

Mission Valley Community Plan Update

Mobility Technical Report

Draft Report



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The City of



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Table of Contents

1.0	Introduction.....	1
1.1	Study Background and Purpose.....	1
1.2	Study Location.....	1
1.3	Organization of the Report	3
2.0	Analysis Methodology	4
2.1	Pedestrian	5
2.1.1	Pedestrian Demand	5
2.1.2	Pedestrian Safety (Informational – Analyzed for Existing Conditions Only).....	5
2.1.3	Pedestrian Environment Quality Evaluation (PEQE)	5
2.1.4	Pedestrian Network Connectivity.....	8
2.2	Bicycle.....	8
2.2.1	Bicycle Demand.....	8
2.2.2	Bicycle Safety (Informational – Analyzed for Existing Conditions Only)	9
2.2.3	Bicycle Facility Quality	9
2.2.4	Bicycle Network Connectivity	9
2.3	Transit.....	10
2.3.1	Transit Demand.....	10
2.3.2	Safety Near Transit (Informational – Analyzed for Existing Conditions Only)	10
2.3.3	Transit Quality.....	11
2.3.4	Quality Connections to Transit	12
2.4	Vehicular System.....	12
2.4.1	Vehicular Demand	13
2.4.2	Vehicular Safety (Informational – Analyzed for Existing Conditions Only)	13
2.4.3	Vehicular System Operations	13
2.4.4	Vehicular Connectivity	21
3.0	Mission Valley Proposed Plan.....	22
3.1	Development of the Proposed Plan.....	22
3.1.1	Identification of Issues and Needs	22
3.1.2	Development of Proposed Plan Improvements.....	22
3.2	Pedestrian Environment	22
3.2.1	Identified Pedestrian Needs	22
3.2.2	Pedestrian Improvements	25
3.3	Cycling Environment	32
3.3.1	Identified Bicycle Needs	32
3.3.2	Bicycle Improvements	35
3.4	Public Transit Service and Facilities	38
3.4.1	Identified Transit Needs	38
3.4.2	Planned Transit Improvements	42
3.5	Street and Freeway System	44
3.5.1	Identified Street and Freeway Needs.....	44
3.5.2	Street and Freeway Improvements.....	48
3.6	Currently Planned Improvements	68

3.6.1	Pedestrian	68
3.6.2	Bicycle	70
3.6.3	Transit	70
3.6.4	Vehicular	70
4.0	Modeling and Forecasting	72
4.1	Base Year Model Calibration.....	72
4.1.1	Base Year Land Use Verification/Validation	72
4.1.2	Base Year Roadway Network Verification/Validation	72
4.1.3	Base Year Ground Count Validation & Adjustment	73
4.1.4	Model Sensitivity Adjustment	73
4.1.5	Base Year Final Calibration Results.....	73
4.2	Future Year Traffic Forecast Volume	73
4.2.1	Vehicle Miles Traveled (VMT).....	74
5.0	Proposed Plan Analysis	77
5.1	Pedestrian Assessment and Results	77
5.1.1	Pedestrian Network Connectivity.....	77
5.1.2	Pedestrian Network Quality	77
5.2	Cycling Assessment and Results	87
5.2.1	Bicycle Network Connectivity	88
5.2.2	Bicycle Network Quality.....	88
5.2.3	Combined Bicycle Network Connectivity and Quality Assessment	91
5.3	Public Transit Services and Facilities Assessment and Results	91
5.3.1	Transit Stop/Station Average Daily Boardings/Alightings and Amenities.....	91
5.4	Street and Freeway System Assessment and Results	105
5.4.1	Roadway Segment Analysis	105
5.4.2	Peak Hour Arterial Analysis.....	115
5.4.3	Intersection Geometry and LOS Analysis	120
5.4.4	Intersection Queuing Analysis	139
5.4.5	Freeway Segment Analysis	146
5.4.6	Freeway Ramp Metering Analysis	154

Appendices

Appendix A	Heavy Vehicle Percentage
Appendix B	Signal Timing Plans & Signal Warrant Worksheets
Appendix C	Signalized Intersection Analysis Adjustments
Appendix D	Connectivity Assessment Paper
Appendix E	Base Year Land Use Inputs
Appendix F	Final Base Year Model Roadway Network
Appendix G	Proposed Plan Buildout Land Use Inputs
Appendix H	Proposed Plan Adjustments
Appendix I	PEQE Calculation Worksheets
Appendix J	Peak Hour Arterial Analysis Worksheets
Appendix K	Peak Hour Intersection Calculation Worksheets & Queuing Reports

