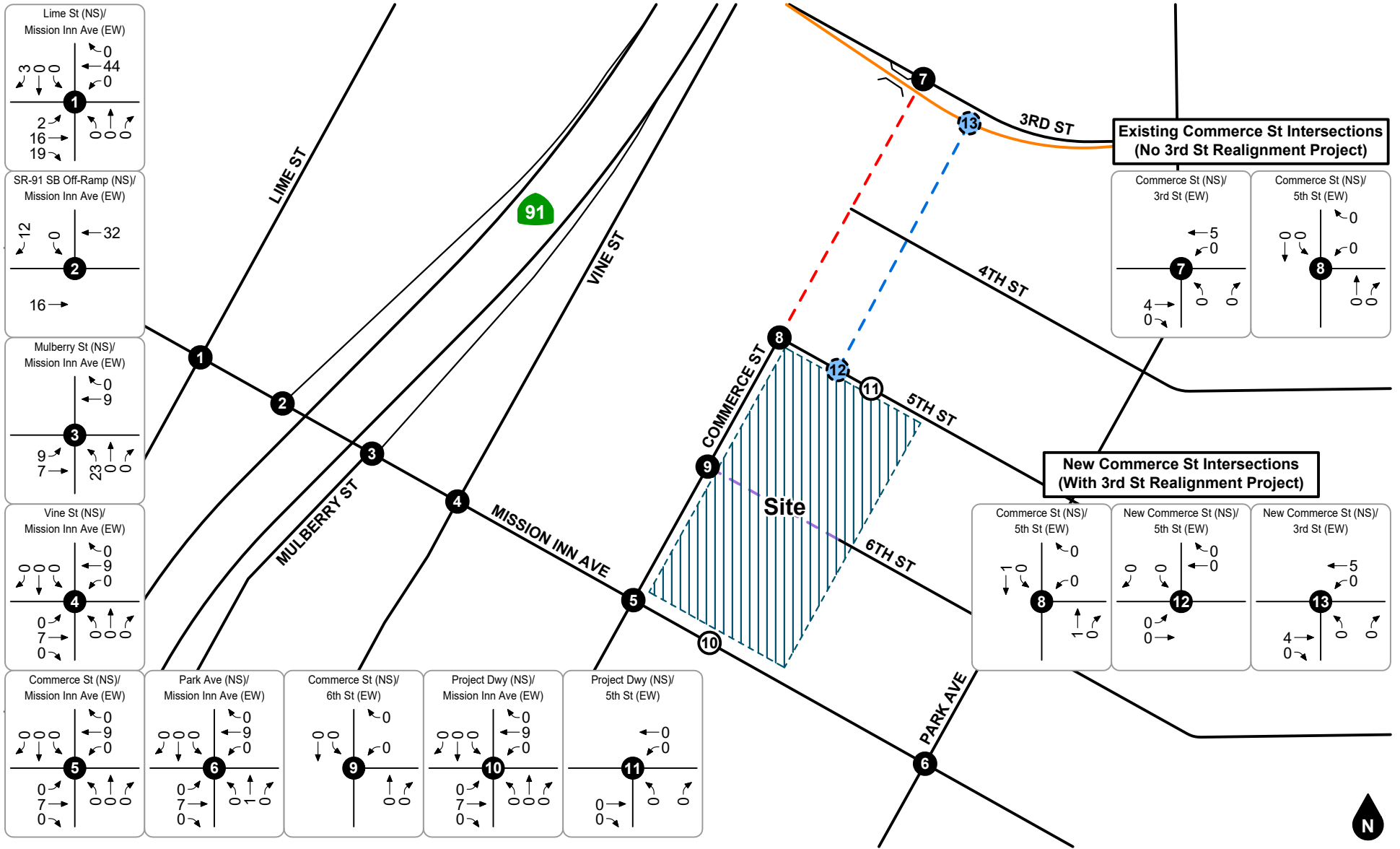
**Legend**  
 ● Other Development

**Figure 19**  
**Other Development Location Map**



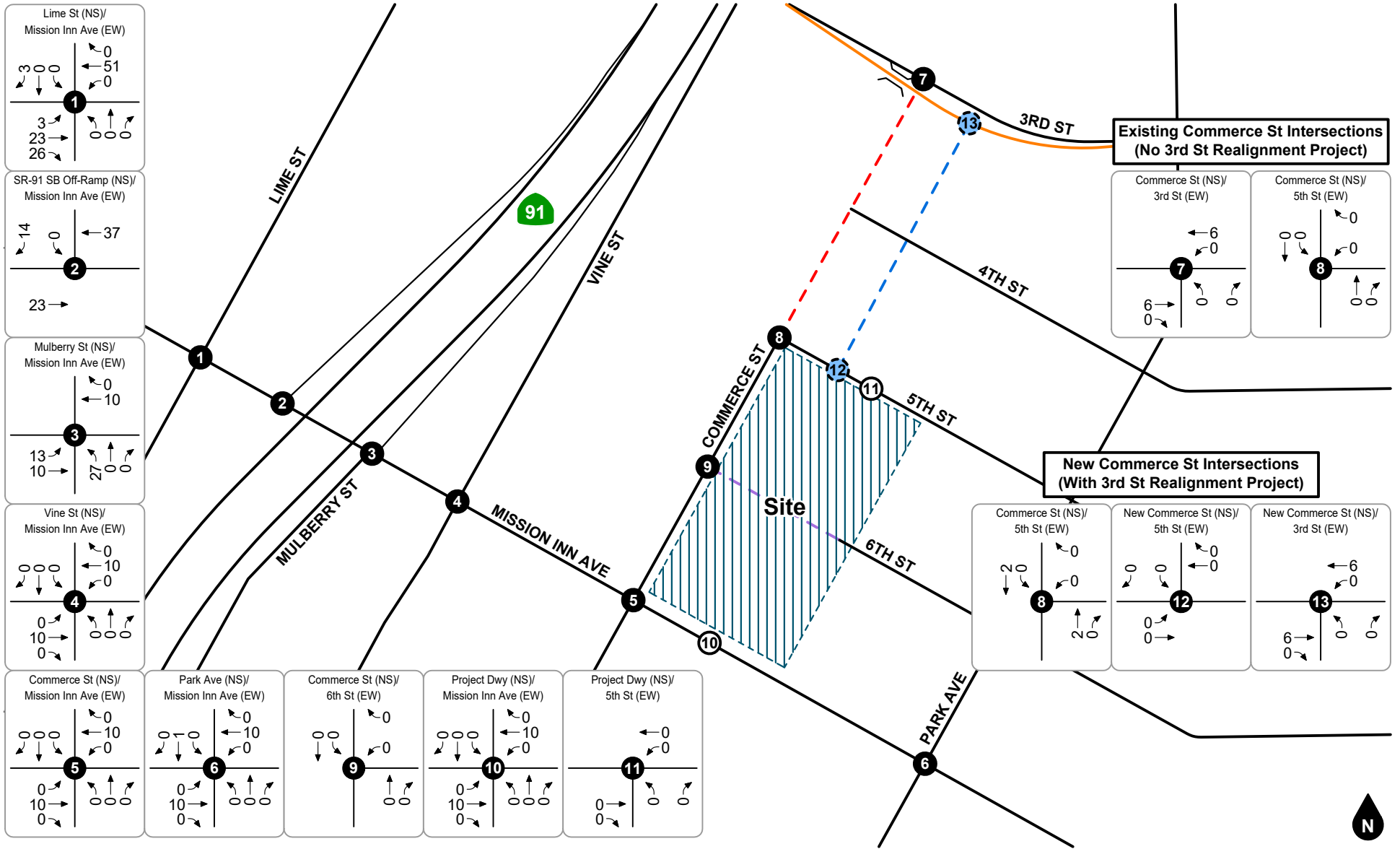
- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 20**  
**Other Development Average Daily Traffic Volumes**



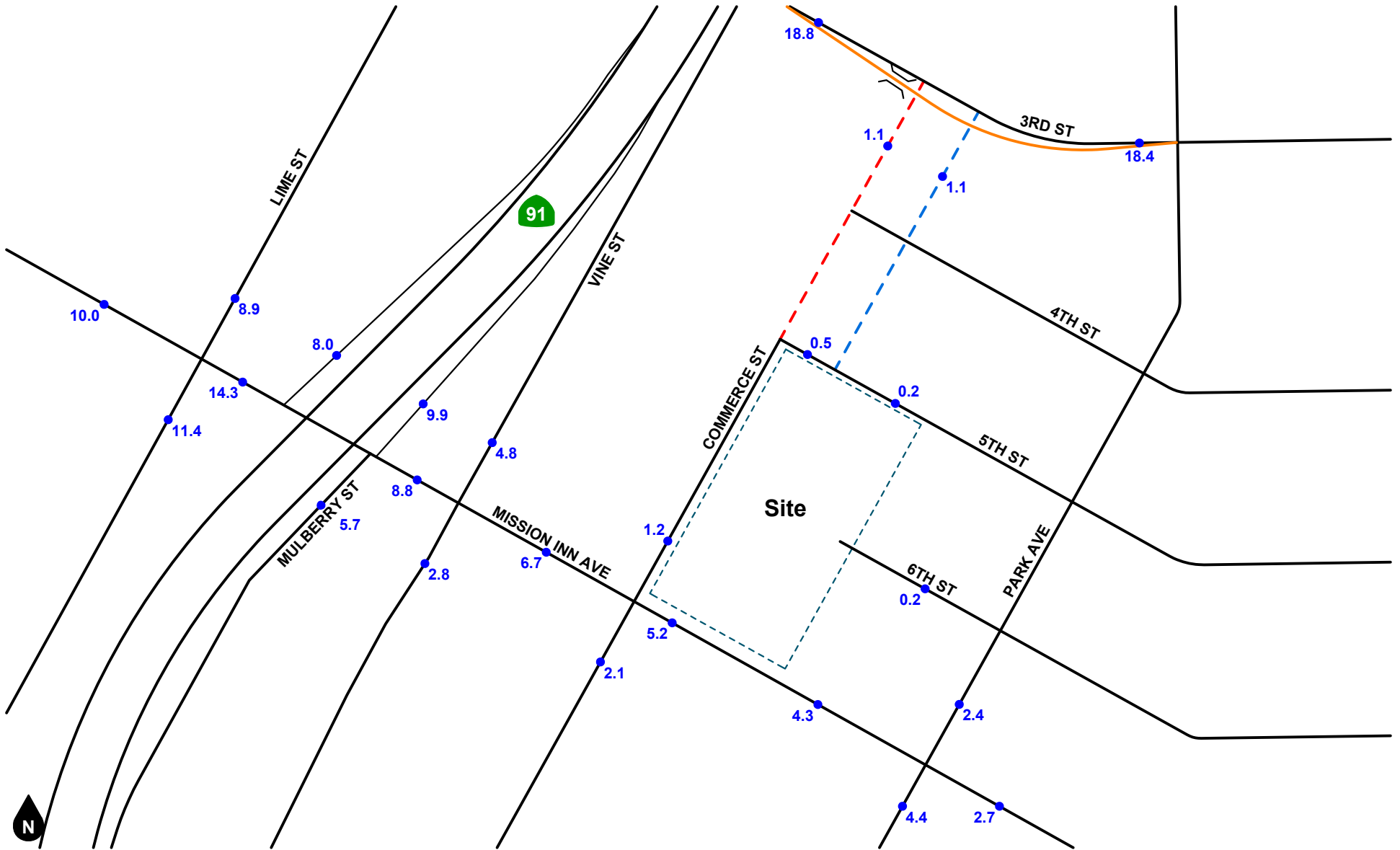
- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 21**  
**Other Development**  
**AM Peak Hour Intersection Turning Movement Volumes**



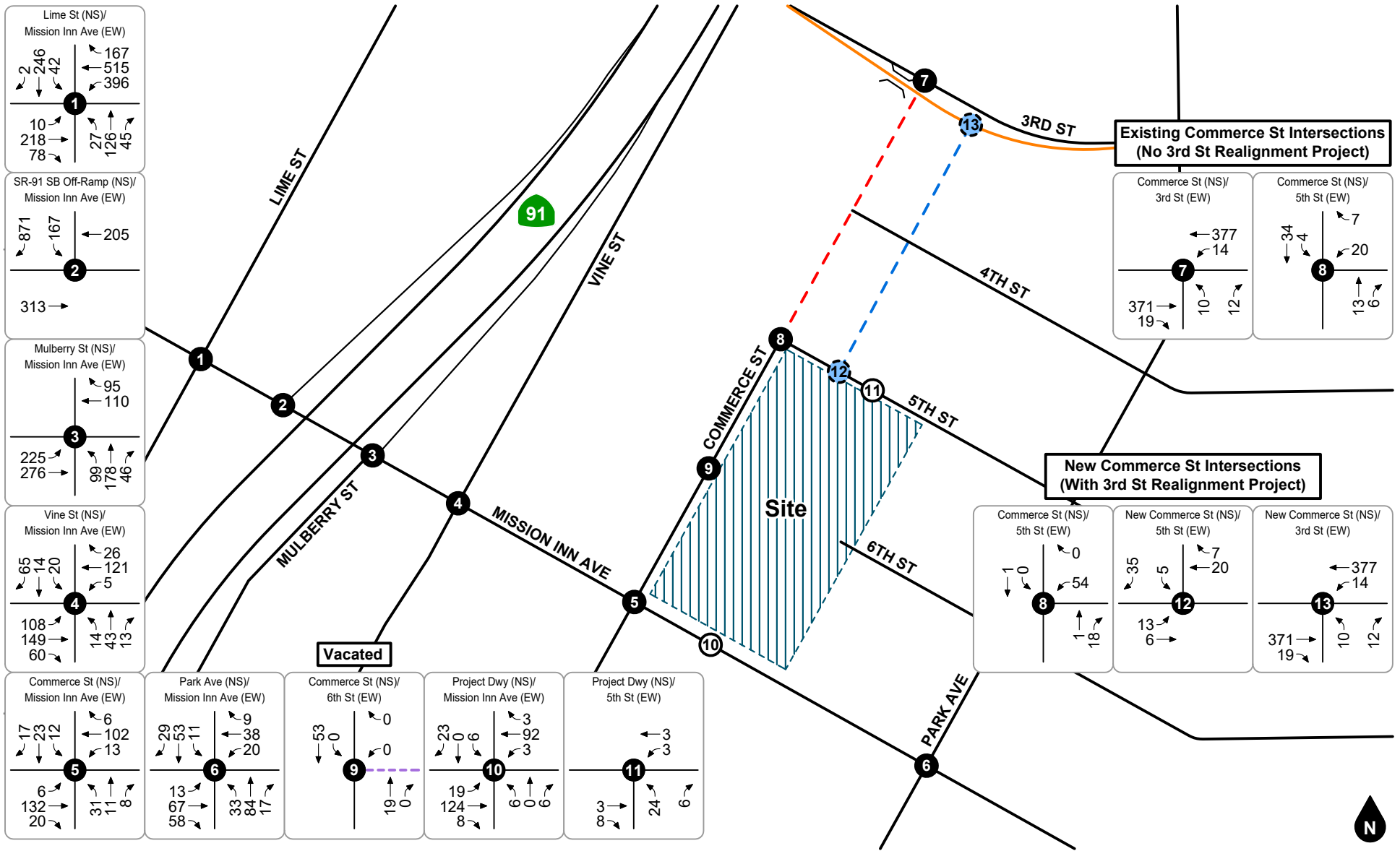
- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 22**  
**Other Development**  
**PM Peak Hour Intersection Turning Movement Volumes**