List of Tables

Table 2.1	Multimodal Performance Measure Matrix	4
Table 2.2	Pedestrian Environment Quality Ranking System	7
Table 2.3	Bicycle Land Use Categories.....	10
Table 2.4	Transit Amenity Standards by Ridership Levels	11
Table 2.5	Vehicular Level of Service Definitions	15
Table 2.6	City of San Diego Roadway Segment Daily Capacity and Level of Service Standards	16
Table 2.7	Arterial Analysis Level of Service Thresholds	17
Table 2.8	Signalized Intersection Level of Service HCM Operational Analysis Method.....	18
Table 2.9	Level of Service Criteria for Stop Controlled Unsignalized Intersections	19
Table 2.10	Caltrans District 11 Freeway Segment Level of Service Thresholds	20
Table 3.1	Mission Valley Transit Performance.....	41
Table 3.2	Planned Roadway Modifications.....	61
Table 3.3	Planned Intersection Modifications	64
Table 4.1	Vehicle Miles Traveled (VMT) Scenario Comparison.....	76
Table 4.2	Commute Auto Round Trip Tour Length.....	76
Table 5.1a	PEQE Segment Analysis Results – Proposed Plan Conditions.....	80
Table 5.1b	PEQE Intersection Analysis Results – Proposed Plan Conditions	85
Table 5.1c	PEQE Mid-Block Crossing Analysis Results – Proposed Plan Conditions	86
Table 5.2	PEQE Segment Analysis Results by Grade Mileage – Proposed Plan Conditions	86
Table 5.3	PEQE Intersection Analysis Results by Grade – Proposed Plan Conditions.....	87
Table 5.4	Bicycle Facilities by Network Mileage – Proposed Plan Conditions	87
Table 5.5	LTS Analysis Results by Grade Mileage – Proposed Plan Conditions.....	88
Table 5.6	Average Daily Boardings and Alightings by Route – Proposed Plan Conditions.....	93
Table 5.7	Transit Amenities Recommended Based on Forecast Transit Stop Boardings	98
Table 5.8	Roadway Segment Analysis – Proposed Plan Conditions	108
Table 5.9	Peak Hour Roadway Arterial Analysis – Proposed Plan Conditions.....	119
Table 5.10	Peak Hour Intersection LOS and Delay Results – Proposed Plan Conditions	135
Table 5.11	Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions	140
Table 5.12a	AM Freeway Segment Level of Service Results – Proposed Plan Conditions.....	148
Table 5.12b	PM Freeway Segment Level of Service Results – Proposed Plan Conditions	151
Table 5.13	Freeway Ramp Metering Analysis – Proposed Plan Conditions	154

List of Figures

Figure 1-1	Mission Valley within the Region	2
Figure 2-1	Pedestrian Study Area – Proposed Plan Conditions	6
Figure 2-2	Mission Valley Project Study Area and Key Study Intersections	14
Figure 3-1	Pedestrian Needs	24
Figure 3-2	Pedestrian Route Types – Proposed Plan Conditions	27
Figure 3-3	Example Implementation of a Multi-Use Bridge Across Friars Road at Frazee Road	28
Figure 3-4	Pedestrian Treatments	29
Figure 3-5	Bicycle Needs.....	34
Figure 3-6	Bicycle Network – Proposed Plan Conditions	37
Figure 3-7	Transit Needs.....	40
Figure 3-8	Transit Coverage – Proposed Plan Conditions	43
Figure 3-9	Street and Freeway Needs	45
Figure 3-10	Parking Needs.....	47
Figure 3-11	Fashion Valley Road Proposed Improvements	50
Figure 3-12	Hotel Circle North Proposed Improvements	51
Figure 3-13	San Diego Mission Road Proposed Improvements	52
Figure 3-14	Camino Del Rio South Proposed Improvements.....	53
Figure 3-15	Rancho Mission Road Proposed Improvements.....	54
Figure 3-16	Via Las Cumbres Proposed Extension	58
Figure 3-17	Fenton Parkway Proposed Extension.....	59
Figure 3-18	Roadway Classifications – Proposed Plan Conditions	60
Figure 3-19	Rio San Diego Drive / River Run Drive Proposed Improvements.....	65
Figure 4-1	Average Daily Traffic Volumes – Proposed Plan Conditions.....	75
Figure 5-1	Pedestrian Connectivity Ratio – Proposed Plan Conditions	78
Figure 5-2	Pedestrian Environmental Quality Evaluation (PEQE) – Proposed Plan Conditions	79
Figure 5-3	Bicycle Network Connectivity – Proposed Plan Conditions.....	89
Figure 5-4	Bicycle Level of Traffic Stress (LTS) – Proposed Plan Conditions.....	90
Figure 5-5	Combined Bicycle Network Connectivity and Quality Assessment – Proposed Plan Conditions.....	92
Figure 5-6	Daily Roadway Segment Traffic Volumes and LOS – Proposed Plan Conditions.....	107
Figure 5-7a	AM Arterial Level of Service – Proposed Plan Conditions	117
Figure 5-7b	PM Arterial Level of Service – Proposed Plan Conditions.....	118
Figure 5-8	Intersection Geometrics – Proposed Plan Conditions	121
Figure 5-9	AM/PM Peak Hour Intersection Volumes – Proposed Plan Conditions	126
Figure 5-10	Midday Peak Hour Intersection Volumes – Proposed Plan Conditions.....	131
Figure 5-11	AM/PM Peak Hour Intersection LOS – Proposed Plan Conditions	133
Figure 5-12	Midday Peak Hour Intersection LOS – Proposed Plan Conditions.....	134