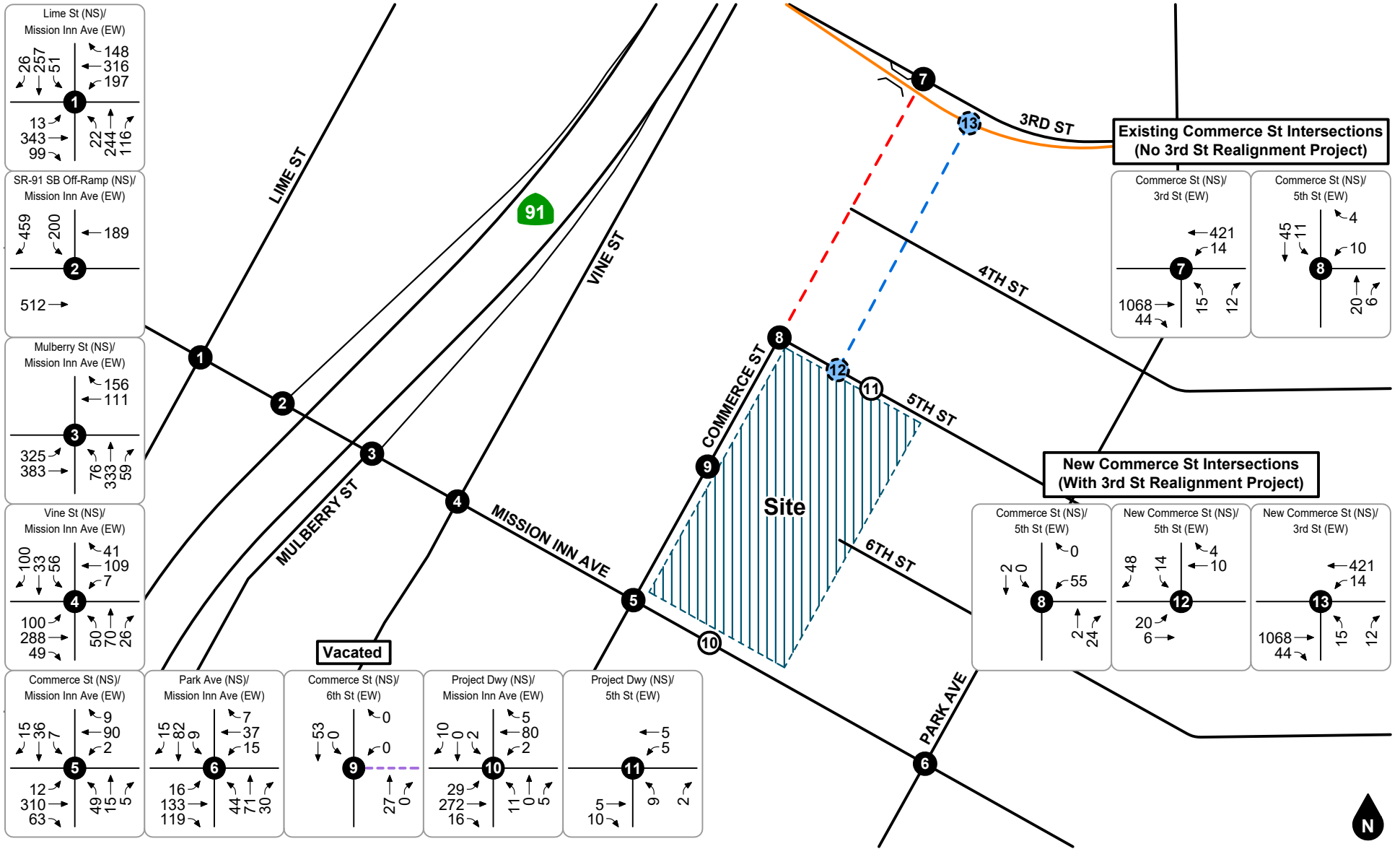
- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)

**Figure 23**  
**Existing Plus Project Project Average Daily Traffic Volumes**



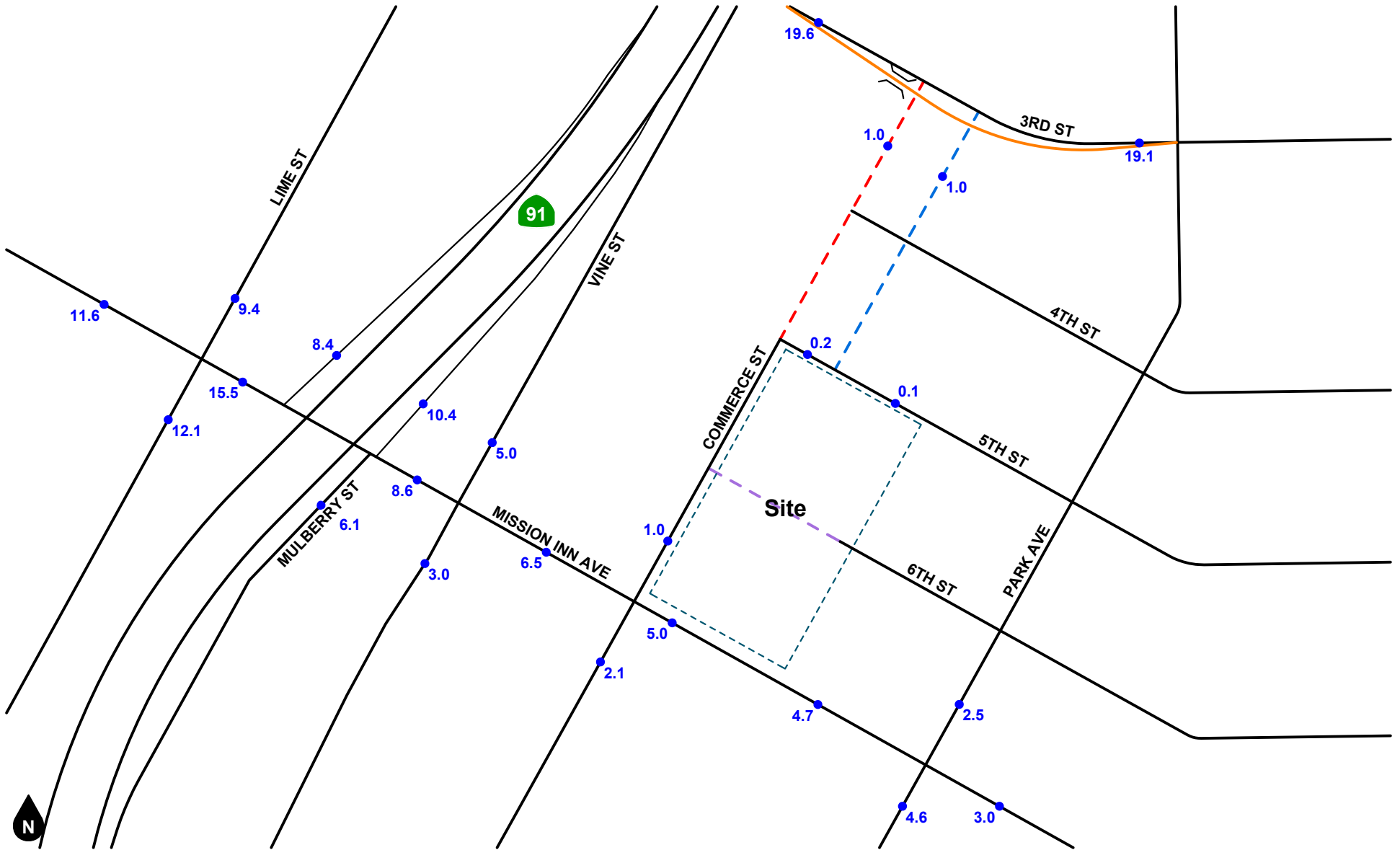
- Legend**
- Study Intersection
  - Project Driveway
  - Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - Planned Commerce Street Realignment (City Project)
  - Planned Commerce Street Vacation (City Project)
  - Proposed 6th Street Vacation (Project)

**Figure 24**  
**Existing Plus Project**  
**AM Peak Hour Intersection Turning Movement Volumes**



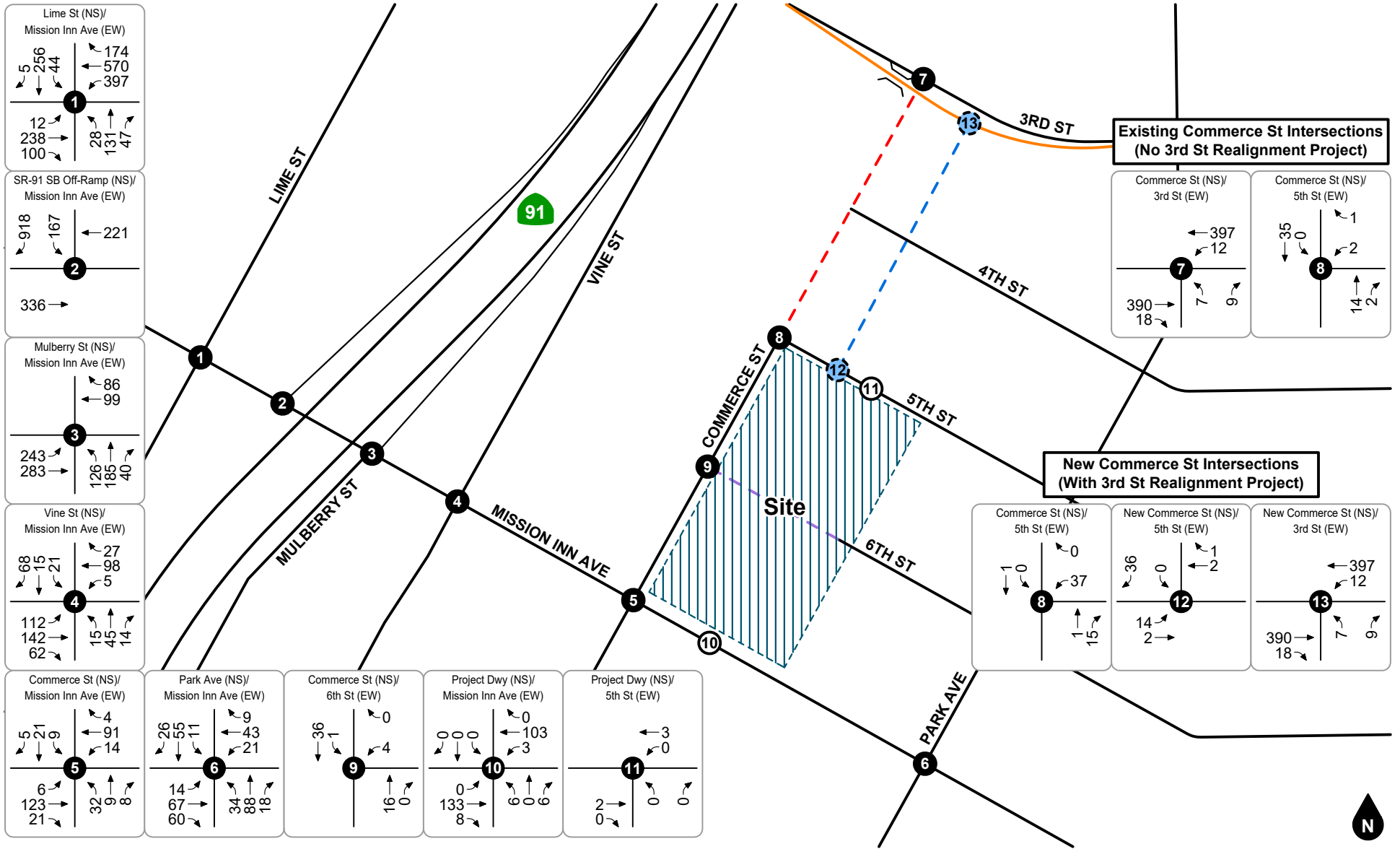
- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - Planned Commerce Street Realignment (City Project)
  - Planned Commerce Street Vacation (City Project)
  - Proposed 6th Street Vacation (Project)

**Figure 25**  
**Existing Plus Project**  
**PM Peak Hour Intersection Turning Movement Volumes**



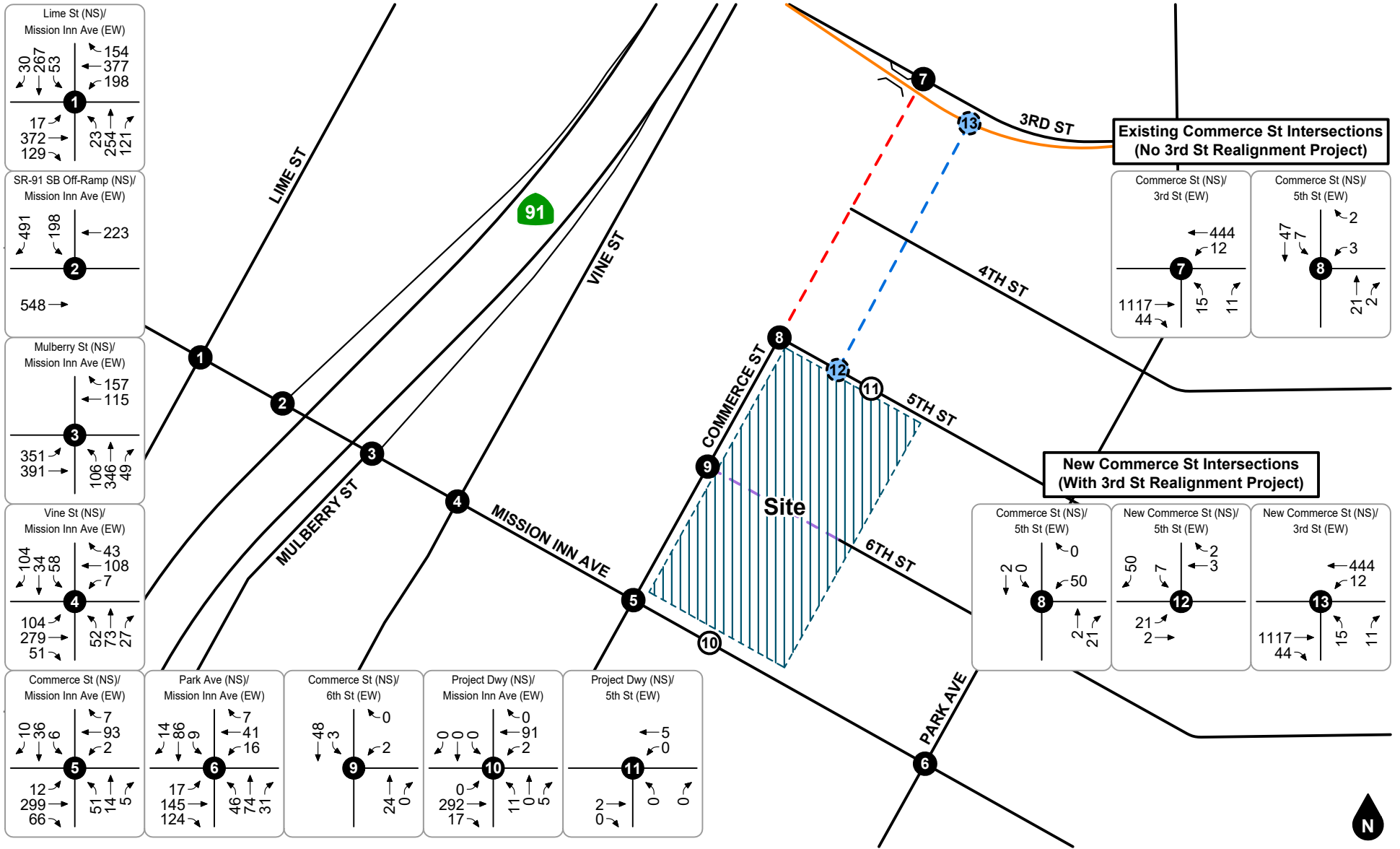
- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 26**  
**Opening Year (2026) Without Project Average Daily Traffic Volumes**



- Legend**
- #** Study Intersection
  - #** Project Driveway
  - #** Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

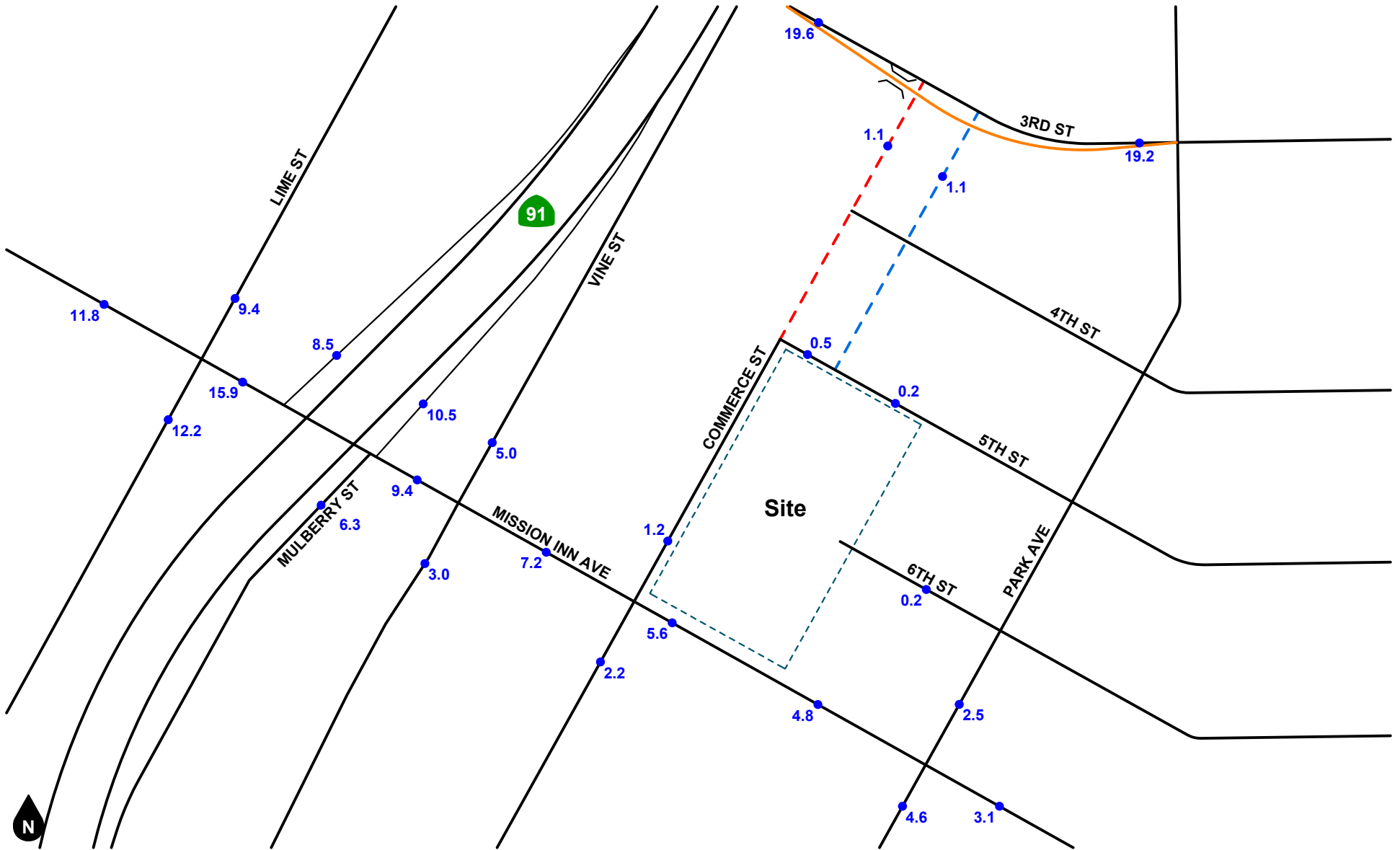
**Figure 27**  
**Opening Year (2026) Without Project**  
**AM Peak Hour Intersection Turning Movement Volumes**



**Legend**

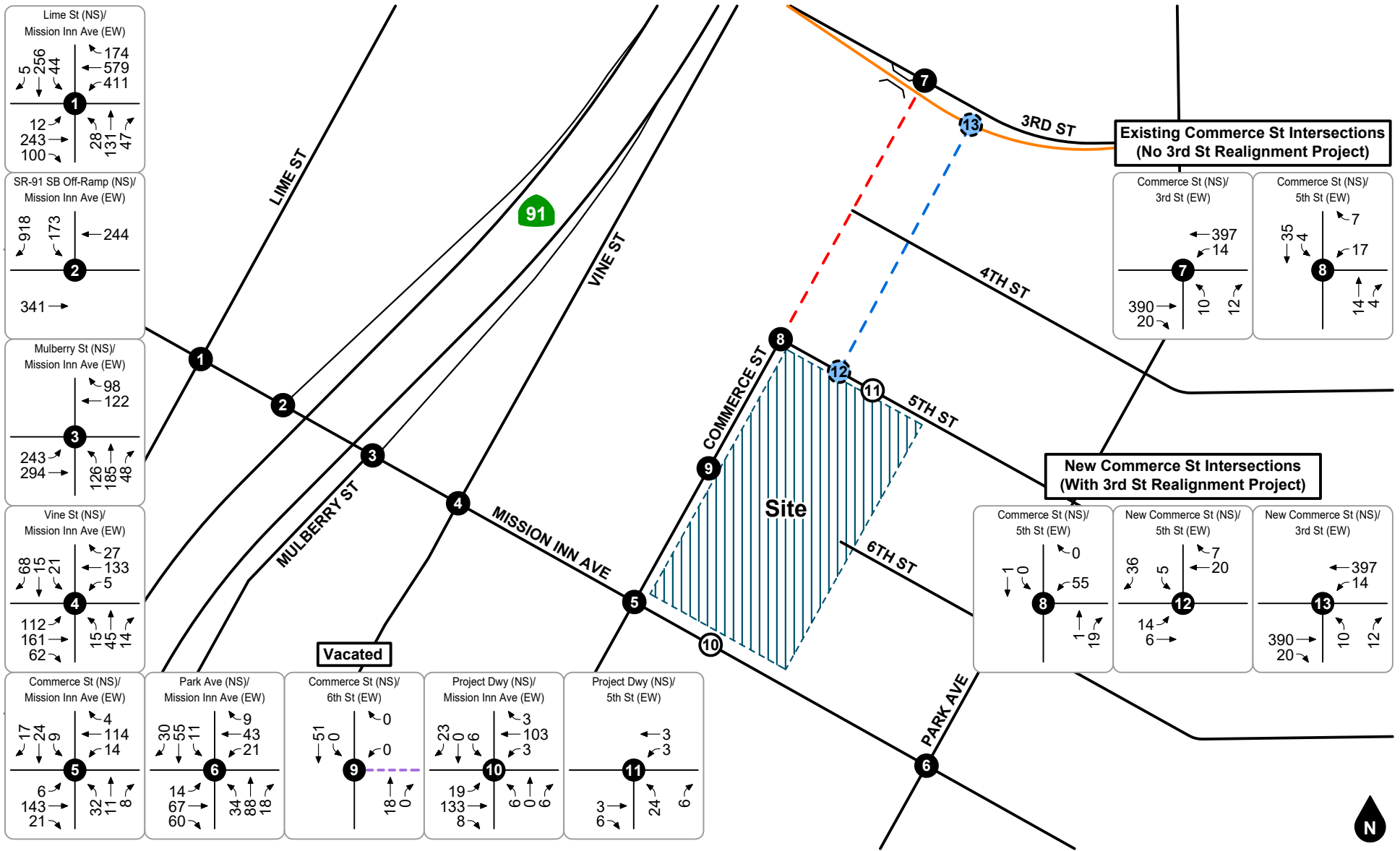
- # Study Intersection
- # Project Driveway
- # Study Intersection after Street Realignment
- Planned 3rd Street Grade Separation Project (City Project)
- - - Planned Commerce Street Realignment (City Project)
- - - Planned Commerce Street Vacation (City Project)
- - - Proposed 6th Street Vacation (Project)

**Figure 28**  
**Opening Year (2026) Without Project**  
**PM Peak Hour Intersection Turning Movement Volumes**



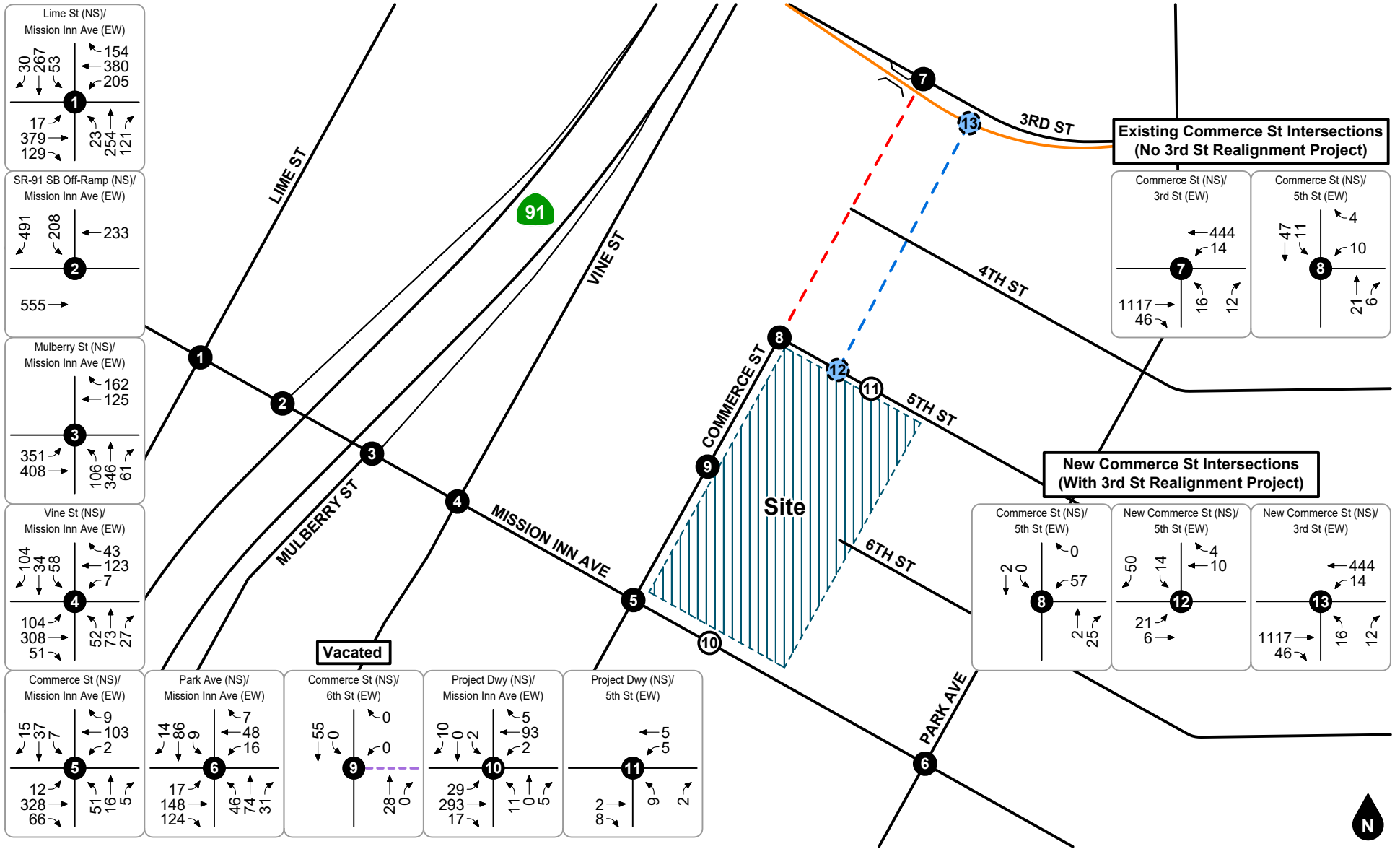
- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)