1.0 Introduction

1.1 Study Background and Purpose

The current Mission Valley Community Plan was adopted in 1985, with over twenty amendments incorporated since its adoption. The update process was initiated in 2015 to provide direction and guidance for future community growth and development. The updated plan also serves to describe the community's vision and to identify strategies for enhancing community character and managing change.

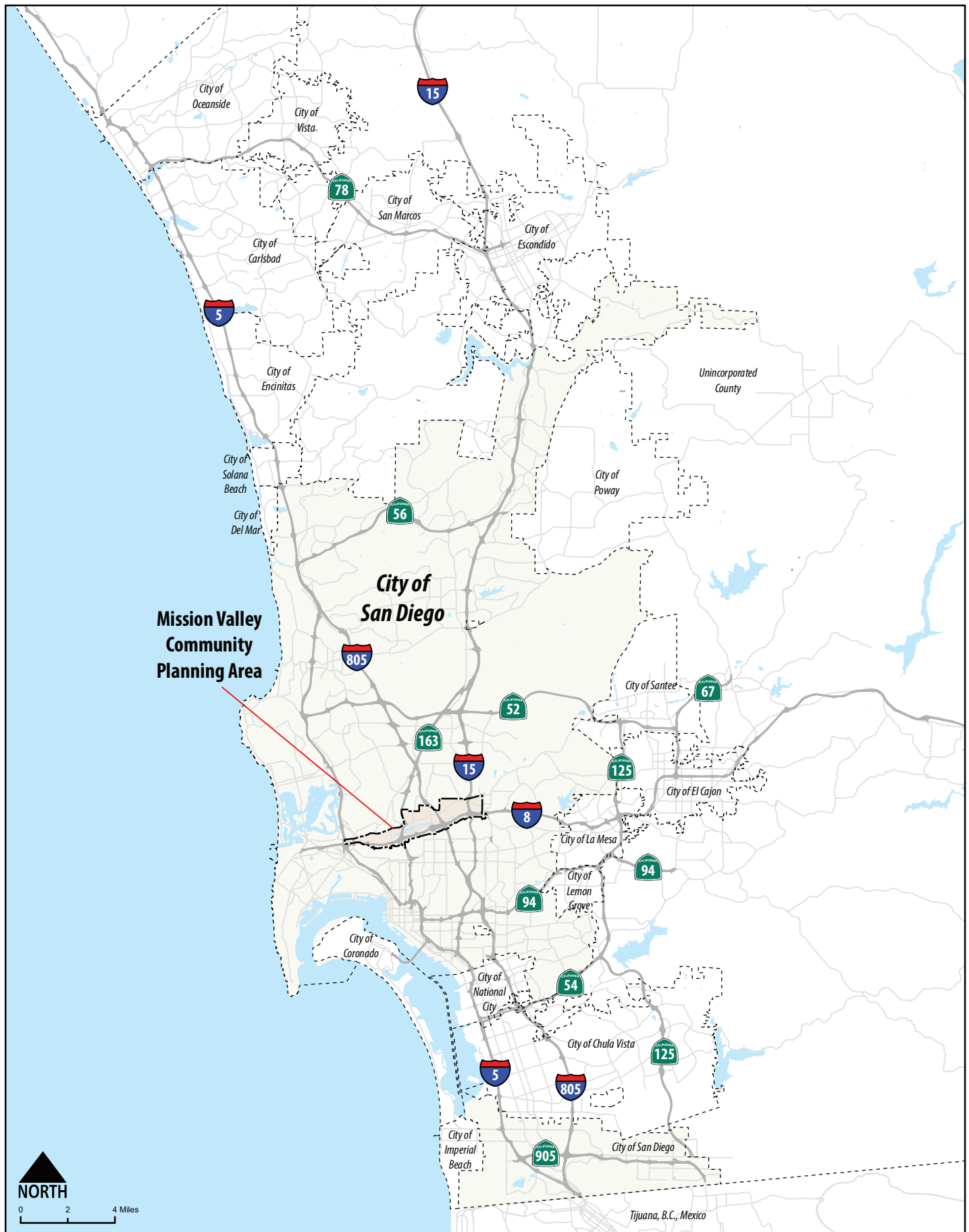
This Mobility Technical Report summarizes the physical and operational conditions of the planned mobility system outlined in the Mission Valley Mobility Element. This report is one component of the Mission Valley Community Plan Update, identifying the planned mobility improvements and culminating with an analysis of all travel modes under the horizon year 2050 Proposed Plan conditions. The report also describes the analysis methodologies.