**Figure 29**  
**Opening Year (2026) With Project Average Daily Traffic Volumes**



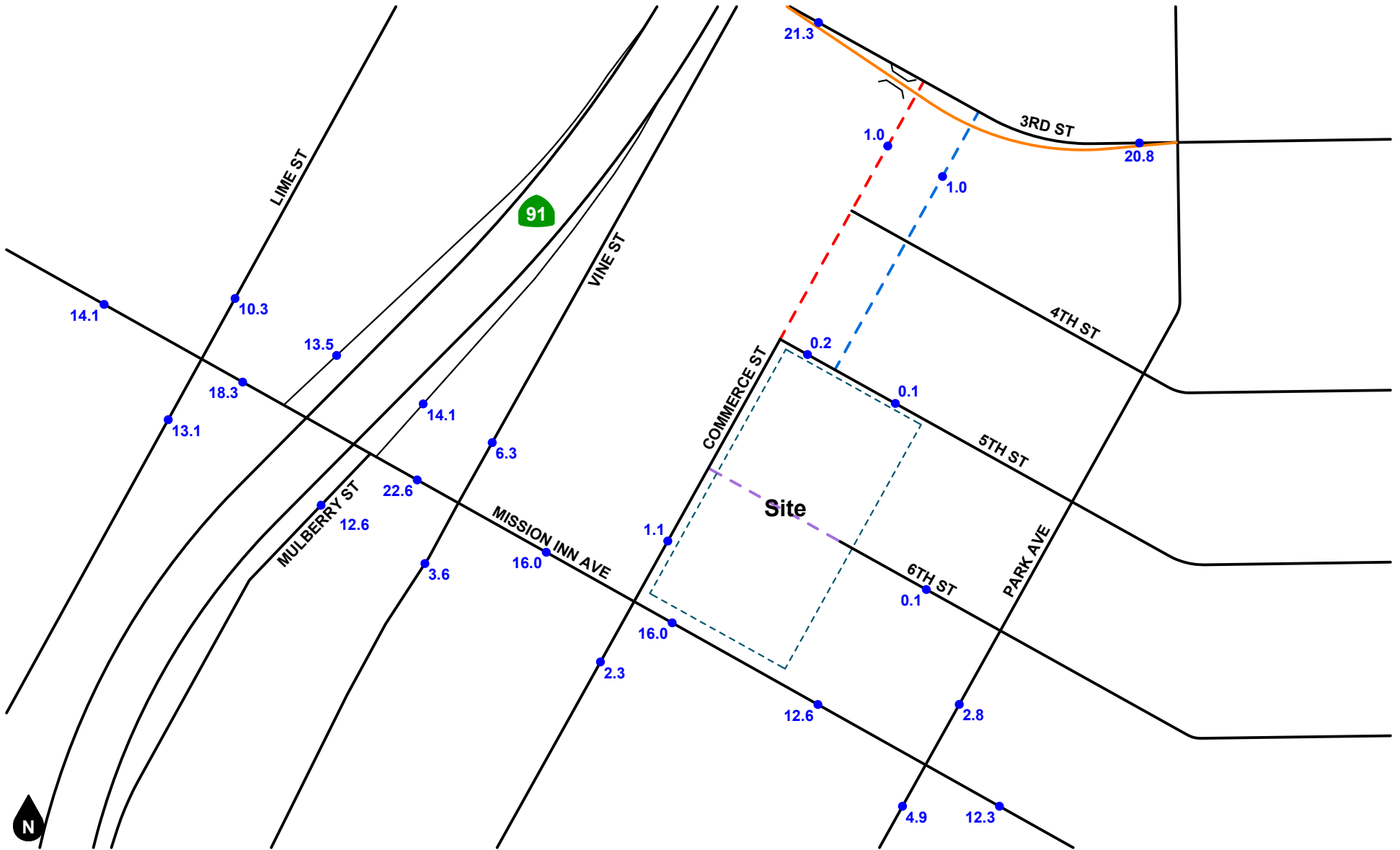
- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 30**  
**Opening Year (2026) With Project**  
**AM Peak Hour Intersection Turning Movement Volumes**



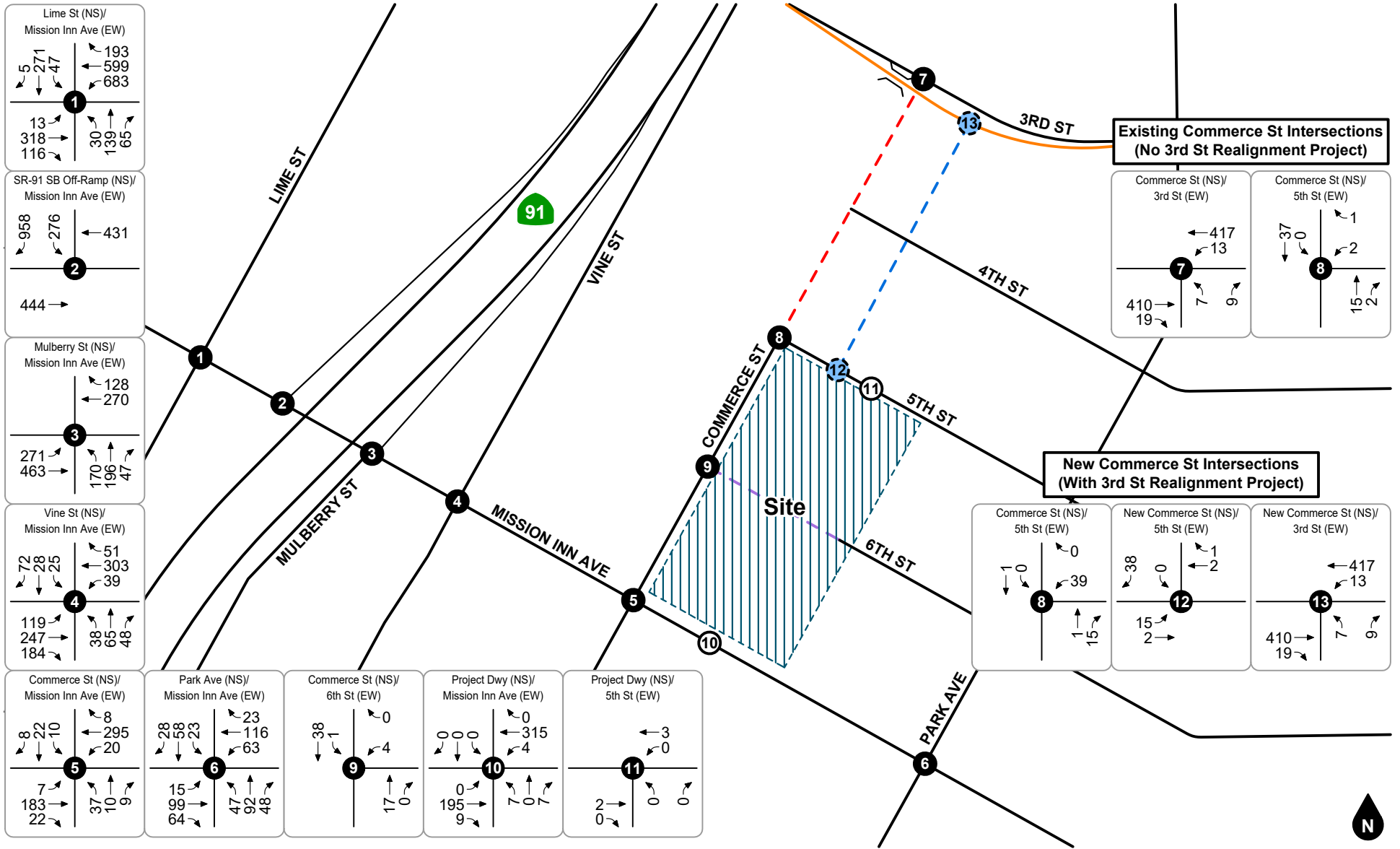
- Legend**
- #** Study Intersection
  - #** Project Driveway
  - #** Study Intersection after Street Realignment
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

**Figure 31**  
**Opening Year (2026) With Project**  
**PM Peak Hour Intersection Turning Movement Volumes**



- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)
  - - - Proposed 6th Street Vacation (Project)

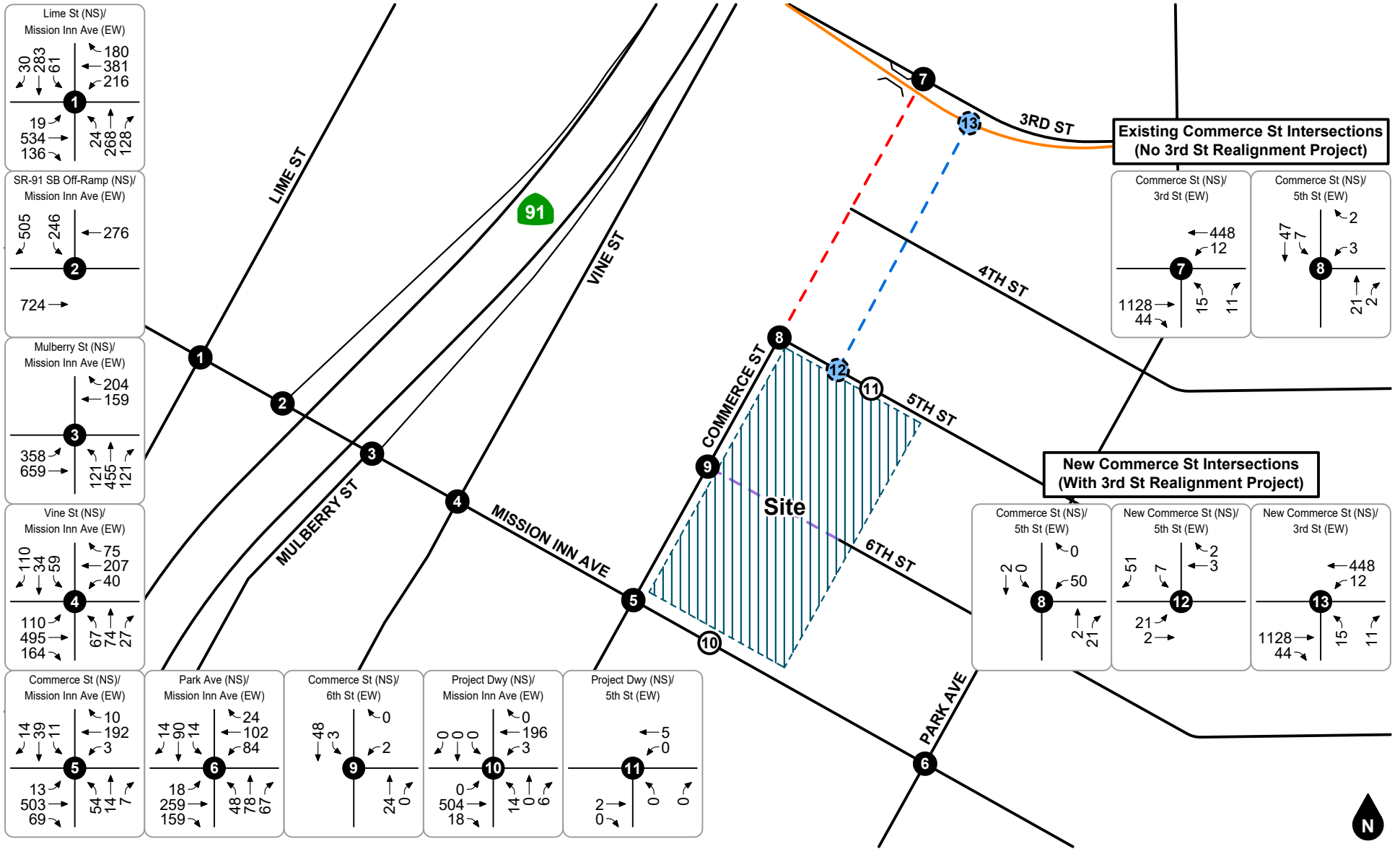
**Figure 32**  
**Buildout Year 2045 Without Project Average Daily Traffic Volumes**



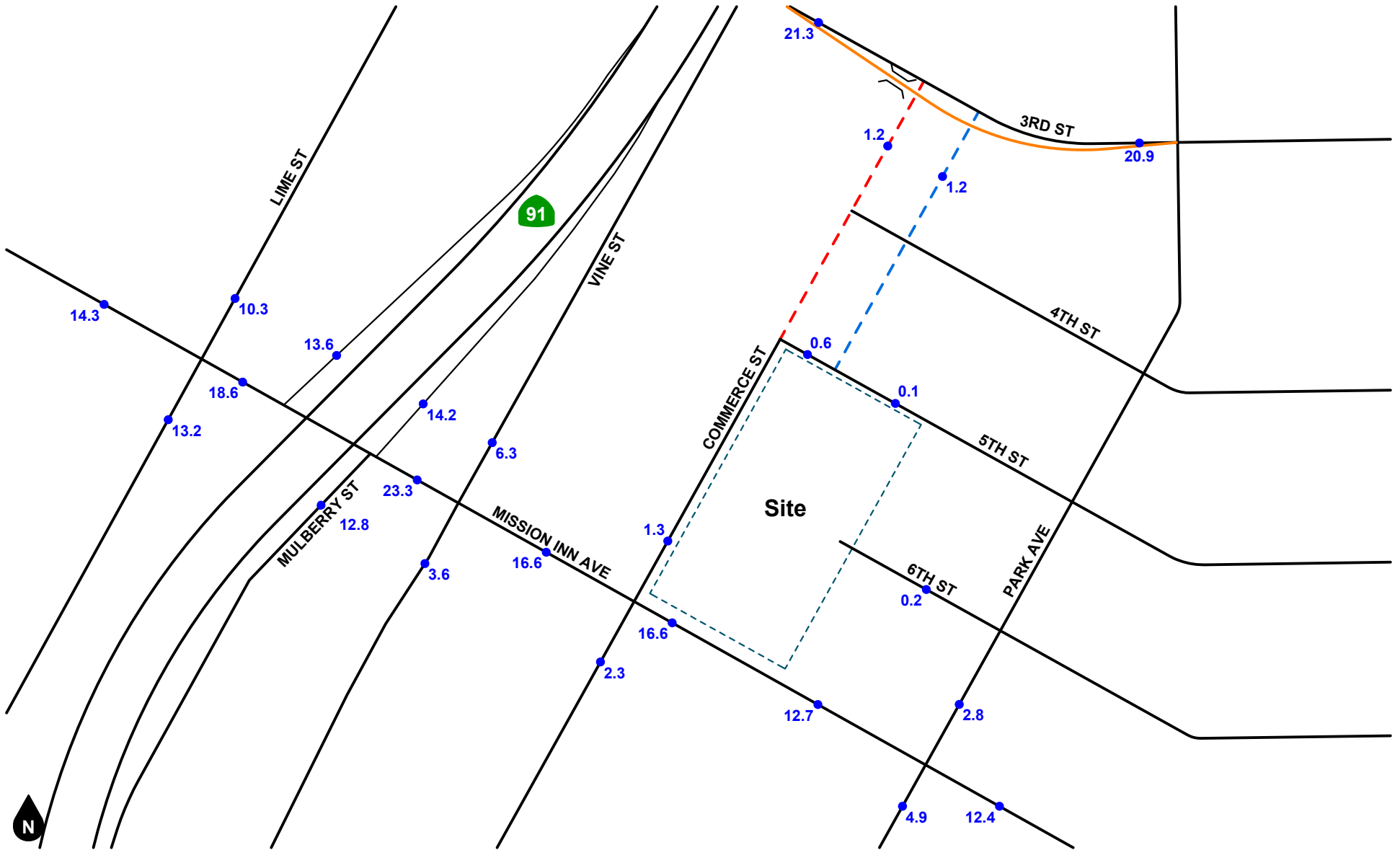
- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment

- Planned 3rd Street Grade Separation Project (City Project)
- Planned Commerce Street Realignment (City Project)
- Planned Commerce Street Vacation (City Project)
- Proposed 6th Street Vacation (Project)

**Figure 33**  
**Buildout Year 2045 Without Project**  
**AM Peak Hour Intersection Turning Movement Volumes**

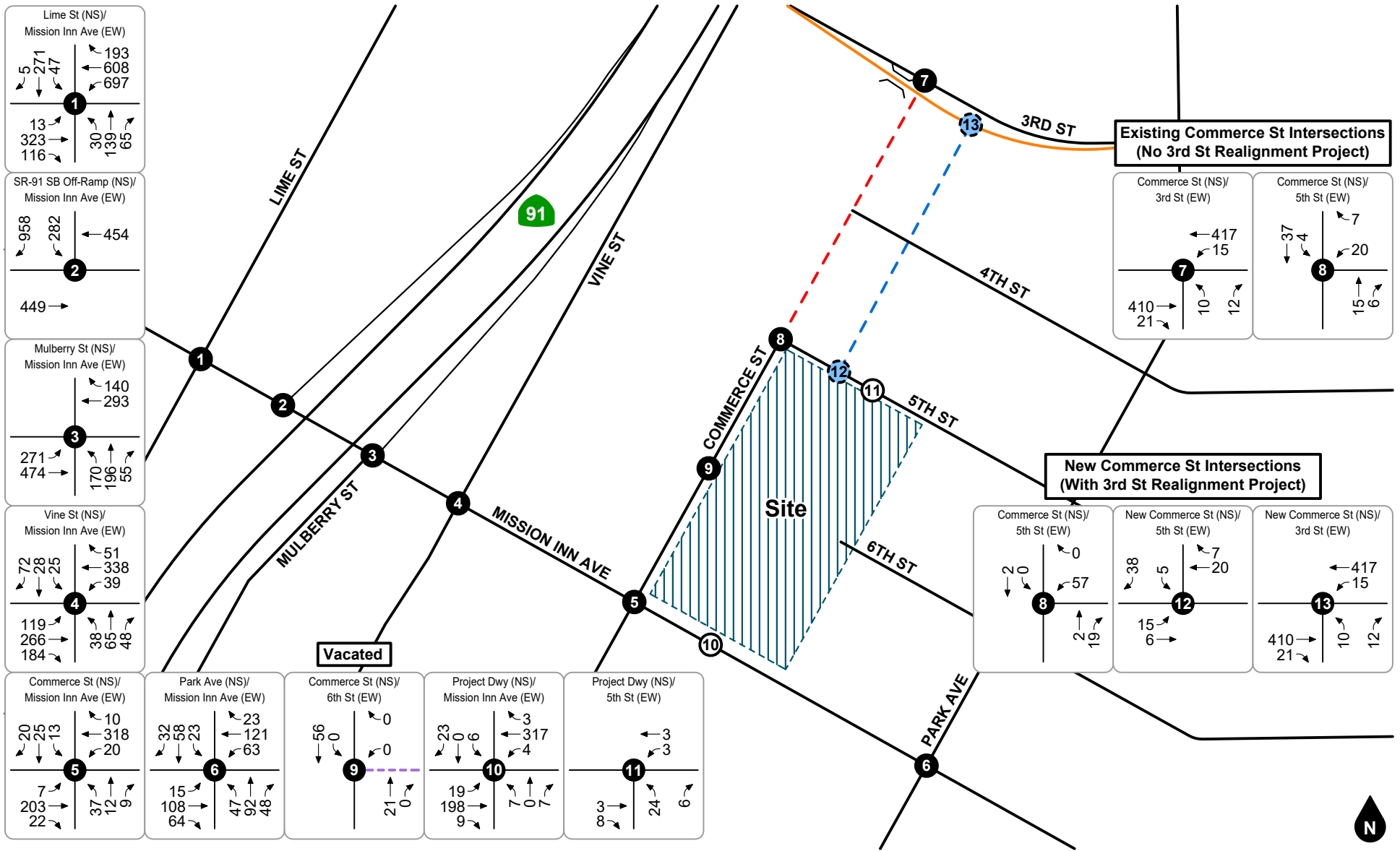


**Figure 34**  
**Buildout Year 2045 Without Project**  
**PM Peak Hour Intersection Turning Movement Volumes**



- Legend**
- ## Vehicles Per Day (1,000's)
  - Planned 3rd Street Grade Separation Project (City Project)
  - - - Planned Commerce Street Realignment (City Project)
  - - - Planned Commerce Street Vacation (City Project)

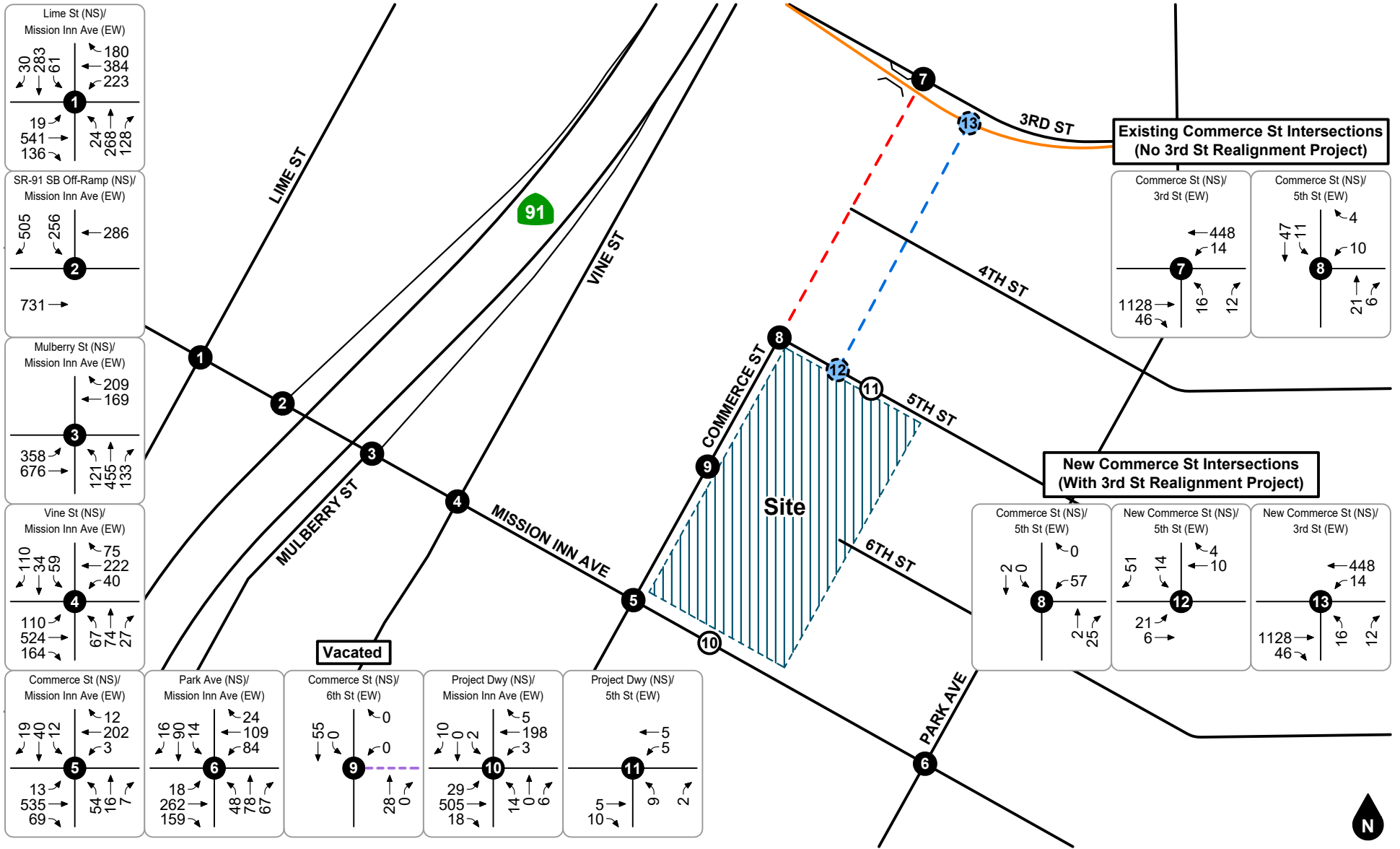
**Figure 35**  
**Buildout Year 2045 With Project Average Daily Traffic Volumes**



- Legend**
- # Study Intersection
  - # Project Driveway
  - # Study Intersection after Street Realignment

- Planned 3rd Street Grade Separation Project (City Project)
- Planned Commerce Street Realignment (City Project)
- Planned Commerce Street Vacation (City Project)
- Proposed 6th Street Vacation (Project)

**Figure 36**  
**Buildout Year 2045 With Project**  
**AM Peak Hour Intersection Turning Movement Volumes**



**Figure 37**  
**Buildout Year 2045 With Project**  
**PM Peak Hour Intersection Turning Movement Volumes**

## 6. FUTURE LEVELS OF SERVICE ANALYSIS

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Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix D.

Project design features, such as improvements necessary to provide project site access, and construction along the project site frontage, are assumed to be constructed by the proposed project and are described in further detail in the Site Access & Circulation section presented later in this report.

### **CURRENT COMMERCE STREET ALIGNMENT (WITHOUT PLANNED 3RD STREET GRADE SEPARATION PROJECT)**

The following summarizes study area operations based on the existing roadway geometry and traffic controls without the planned 3rd Street Grade Separation project.

#### **Existing Plus Project**

The study intersection Levels of Service for Existing Plus Project conditions are shown in Table 5. As shown in Table 5, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions.

As shown in Table 5, the proposed project is forecast to result in no substantial transportation effects at the study intersections for Existing Plus Project conditions.

#### **Opening Year (2026) Without Project**

The study intersection Levels of Service for Opening Year (2026) Without Project conditions are shown in Table 6. As shown in Table 6, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) Without Project conditions.

#### **Opening Year (2026) With Project**

The study intersection Levels of Service for Opening Year (2026) With Project conditions are also shown in Table 6. As shown in Table 6, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) With Project conditions.

As shown in Table 6, the proposed project is forecast to result in no substantial transportation effects at the study intersections for Opening Year (2026) With Project conditions.

#### **Buildout Year 2045 Without Project**

The study intersection Levels of Service for Buildout Year 2045 Without Project conditions are shown in Table 7. As shown in Table 7, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year 2045 Without Project conditions except for the following intersection that is forecast to operate at Level of Service E during the AM peak hour:

4. Vine Street (NS) and Mission Inn Avenue (EW)

#### **Buildout Year 2045 With Project**

The study intersection Levels of Service for Buildout Year 2045 With Project conditions are also shown in Table 7. As shown in Table 7, the study intersections are forecast to operate within acceptable Levels of

Service (D or better) during the peak hours for Buildout Year 2045 With Project conditions except for the following intersection that is forecast to operate at Level of Service E during the AM peak hour:

4. Vine Street (NS) and Mission Inn Avenue (EW)

To address this, the Proposed Project will implement the following City-directed improvements:

- Project will install total of four stop signs equipped with solar powered flashing LEDs at all approaches.
- Project shall upgrade the existing crosswalks to the high visibility crosswalks at all approaches.

### **PLANNED COMMERCE STREET RE-ALIGNMENT (WITH 3RD STREET GRADE SEPARATION PROJECT)**

The following summarizes study intersection operations based on future roadway geometry and traffic controls upon completion of the planned 3rd Street Grade Separation project. Study intersections one through six, nine, and ten are unaffected by and would have the same volumes and Level of Service operations with or without the planned 3rd Street Grade Separation Project. Therefore, the unaffected study intersections (#1 to 6, 9, 10) are omitted from Tables 8 through 10.

#### **Existing Plus Project**

The study intersection Levels of Service for Existing Plus Project conditions are shown in Table 8. As shown in Table 8, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions.

As shown in Table 8, the proposed project is forecast to result in no substantial transportation effects at the study intersections for Existing Plus Project conditions.

#### **Opening Year (2026) Without Project**

The study intersection Levels of Service for Opening Year (2026) Without Project conditions are shown in Table 9. As shown in Table 9, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) Without Project conditions.

#### **Opening Year (2026) With Project**

The study intersection Levels of Service for Opening Year (2026) With Project conditions are also shown in Table 9. As shown in Table 9, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) With Project conditions.

As shown in Table 9, the proposed project is forecast to result in no substantial transportation effects at the study intersections for Opening Year (2026) With Project conditions.

#### **Buildout Year 2045 Without Project**

The study intersection Levels of Service for Buildout Year 2045 Without Project conditions are shown in Table 10. As shown in Table 10, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year 2045 Without Project conditions.

#### **Buildout Year 2045 With Project**

The study intersection Levels of Service for Buildout Year 2045 With Project conditions are also shown in Table 10. As shown in Table 10, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year 2045 With Project conditions.

As shown in Table 10, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours with improvements.

### **ROADWAY SEGMENT LEVEL OF SERVICE**

The roadway segment capacity analysis for all scenarios conditions is shown Table 11. As Shown in Table 11, the study roadway segments continue operating within acceptable Levels of Service (D or better).

### **TRAFFIC SIGNAL WARRANT ANALYSIS**

The potential need for installation of a traffic signal at the unsignalized study intersections was evaluated based on the *California Manual on Uniform Traffic Control Devices* ("California MUTCD," November 2014), Section 4C-04, peak hour volume warrant (Warrant 3). The *California MUTCD* Section 4C-01 states "satisfaction of one or more traffic signal warrants shall not in itself require the installation of a traffic signal" as engineering judgement should be applied to the physical considerations of the location. Traffic signal warrant worksheets are provided in Appendix H.

Installation of a traffic signal is not warranted based on the peak hour volume warrant (Warrant 3) at the study area intersections. However, the peak hour warrant at Vine Street and Mission Inn Avenue is just below the traffic signal warrant threshold for the PM peak hour.

### **RAILROAD CROSSING ON MISSION INN AVENUE WEST OF COMMERCE STREET**

There are existing train tracks crossing Mission Inn Avenue approximately 100 feet west of Commerce Street which provides approximately 74 feet of storage length between the railroad stop bar and the intersection corner for westbound vehicles during a train crossing. Based on standard vehicle length and the available storage length, there is storage for three (3) vehicles. The existing westbound Mission Inn Avenue AM peak hour volume is 115 vehicles per hour (2 vehicles per minute) and PM peak hour volume 139 vehicles per hour (2 vehicles per minute). Vehicle queue lengths at the railroad crossing are forecast to exceed the available storage lengths during the peak hours for the all scenario conditions for any train crossing which is longer than a one and one-half (1.5) minutes.

Based on the westbound traffic volume and storage length approaching the railroad crossing on Mission Inn Avenue west of Commerce Street, the following improvement is recommended and will be installed by the project to ensure westbound queues at the rail crossing on Mission Inn Avenue do not block turning or north-south through movements at Commerce Street for all scenarios:

5. Commerce Street (NS) at Mission Inn Avenue (EW)
  - Install "KEEP CLEAR" markings in the intersection for westbound lanes on Mission Inn Avenue.

A roadway concept plan for the above recommended improvement is included in Appendix I.

**Table 5  
Existing Plus Project Intersection Levels of Service & Project-Related Effect**

Study Intersection	Traffic Control <sup>1</sup>	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>				
1. Lime Street at Mission Inn Avenue	TS	34.9	C	26.7	C	35.3	D	26.8	C	+0.4	NO	+0.1	NO
2. SR-91 Off Ramp at Mission Inn Avenue	TS	25.7	C	24.6	C	26.7	C	24.6	C	+1.0	NO	+0.0	NO
3. Mulberry Street at Mission Inn Avenue	TS	31.9	C	36.6	D	32.7	C	36.6	D	+0.8	NO	+0.0	NO
4. Vine Street at Mission Inn Avenue	AWS	9.4	A	14.4	B	9.7	A	16.0	C	+0.3	NO	+1.6	NO
5. Commerce Street at Mission Inn Ave	CSS	10.9	B	13.3	B	10.8	B	14.1	B	-0.1	NO	+0.8	NO
6. Park Avenue at Mission Inn Ave	AWS	8.5	A	9.8	A	8.6	A	9.9	A	+0.1	NO	+0.1	NO
7. Commerce Street at 3rd Street	CSS	12.2	B	28.8	D	12.6	B	29.3	D	+0.4	NO	+0.5	NO
8. Commerce Street at 5th Street	CSS	8.7	A	8.8	A	8.9	A	8.9	A	+0.2	NO	+0.1	NO
9. Commerce Street at 6th Street	CSS	8.9	A	8.9	A	9.0	A	9.0	A	+0.1	NO	+0.1	NO
10. Project Driveway at Mission Inn Ave	CSS	9.4	A	10.9	B	9.7	A	11.6	B	+0.3	NO	+0.7	NO
11. Project Driveway at 5th Street	CSS	-	-	-	-	8.7	A	8.6	A	+8.7	NA	+8.6	NA

Notes:

1. TS = Traffic Signal; AWS = All Way Stop; CSS = Cross Street Stop
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service

**Table 6**  
**Opening Year (2026) Intersection Levels of Service & Project-Related Effect**

Study Intersection	Traffic Control <sup>1</sup>	Opening Year (2026) Without Project				Opening Year (2026) With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>				
1. Lime Street at Mission Inn Avenue	TS	35.0	C	26.9	C	35.4	D	27.0	C	+0.4	NO	+0.1	NO
2. SR-91 Off Ramp at Mission Inn Avenue	TS	25.1	C	24.0	C	26.1	C	25.0	C	+1.0	NO	+1.0	NO
3. Mulberry Street at Mission Inn Avenue	TS	31.9	C	37.2	D	32.7	C	38.7	D	+0.8	NO	+1.5	NO
4. Vine Street at Mission Inn Avenue	AWS	9.6	A	15.8	C	10.0	A	18.0	C	+0.4	NO	+2.2	NO
5. Commerce Street at Mission Inn Ave	CSS	10.6	B	13.9	B	11.1	B	14.7	B	+0.5	NO	+0.8	NO
6. Park Avenue at Mission Inn Ave	AWS	8.7	A	10.2	B	8.7	A	10.3	B	+0.0	NO	+0.1	NO
7. Commerce Street at 3rd Street	CSS	12.5	B	32.4	D	12.9	B	32.9	D	+0.4	NO	+0.5	NO
8. Commerce Street at 5th Street	CSS	8.7	A	8.9	A	8.9	A	9.0	A	+0.2	NO	+0.1	NO
9. Commerce Street at 6th Street	CSS	8.9	A	8.9	A	-	-	-	-	-	NO	-	NO
10. Project Driveway at Mission Inn Ave	CSS	9.5	A	11.2	B	9.8	A	11.9	B	+0.3	NO	+0.7	NO
11. Project Driveway at 5th Street	CSS	-	-	-	-	8.7	A	8.6	A	+8.7	NA	+8.6	NA

Notes:

1. TS = Traffic Signal; AWS = All Way Stop; CSS = Cross Street Stop
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service

**Table 7**  
**Build-out Year 2045 Intersection Levels of Service & Project-Related Effect**

Study Intersection	Traffic Control <sup>1</sup>	Build-out Year 2045 Without Project				Build-out Year 2045 With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>				
1. Lime Street at Mission Inn Avenue	TS	40.1	D	27.3	C	41.7	D	27.5	C	+1.6	NO	+0.2	NO
2. SR-91 Off Ramp at Mission Inn Avenue	TS	25.1	C	22.8	C	26.1	C	22.8	C	+1.0	NO	+0.0	NO
3. Mulberry Street at Mission Inn Avenue	TS	28.6	C	39.3	D	29.4	C	39.7	D	+0.8	NO	+0.4	NO
4. Vine Street at Mission Inn Avenue	AWS	12.8	B	35.4	E	13.5	B	43.7	E	+0.7	NO	+8.3	YES
5. Commerce Street at Mission Inn Ave	CSS	13.0	B	20.2	C	13.8	B	22.0	C	+0.8	NO	+1.8	NO
6. Park Avenue at Mission Inn Ave	AWS	9.7	A	14.8	B	9.8	A	15.1	C	+0.1	NO	+0.3	NO
7. Commerce Street at 3rd Street	CSS	12.0	B	30.7	D	12.3	B	31.2	D	+0.3	NO	+0.5	NO
8. Commerce Street at 5th Street	CSS	8.7	A	8.8	A	8.8	A	8.9	A	+0.1	NO	+0.1	NO
9. Commerce Street at 6th Street	CSS	8.8	A	8.9	A	-	-	-	-	-	NO	-	NO
10. Project Driveway at Mission Inn Ave	CSS	10.3	B	14.2	B	10.8	B	15.4	C	+0.5	NO	+1.2	NO
11. Project Driveway at 5th Street	CSS	-	-	-	-	8.7	A	8.6	A	+8.7	NA	+8.6	NA

Notes:

1. TS = Traffic Signal; AWS = All Way Stop; CSS = Cross Street Stop
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service

**Table 8  
Existing Plus Project Intersection Levels of Service & Project-Related Effect  
With 3rd Street Grade Separation Project**

Study Intersection <sup>4</sup>	Traffic Control <sup>1</sup>	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS				
8. Commerce Street at 5th Street	CSS	9.3	A	9.4	A	9.4	A	9.4	A	+0.1	NO	+0.0	NO
12. Realigned Commerce Street at 5th Street	CSS	8.5	A	8.0	A	8.6	A	8.7	A	+0.1	NO	+0.7	NO
13. Realigned Commerce Street at 3rd Street	CSS	12.0	B	27.6	D	12.4	B	28.0	D	+0.4	NO	+0.4	NO

Notes:

1. CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service
4. This analysis is provided for the intersections modified by the Commerce Street Realignment included in the 3rd Street Grade Separation Project.

**Table 9**  
**Opening Year (2026) Intersection Levels of Service & Project-Related Effect**  
**With 3rd Street Grade Separation Project**

Study Intersection <sup>4</sup>	Traffic Control <sup>1</sup>	Opening Year (2026) Without Project				Opening Year (2026) With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>				
8. Commerce Street at 5th Street	CSS	9.3	A	9.3	A	9.4	A	9.4	A	+0.1	NO	+0.1	NO
12. Realigned Commerce Street at 5th Street	CSS	8.5	A	8.6	A	8.6	A	8.7	A	+0.1	NO	+0.1	NO
13. Realigned Commerce Street at 3rd Street	CSS	12.3	B	30.9	D	12.7	B	31.3	D	+0.4	NO	+0.4	NO

Notes:

1. CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service
4. This analysis is provided for the intersections modified by the Commerce Street Realignment included in the 3rd Street Grade Separation Project.

**Table 10**  
**Build-out Year 2045 Intersection Levels of Service & Project-Related Effect**  
**With 3rd Street Grade Separation Project**

Study Intersection <sup>4</sup>	Traffic Control <sup>1</sup>	Buildout Year 2045 Without Project				Buildout Year 2045 With Project				AM Peak Hour		PM Peak Hour	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Change	Substantial Effect?	Change	Substantial Effect?
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>				
8. Commerce Street at 5th Street	CSS	9.2	A	9.3	A	9.3	A	9.3	A	+0.1	NO	+0.0	NO
12. Realigned Commerce Street at 5th Street	CSS	8.5	A	8.6	A	8.6	A	8.7	A	+0.1	NO	+0.1	NO
13. Realigned Commerce Street at 3rd Street	CSS	11.9	B	29.4	D	12.1	B	29.8	D	+0.2	NO	+0.4	NO

Notes:

1. CSS = Cross Street Stop.
2. Delay is shown in seconds per vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst minor street approach or major street left turn
3. LOS = Level of Service
4. This analysis is provided for the intersections modified by the Commerce Street Realignment included in the 3rd Street Grade Separation Project.

**Table 11  
Roadway Segment Level of Service**

ID	Roadway	Segment		Roadway Capacity <sup>1</sup>			Existing			Existing Plus Project			Change	Substantial Effect?
				Ultimate	Existing/Proposed		ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>	ADT <sup>3</sup>	V/C <sup>3</sup>	LOS <sup>3</sup>		
		Classification	Lanes	Capacity										
1.	Commerce St	Mission Inn Ave	3rd Street	Local	2	2,500	1,010	0.40	A	1,210	0.48	A	8.0%	NO
2.	5th Street	Commerce Street	Park Avenue	Local	2	2,500	90	0.04	A	410	0.16	A	12.8%	NO
3.	6th Street	Commerce Street	Park Avenue	Local	2	2,500	120	0.05	A	180	0.07	A	2.4%	NO

ID	Roadway	Segment		Roadway Capacity <sup>1</sup>			Opening Year (2026) Without Project			Opening Year (2026) With Project			Change	Substantial Effect?
				Ultimate	Existing/Proposed		ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>	ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>		
		Classification	Lanes	Capacity										
1.	Commerce St	Mission Inn Ave	3rd Street	Local	2	2,500	1,050	0.42	A	1,250	0.50	A	8.0%	NO
2.	5th Street	Commerce Street	Park Avenue	Local	2	2,500	96	0.04	A	420	0.17	A	12.8%	NO
3.	6th Street	Commerce Street	Park Avenue	Local	2	2,500	121	0.05	A	180	0.07	A	2.4%	NO

ID	Roadway	Segment		Roadway Capacity <sup>1</sup>			Buildout Year 2045 Without Project			Buildout Year 2045 With Project			Change	Substantial Effect?
				Ultimate	Existing/Proposed		ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>	ADT <sup>2</sup>	V/C <sup>2</sup>	LOS <sup>2</sup>		
		Classification	Lanes	Capacity										
1.	Commerce St	Mission Inn Ave	3rd Street	Local	2	2,500	1,110	0.44	A	1,311	0.52	A	8.0%	NO
2.	5th Street	Commerce Street	Park Avenue	Local	2	2,500	100	0.04	A	421	0.17	A	12.8%	NO
3.	6th Street	Commerce Street	Park Avenue	Local	2	2,500	130	0.05	A	191	0.08	A	2.4%	NO

Notes:

- Roadway classifications from the City of Riverside General Plan Circulation Element, and the corresponding roadway capacity from the Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment, July 2020.
- ADT = Average Daily Traffic; V/C = Volume to Capacity Ratio; LOS = Level of Service

## 7. SITE ACCESS & ON-SITE CIRCULATION

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This section evaluates the project site access and on-site circulation. Vehicular access for the project site is proposed via two driveways with one on 5th Street and one on Mission Inn Avenue. Roadway concept plans for either roadway segment or intersection improvements not included in the 3rd Street Grade Separation project are provided in Appendix I.

### PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

#### Roadway Segments

##### Mission Inn Avenue

- Construct ultimate half-section width (four-lane divided (two-way turn lane) Arterial roadway), including landscaping and parkway improvements along project boundary abutting Mission Inn Avenue (from Commerce Street to the east project boundary) in conjunction with the development.

##### 5th Street

- Construct ultimate half-section width (two-lane undivided roadway), including landscaping and parkway improvements along project boundary abutting 5th Street (from Commerce Street to the east project boundary) in conjunction with the development.
- Coordinate with the planned 3rd Street Grade Separation project contractor for roadway construction.

##### Commerce Street

- Construct ultimate half-section width (two-lane undivided roadway), including landscaping and parkway improvements along project boundary abutting Commerce Street (from 5th Street to Mission Inn Avenue) in conjunction with the development.
- Coordinate with the planned 3rd Street Grade Separation project contractor for roadway construction.

#### Intersections

5. Commerce Street (NS) at Mission Inn Avenue (EW)
  - Install high-visibility pedestrian crosswalk on the east leg of the intersection including an overhead infrastructure with advanced pedestrian warning signs.
10. Project Driveway (NS) at Mission Inn Avenue (EW)
  - Construct the project driveway with one inbound lane and one outbound lane.
  - Install southbound stop control at site egress.
11. Project Driveway (NS) at 5th Street (EW)
  - Construct the project driveway with one inbound lane and one outbound lane.
  - Install northbound stop control at site egress.

This analysis also assumes the project shall comply with the following conditions as part of the City of Riverside standard development review process to ensure adequate geometric design and emergency access:

- Site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Riverside.

- All on-site and off-site roadway design, signing/stripping, and traffic control improvements relating to the proposed project shall be submitted to the City for review and constructed following applicable State/Federal engineering standards to the satisfaction of the City of Riverside.
- The final grading, landscaping, and street improvement plans shall demonstrate that applicable sight distance requirements are met.
- Final project plans shall demonstrate adequate emergency vehicle access and circulation to the satisfaction of the City of Riverside Public Works and Fire Departments.
- A construction worksite traffic control plan shall comply with applicable engineering standards outlined in the *California Manual of Uniform Traffic Control Devices* and shall be submitted to the City for review and approval before the issuance of a grading permit or start of construction. The plan shall identify any roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction-related trips shall be restricted to off-peak hours to the extent possible.
- The final placement of the ADA compliant crosswalk ramp at the northwest corner of Mission Inn Avenue and Commerce Street will require coordination with California Public Utility Commission (CPUC) and Burlington Northern Santa Fe (BNSF) railroad due to the proximity to the railroad tracks. The placement of ADA crosswalk ramp on the northwest corner is shown as a feature of the Commerce Street improvements included in the 3rd Street Grade Separation project.

#### **SITE ACCESS QUEUING ANALYSIS**

Table 12 summarizes the results of the queue analysis to check for potential conflicts between the project driveways and the adjacent key intersections. The forecasted queue lengths shown in Table 12, are based on the HCM 95th-percentile back-of-queue methodology. Queuing calculations for the project driveways and the adjacent intersection are shown in the Level of Service worksheets provided in Appendix D.

As shown in Table 12, vehicle queue lengths at for project driveways are forecast to operate within the available storage lengths during the peak hours for the Opening Year (2026) With Project conditions.

#### **TRAFFIC SIGNAL WARRANT ANALYSIS**

The potential need for installation of a traffic signal at the project driveways was evaluated based on the *California Manual on Uniform Traffic Control Devices* (“*California MUTCD*,” November 2014), Section 4C-04, peak hour volume warrant (Warrant 3). The *California MUTCD* Section 4C-01 states “satisfaction of one or more traffic signal warrants shall not in itself require the installation of a traffic signal” as engineering judgement should be applied to the physical considerations of the location. Traffic signal warrant worksheets are provided in Appendix H.

Installation of a traffic signal is not warranted at the project driveways based on the peak hour volume warrant (Warrant 3) for the analysis scenarios.

#### **PEDESTRIAN, BICYCLE AND TRANSIT FACILITY ACCESS TO AND FROM PROJECT**

The Metrolink train station is on Vine Street southwest of Mission Inn Avenue. Access to the east (northbound) tract is within a quarter mile of the project site. There is a pedestrian bridge over the train tracks to allow access to the southbound track adjacent to Vine Street or the northbound track adjacent to Commerce Street. Figure 38 shows the pedestrian and bicycle path to and from the project to the train station.

## PEDESTRIAN CROSSING AT MISSION INN AVENUE AND COMMERCE STREET

The intersection approaches are stop-controlled on Commerce Street and uncontrolled on Mission Avenue Inn. Mission Inn Avenue currently provides two westbound lanes and one eastbound through lane with a raised median on the west leg and a painted two-way left-turn lane median on the east leg of the intersection. The nearest marked pedestrian crossings for Mission Inn Avenue are located approximately 520 feet to the west at Vine Street and 860 feet to the east at Park Avenue. The crossing distance is approximately 84 feet from the existing northerly roadside edge to the pedestrian curb ramp on the south side of Mission Inn Avenue. There is one existing streetlight near the northwest corner of the intersection.

The existing average daily traffic (ADT) volume on Mission Inn Avenue is currently estimated at approximately 6,000 vehicles per day and is forecast to increase to approximately 7,200 vehicles per day for Opening Year With Project conditions. Mission Inn Avenue has a posted speed limit of 35 miles per hour east of the intersection.

Existing pedestrian volumes across Mission Inn Avenue at Commerce Street are relatively low at the intersection since the project site is currently underutilized; however, the proposed project is likely to increase pedestrian crossings of Mission Inn Avenue at Commerce Street associated with travel to/from the Metrolink Station. Per the ITE Trip Generation Manual, mid-rise multifamily housing near transit (Land Use Code 221) generates an average of 0.12 to 0.13 walk/bike/transit trips per dwelling unit during the AM and PM peak hours, respectively. Therefore, the project is forecast to generate up to 39 walk/bike/transit trip ends during the peak hours of adjacent street traffic. Additional pedestrian volumes across Mission Inn Avenue were observed at the nearby Mission Lofts Apartments driveway.

Based on the following considerations, installation of a marked pedestrian crosswalk is recommended on Mission Inn Avenue on the east leg of the intersection at Commerce Street:

- The crosswalk would consolidate crossing points from the proposed project and the adjacent Mission Lofts Apartments driveway.
- Future pedestrian crossing volume upon completion of the proposed project is expected to increase (>20 pedestrian crossings during peak hours).
- The nearest controlled crossing location is more than 300 feet.

Section 3B.18 of the CA MUTCD states the following with regard to crosswalk markings across uncontrolled roadways (see Appendix J):

*09 New marked crosswalks across uncontrolled roadways should include other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, where the speed limit exceeds 40 mph and either:*

- A. *The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or*
- B. *The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.*

*09a If a marked crosswalk exists across an uncontrolled roadway where the speed limit exceeds 40 mph and the roadway has four or more lanes of travel and an ADT of 12,000 vehicles per day or greater, advanced yield lines with associated Yield Here to Pedestrians (R1-5, R1-5a) signs should be placed 20 to 50 ft in advance of the crosswalk, adequate visibility should be provided by parking prohibitions, pedestrian crossing (W11-2) warning signs with diagonal downward pointing arrow (W16-7p) plaques should be installed at the crosswalk, and a high-visibility crosswalk marking pattern should be used (See Figure 3B-17(CA)).*

Mission Inn Avenue has posted speed limits of less than 40 miles per hour and an ADT below 12,000; therefore, the other crossing measures are not required per CA MUTCD guidance. Nevertheless, the recommended crosswalk would cross multiple lanes on an uncontrolled roadway and pedestrian demand is forecast to exceed 20 crossings per hour. Therefore, it is recommended that the crosswalk be installed with high-visibility crosswalk marking pattern, advanced warning signs in both directions including solar powered rectangular rapid flashing beacon (RRFB), LED edge-lit advance warning signs, pedestrian crossing (W11-2) warning signs with diagonal downward pointing arrow (W16-7p) plaques and crosswalk push button controls, ADA compliant crosswalk ramps, improved crosswalk lighting, and on-street parking prohibition to provide adequate visibility. The use of advanced yield lines/signs may be considered optional but would further enhance crosswalk safety, in particular for the westbound approach.

A roadway concept plan for the above recommended improvement is included in Appendix I.

**Table 12**  
**Site Access Queuing Analysis**

Study Intersection	Approach	Lane	Storage Length (Feet) <sup>2</sup>	Peak Hour 95th-Percentile Queue Length (Feet) <sup>1</sup>		Adequate Storage Provided
				Buildout Year 2045 With Project		
				AM	PM	
4. Vine Street at Mission Inn Avenue	Northbound	left	150	90	45	YES
	Northbound	Thru-Right	230	70	55	YES
	Southbound	Shared	135	80	135	YES
	Eastbound	Left	150	90	25	YES
	Eastbound	Thru	190	60	110	YES
	Eastbound	Right	190	45	30	YES
	Westbound	Left	85	30	<20	YES
	Westbound	Thru	175	55	25	YES
	Westbound	Thru-Right	175	55	25	YES
5. Commerce Street at Mission Inn Ave	Northbound	Shared	350	<20	30	YES
	Southbound	Shared	360	<20	<20	YES
	Eastbound	Left-Thru	90	<20	<20	YES
	Eastbound	Right	90	<20	<20	YES
	Westbound	Left	90	<20	<20	YES
	Westbound	Thru-Right	170	<20	<20	YES
10. Project Driveway at Mission Inn Ave	Northbound	Shared	75	<20	<20	YES
	Southbound	Shared	75	<20	<20	YES
	Eastbound	Left	50	<20	<20	YES
	Westbound	Thru-Right	215	<20	<20	YES
11. Project Driveway at 5th Street	Northbound	Shared	50	<20	<20	YES
	Eastbound	Shared	300	<20	<20	YES
	Westbound	Shared	95	<20	<20	YES

Notes:

1. The forecast 95th-percentile queue lengths shown in the delay calculation worksheets have been rounded up to nearest 5-foot increment.
2. Length of turning lane storage or distance to the adjacent driveway.



- Legend**
- Pedestrian Routes
  - Unmarked, Uncontrolled Pedestrian Crossing
  - Bicycle Routes
  - Bicycle Parking
  - Pedestrian Bridge Over Tracks

**Figure 38**  
**Project Train Station Access**

## 8. SUMMARY OF IMPROVEMENTS

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This section summarizes the recommended improvements identified in the previous sections of this report and the project's fair share toward any improvements required for cumulative conditions. The City of Riverside does not have a "Fair Share Program"; however, the fair share estimate is provided to facilitate discussion with the City and that any improvements will be discussed and recommended at the discretion of the City.

Project design features (as detailed in the Site Access & On-Site Circulation Section 7) involve improvements necessary to provide project site, and the construction along the project site frontage.

### OFF-SITE IMPROVEMENTS

The following improvement is recommended and will be installed by the project to ensure westbound queues at the rail crossing on Mission Inn Avenue do not block turning or north-south through movements at Commerce Street for all scenarios:

5. Commerce Street (NS) at Mission Inn Avenue (EW)
  - Install "KEEP CLEAR" markings in the intersection for westbound lanes on Mission Inn Avenue.

The Proposed Project will implement the following City-directed improvements:

- Project will install total of four stop signs equipped with solar powered flashing LEDs at all approaches.
- Project shall upgrade the existing crosswalks to the high visibility crosswalks at all approaches.

In the event that this project's completion proceeds the construction of the 3rd Street Grade Separation project roadway improvements, roadway concept plans for the following pavement marking improvements are shown in Appendix K.

Commerce Street (between 3rd Street and Mission Inn Avenue)

- Install Type III bike lane sharrow pavement markings

5th Street (between Commerce Street and Park Avenue)

- Install Type III bike lane sharrow pavement markings

4th Street (between Commerce Street and Park Avenue)

- Install Type III bike lane sharrow pavement markings

### DEVELOPMENT IMPACT FEE

The proposed project shall contribute towards the City of Riverside Development Impact Fee program and the Western Riverside Council of Governments transportation uniform mitigation fee (TUMF). The Development Impact Fee provides a funding mechanism for arterial streets, traffic signals, interchange improvements as well as emergency services. The purpose of such fees is to minimize, to the greatest extent practicable, the impact that new development has on the City's public services and public facilities. The City intends for new development project applicants to pay their fair share of the costs of providing such public services and public facilities. Unless otherwise approved by the City, all development projects are required to pay the Development Impact Fee as a condition of development.

## 9. CONCLUSIONS

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This section summarizes the proposed project, operational findings, and identifies recommendations (if any) as specified in previous sections of this study. Figure 39 summarizes the recommended improvements.

### PROJECT TRIP GENERATION

The proposed project is forecast to generate a total of approximately 1,213 net new daily trips, including 90 net new trips during the AM peak hour and 72 net new trips during the PM peak hour

### LEVEL OF SERVICE ANALYSIS

The study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for the Existing conditions.

The study intersections are forecast to continue operating within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2026) conditions.

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Buildout Year (2045) conditions, except for the following intersection that is forecast to operate at an unacceptable Levels of Service E during the PM peak hour:

4. Vine Street (NS) and Mission Inn Avenue (EW)

To address this, the Proposed Project will implement the City-directed improvements summarized below.

### SUMMARY OF IMPROVEMENTS

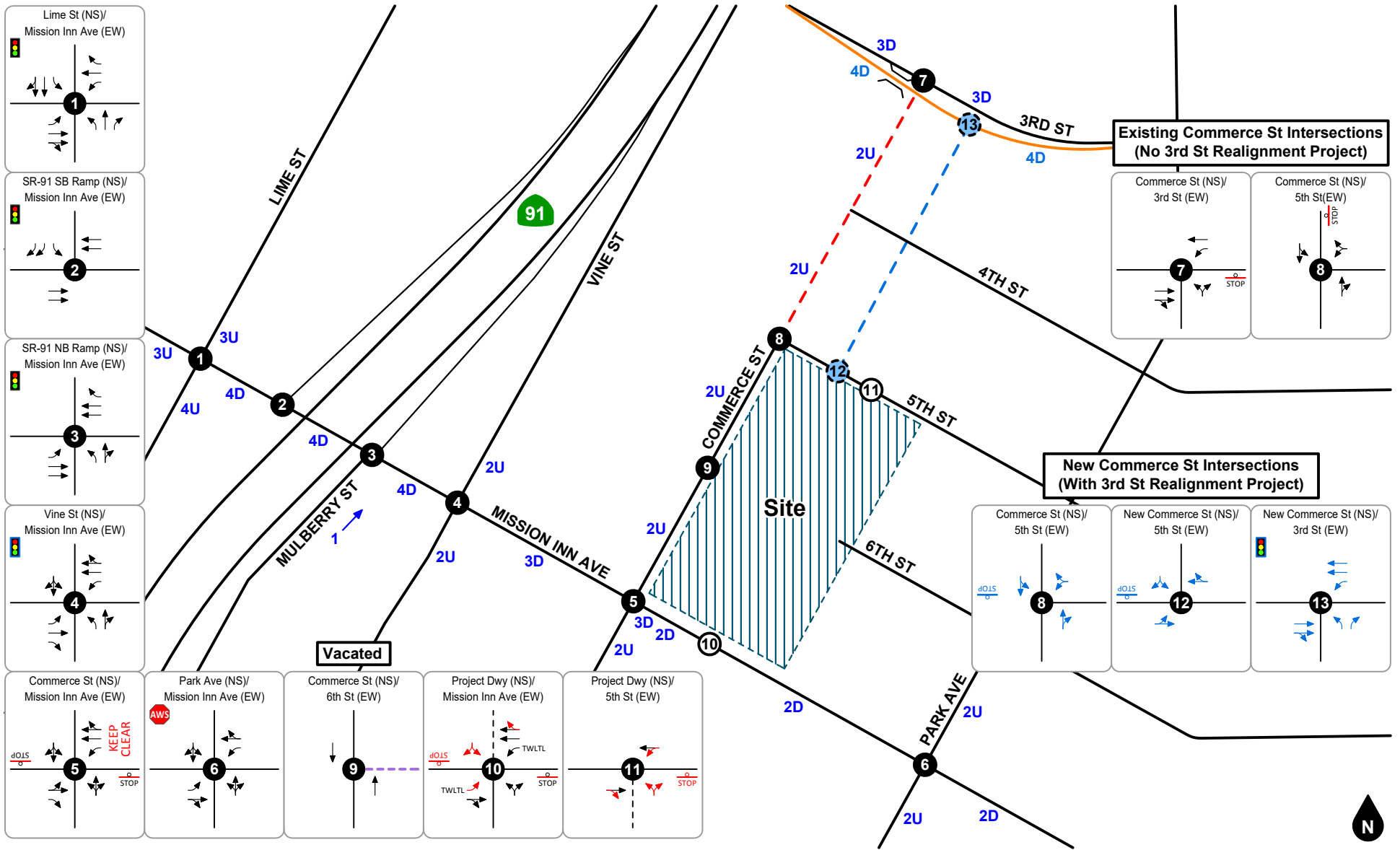
Project design features, necessary to provide project access, are outlined in the Site Access & On-Site Circulation (Section 7).

The following improvement is recommended and will be installed by the project to ensure westbound queues at the rail crossing on Mission Inn Avenue do not block turning or north-south through movements at Commerce Street for all scenarios:

5. Commerce Street (NS) at Mission Inn Avenue (EW)
  - Install "KEEP CLEAR" markings in the intersection for westbound lanes on Mission Inn Avenue.

The Proposed Project will implement the following City-directed improvements:

- Project will install total of four stop signs equipped with solar powered flashing LEDs at all approaches.
- Project shall upgrade the existing crosswalks to the high visibility crosswalks at all approaches.



- Legend**
- Traffic Signal
  - All Way Stop
  - Stop Sign
  - #-Lane Divided Roadway
  - #-Lane Undivided Roadway icon"/> #-Lane Undivided Roadway
  - Study Intersection
  - # Project Driveway icon"/> Project Driveway
  - # Study Intersection after Street Realignment icon"/> Study Intersection after Street Realignment
  - Existing Lane icon"/> Existing Lane
  - Project Driveway icon"/> Project Driveway

- TWLTL Two-Way Left-Turn Lane
- Planned 3rd Street Grade Separation Project (City Project)
- Planned Commerce Street Realignment (City Project)
- Planned Commerce Street Vacation (City Project)
- Proposed 6th Street Vacation (Project)

- Recommendations
- Cumulative Improvements

**Figure 39**  
**Recommended Lane Geometry**  
**and Intersection Traffic Controls**



## APPENDICES

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Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Traffic Count Data

Appendix D Intersection Level of Service Worksheets

Appendix E Travel Demand Model Plots

Appendix F Travel Demand Post Processing Worksheets

Appendix G 3rd Street Grade Separation Project Preliminary Layout Plan

Appendix H Traffic Signal Warrant Worksheet

Appendix I Roadway Concept Plan

Appendix J California MUTCD 3B.18

Appendix K Roadway Concept Plan (Project Vicinity)

## **APPENDIX A**

### **GLOSSARY**

## ACRONYMS

<b>AC</b>	Acres
<b>ADT</b>	Average Daily Traffic
<b>Caltrans</b>	California Department of Transportation
<b>DU</b>	Dwelling Unit
<b>ICU</b>	Intersection Capacity Utilization
<b>GFA</b>	Gross Floor Area
<b>LOS</b>	Level of Service
<b>PCE</b>	Passenger Car Equivalent
<b>SF</b>	Square Foot
<b>SP</b>	Service Population
<b>TSF</b>	Thousand Square Feet
<b>V/C</b>	Volume to Capacity Ratio
<b>VMT</b>	Vehicle Miles Traveled

## TERMS

**ACTUATED SIGNAL CONTROL:** A type of traffic signal control in which display of each phase depends on whether the corresponding phase detector has registered a service call or the phase is on recall.

**ACTUATION:** Detection of a roadway user that is forwarded to the signal controller.

**AVERAGE DAILY TRAFFIC:** The average 24-hour volume for a stated period is divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

**BANDWIDTH:** The number of seconds of green time available for through traffic in a signal progression.

**BOTTLENECK:** A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

**CALL:** An indication within a signal controller that a particular phase is waiting for service, either through actuation from a roadway user or phase recall.

**CAPACITY:** The maximum number of vehicles that can be reasonably expected to pass through a roadway facility during a specified period.

**CHANNELIZATION:** The separation of conflicting traffic movements by use of pavement markings, raised curbs, or other suitable means to facilitate free flow movement.

**CLEARANCE INTERVAL:** Equal to the yellow plus all-red time, if any, when a traffic signal changes between phases (i.e., the amount of time between the end of a green light from one movement to the beginning of a green light for the next).

**COORDINATED SIGNAL CONTROL:** A type of traffic signal control in which non-coordinated phases associated with minor movements are constrained such that the coordinated phases are served at a specific time during the signal cycle, thus maintaining the efficient progression of traffic flow along the major roadway.

**CONTROL DELAY:** The portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign). It includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay.

**CORDON:** An imaginary boundary line around or across a study area across which vehicles, persons, or other information can be collected for survey and analytical purposes.

**CORNER SIGHT DISTANCE:** The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic traveling at a given speed to radically alter their speed or trajectory.

**CYCLE:** A complete sequence of signal indications for all phases. Also known as a signal cycle.

**CYCLE LENGTH:** The total time for a traffic signal to complete one full cycle.

**DAILY CAPACITY:** A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

**DELAY:** The total additional travel time experienced by a roadway user (driver, passenger, bicyclist, or pedestrian) beyond that required to travel at a desired speed.

**DENSITY:** The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

**DETECTOR:** A device used to count or determine the presence of a roadway user.

**DESIGN SPEED:** A speed used for purposes of designing horizontal and vertical alignments of a highway.

**DIRECTIONAL SPLIT:** The percent of two-way traffic traveling in a specified direction.

**DIVERSION:** The rerouting of traffic from a normal path of travel between two points, such as to avoid congestion or perform a secondary trip.

**FREE FLOW:** Traffic flow that is unaffected by a traffic control and/or or upstream or downstream conditions.

**GAP:** Time or distance between two vehicles measured from rear bumper of the front vehicle to front bumper of the second vehicle.

**GAP ACCEPTANCE:** The method by which a driver accepts an available gap in traffic to enter or cross the road.

**HEADWAY:** Time or distance between two successive vehicles measured from same point on both vehicles (i.e., front bumper to front bumper). Also known as gap.

**LEVEL OF SERVICE:** A grading scale of quantitative performance measures representing the quality of service of a transportation facility or service from an average traveler's perspective.

**LOOP DETECTOR:** A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

**MULTI-MODAL:** More than one mode, such as automobile, transit, bicycle, and pedestrian.

**OFFSET:** The time interval between the beginning of a traffic signal cycle at one intersection and the beginning of signal cycle an adjacent intersection.

**PLATOON:** A set of vehicles traveling at similar speed and moving as a general group with clear separation between other vehicles ahead and behind.

**PASSENGER CAR EQUIVALENT:** A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

**PEDESTRIAN CLEARANCE INTERVAL:** Also known as the “Flashing Don’t Walk” interval, it signals the end of pedestrian entry into the crosswalk following the “Walk” indication and provides time for pedestrians who have already entered the crosswalk to finishing crossing.

**PEAK HOUR:** The hour within a day in which the maximum volume occurs.

**PEAK HOUR FACTOR:** The peak hour volume divided by the four times the peak 15-minute flow rate.

**PHASE:** In traffic signals, the green, yellow, and red clearance intervals assigned to a specified traffic movement.

**PRETIMED SIGNAL:** A traffic signal operation in which the cycle length, phasing sequence, and phasing times are predetermined and fixed, regardless of actual demand for any given traffic movement. Also known as a fixed time signal.

**PROGRESSION:** The coordinated movement of vehicles through signalized intersections along a corridor.

**QUEUE:** The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

**QUEUE LENGTH:** The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

**RECALL:** A signal phasing operation in which a specified phase places a call to the signal controller each time a conflicting phase is served, thus ensuring the specified phase will be serviced again.

**SEMI-ACTUATED CONTROL:** A type of traffic signal control in which only the minor movements are provided detection.

**SIGHT DISTANCE:** The continuous length of roadway visible to a driver or roadway user.

**STACKING DISTANCE:** The length of area available behind a service area, such as a traffic signal or gate, for vehicle queuing to occur.

**STOPPING SIGHT DISTANCE:** The minimum distance required by the driver of a vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible, including reaction and response time.

**TRAFFIC-ACTUATED SIGNAL:** A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors. Also known as a demand responsive signal.

**TRIP OR TRIP END:** The one-directional movement of a person or vehicle. Every trip has an origin and a destination at its respective ends (i.e., trip ends). In terms of site trip generation, the same vehicle entering and exiting a site generates two trips: one inbound trip and one outbound trip.

**TRIP GENERATION RATE:** The rate at which a land use generates trips per the specified land use variable, such per dwelling unit or per thousand square feet.

**TURNING RADIUS:** The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheelbase as well as the steering mechanism of the vehicle.

**VEHICLE MILES TRAVELED:** A measure of the amount and distance of automobile travel essentially calculated as the sum of each trip times the trip length.

**APPENDIX B**  
**SCOPING AGREEMENT**

**Subject:** FW: Response to Comments and SA revision Iron Lofts MFR on Commerce St between Mission Inn Ave and 5th St - SA APPROVAL  
**Attachments:** Final - Iron Loft Multifamily Residential Traffic Analysis Scoping Agreement.pdf

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**From:** Patel, Vital  
**Sent:** Tuesday, October 22, 2024 3:08 PM  
**To:** Perrie Ilercil; Nitollama, Philip  
**Cc:** Christine Saunders; Todd Cadwell; Darrin Olson; Giancarlo Ganddini  
**Subject:** RE: Response to Comments and SA revision Iron Lofts MFR on Commerce St between Mission Inn Ave and 5th St

Hello Perrie,

Attached is the approved scoping agreement for the Iron Lofts Project.

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

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**From:** Perrie Ilercil  
**Sent:** Tuesday, October 8, 2024 5:35 PM  
**To:** Patel, Vital; Nitollama, Philip  
**Cc:** Christine Saunders; Todd Cadwell; Darrin Olson; Giancarlo Ganddini  
**Subject:** [EXTERNAL] RE: Response to Comments and SA revision Iron Lofts MFR on Commerce St between Mission Inn Ave and 5th St

Hi Vital,  
See the Response to Comment Letter and the revised Scoping Agreement for your review and approval. The SA has been reviewed numerous times, so it is anticipated that there will be no further changes for the traffic LOS analysis report.  
Please, review the SA over the next couple of days, and I will follow up on Tuesday Oct 15th.  
Thank you

Other items in progress or waiting for final plans:

- update on the 3rd Street Grade Separation project (esp. roadway plan changes and construction timing) – **Will provide the latest information soon (2021-0918 email)**
- Confirm that the left turn as shown in the 3SGS traffic report will be provided. **(See email Aug 8, 2023 earlier in this email chain)**

Sincerely,  
*Perrie Ilercil*, PE (AZ)  
Senior Engineer  
**GANDDINI GROUP, INC**

**From:** Patel, Vital  
**Sent:** Thursday, September 19, 2024 10:58 AM  
**To:** Perrie Ilercil; Nitollama, Philip  
**Cc:** Giancarlo Ganddini; Equez, Judy  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Hello Perrie,

Please see the attached for our comments on the revised scope and let us know if you have any questions. Thank you.

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

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**From:** Patel, Vital  
**Sent:** Wednesday, September 18, 2024 8:14 AM  
**To:** Perrie Ilercil; Nitollama, Philip  
**Cc:** Giancarlo Ganddini  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Hello Perrie,

We are currently reviewing the revised scoping agreement.

For the requested information per your email below, please see my response in red:

- update on the 3rd Street Grade Separation project (esp. roadway plan changes and construction timing) – **Will provide the latest information soon**
- contact person/information for RCTC - **Jenny Chan** [jchan@rctc.org](mailto:jchan@rctc.org), **Edward Emery** [eemery@rctc.org](mailto:eemery@rctc.org)
- contact person/information for FRA and CPUC so that a copy of the scoping agreement can be sent when it is approved.: **Jason Sanchez** [Jason.Sanchez@BNSF.com](mailto:Jason.Sanchez@BNSF.com) ( **BNSF Railway**), **Sergio Licon**, [sergio.licon@cpuc.ca.gov](mailto:sergio.licon@cpuc.ca.gov) ( **Rail Crossings & Engineering Branch - Rail Safety Division**)

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

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**From:** Perrie Ilercil  
**Sent:** Friday, September 6, 2024 3:39 PM  
**To:** Patel, Vital; Nitollama, Philip  
**Cc:** Giancarlo Ganddini  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Hi Vital,  
See the revised Scoping agreement for your review and approval.

Please provide the following:

- update on the 3rd Street Grade Separation project (esp. roadway plan changes and construction timing)
- contact person/information for RCTC
- contact person/information for FRA and CPUC so that a copy of the scoping agreement can be sent when it is approved.

At your earliest convenience, please provide acceptance of the Scoping Agreement for this project.

Sincerely,  
*Perrie Ilercil*, PE (AZ)  
Senior Engineer  
**GANDDINI GROUP, INC**

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**From:** Patel, Vital  
**Sent:** Wednesday, August 9, 2023 7:29 AM  
**To:** Perrie Ilercil  
**Cc:** Nitollama, Philip  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Perrie,

We will get back to you soon with the requested information.

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

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**From:** Perrie Ilercil  
**Sent:** Tuesday, August 8, 2023 4:37 PM  
**To:** Patel, Vital  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Vital,

The 2020 report shows north-westbound left turn from 3rd Street to Commerce Street.  
The orange median stops prior to the intersection, but the white striping does not look like a left-turn lane.



Confirm that the left turn as shown in the 3SGS traffic report will be provided.

What is the anticipated timeline for the 3rd Street Separation Project?

When is construction anticipated to start?

What is the anticipated duration of construction?



Sincerely,  
*Perrie Ilercil*, PE (AZ)  
Senior Engineer  
**GANDDINI GROUP, INC**

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**From:** Patel, Vital  
**Sent:** Monday, August 7, 2023 4:06 PM  
**To:** Perrie Ilercil; Christine Saunders  
**Cc:** Giancarlo Ganddini; Todd Cadwell; Darrin Olson  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Perrie,

Please see the attached.

Please include a section in the traffic study report to show how project site plan conforms to the latest 3<sup>rd</sup> Street Grade Separation Project site plan. I am attaching the exhibit for reference.

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

**From:** Perrie Ilercil  
**Sent:** Friday, August 4, 2023 2:57 PM  
**To:** Patel, Vital; Christine Saunders  
**Cc:** Giancarlo Ganddini; Todd Cadwell; Darrin Olson  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Hi Vital,  
See the revised Scoping agreement.

At your earliest convenience, please provide acceptance of the Scoping Agreement for this project.

Sincerely,  
*Perrie Ilercil*, PE (AZ)  
Senior Engineer  
**GANDDINI GROUP, INC**

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**From:** Patel, Vital  
**Sent:** Thursday, August 3, 2023 8:13 AM  
**To:** Perrie Ilercil; Christine Saunders  
**Cc:** Giancarlo Ganddini; Todd Cadwell; Darrin Olson  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Good morning Perrie,

Apologies but upon further review of the scoping agreement, we have added two more comments.

Please let us know if you have any questions.

Sincerely,

**Vital Patel**  
City of Riverside  
Public Works Department, Traffic Engineering  
Main: 951.826.5366  
[RiversideCA.gov](http://RiversideCA.gov)

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**From:** Perrie Ilercil  
**Sent:** Monday, July 31, 2023 3:19 PM  
**To:** Patel, Vital; Christine Saunders  
**Cc:** Giancarlo Ganddini; Todd Cadwell; Darrin Olson  
**Subject:** RE: Responses-RE: [External] RE: Iron Lofts MFR on Commerce Street between Mission Inn Avenue and 4th Street - Scoping Agreement

Hi Vital,  
See the revised Scoping Agreement dated July 31, 2023.  
Also, see the Other Development Table created from the information provided by Judy Eguez, City Planner.

Please provide acceptance of the Scoping Agreement for this project.

Sincerely,  
*Perrie Ilercil*, PE (AZ)



City of Arts & Innovation

**APPROVED**

*Vital Patel*

10/22/2024

Public Works Department

City of Riverside  
Traffic Analysis Guidelines for VMT & LOS Assessment  
July 2020

# Traffic Analysis Scoping Form

This scoping form shall be submitted to the City of Riverside Traffic Engineering Division

## Project Identification:

Case Number:	PR 2023-001469
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	Iron Lofts Multifamily Residential
Project Address:	east of Commerce Street between 5th Street and Mission Inn Avenue
Project Opening Year:	2026
Project Description:	The 6.97-acre site is proposed to consist of a four-story, mixed-use development with 295 multifamily dwelling units and five two-story townhomes.

	<b>Consultant:</b>	<b>Developer:</b>
Name:	Ganddini Group, Inc / Perrie Ilercil	IRON LOFTS, LLC
Address:	555 Parkcenter Dr, Ste 225 Santa Ana, CA 92705	1201 Dove Street, Suite 520 Newport Beach, California 92660
Telephone:	714-795-3100 ext.103	
Fax/Email:	perrie@ganddini.com	

## Scoping & Study Fees:

Fees to be made payable to "City of Riverside" and delivered to Land Development.  
City Hall 3<sup>rd</sup> Floor, 3900 Main Street, Riverside, CA 92522

- 1) Scoping Agreement Fee (For all projects not screened from analysis): **\$271.00**
- 2) TIA Review (For projects with both LOS & VMT analysis of any scale, or standalone LOS analyses with over 100 vehicle trips per hour): **\$2671.02**
- 3) TIA Review (For standalone VMT analysis, or standalone LOS analyses with under 100 vehicle trips per hour): **\$1288.20**