The Proposed Plan is a strategy to address existing and forecast deficiencies related to mobility systems within the Mission Valley community. The mobility networks are comprised of roadway and freeway systems, pedestrian and bicycle infrastructure, and public transit. Each of these transportation modes is discussed in the following chapters.

1.2 Study Location

The Mission Valley planning area includes approximately 2,418 acres in the center of the City of San Diego. The community is bounded on the west by Interstate 5 and on the east by the San Diego River and Fairmont Avenue. The northern and southern community boundaries generally follow the valley peaks. **Figure 1-1** displays the Mission Valley Community Planning area within the San Diego region.

Multiple freeway facilities traverse the community or run adjacent to it, contributing to Mission Valley's role as a regional destination for shopping and entertainment. These facilities include Interstate 5, State Route 163, Interstate 805, Interstate 15, and Interstate 8. The Green Line Trolley crosses the community east-west parallel to the San Diego River and Interstate 8. Public transportation is further supplemented by bus services. The San Diego River Trail also parallels the San Diego River, providing a multi-use path across the community.



1.3 Organization of the Report

The remainder of this Mobility Technical Report is organized into the following chapters:

- **Chapter 2** describes the methodologies used to determine the study area and assess the pedestrian, bicycle, transit, and vehicular systems.
- **Chapter 3** states the community needs identified through the existing conditions process, and presents the Proposed Plan and recommended improvements for the Mission Valley community.
- **Chapter 4** provides an overview of the Transportation Model Forecasting process utilized to project future travel patterns under implementation of the Proposed Plan.
- **Chapter 5** concludes this document with the Proposed Plan analysis results for each mode.

2.0 Analysis Methodology

This chapter describes the methodologies utilized to analyze Mission Valley’s mobility network. Since the adoption of the 2008 California Complete Streets Act (AB 1358), the City of San Diego has employed multimodal analysis procedures to assess mobility needs for pedestrians, cyclists and transit users.

Table 2.1 summarizes performance measures for each mode, while the remaining sections of this chapter outline methodologies employed to analyze facility demand, safety, network quality, operations, and connectivity associated with each of the four major modes of travel (pedestrian, bicycle, transit, and vehicular) in Mission Valley.

Table 2.1 Multimodal Performance Measure Matrix

Performance Measure	Pedestrian	Bicycle	Transit	Vehicular System
Demand	Primary: San Diego Pedestrian Priority Model Existing Conditions Only: Travel Survey Data & Peak Period Pedestrian Counts	Primary: San Diego Bicycle Demand Model Existing Conditions Only: Travel Survey Data & Peak Period Bicycle Counts	Primary: Latent Demand at Major Transit Stops* Existing Conditions Only: Boardings and Alightings information from MTS	Existing: Travel Survey Data & Vehicular Related Counts Future: SANDAG Model Forecast
Safety (Existing Conditions Only)	Historic Pedestrian Collisions (5-Yr)	Historic Bicycle Collisions (5-Yr)	Historic Collisions near Transit Stations/Stops (5-Yr)	Historic Vehicular Collisions (5-Yr)
Quality	Pedestrian Environment Quality Evaluation (PEQE)	Bicycle Level of Traffic Stress (LTS)	Station Quality – Presence of Amenities; Service Quality – Transit Speeds	Level of Service - Freeway and Roadway Segments, Intersections, and Peak Hour Arterial Analysis
Connectivity	Primary: Travelshed Analysis Existing Conditions Only: Missing Sidewalk	Primary: Low-Stress Connectivity Existing Conditions Only: Mileage of Bicycle Facilities by Facility Type	Quality Walk and Bicycle Ratios from Major Transit Stops*	Vehicle Miles Traveled (VMT) Per Capita (Resident or Employee)

Note:

* Major transit stops are defined as stations containing a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15-minutes or less during the peak commute periods.

2.1 Pedestrian

2.1.1 Pedestrian Demand

The Pedestrian Priority Model (PPM) was used to document relative pedestrian demands across the Mission Valley community. The model consists of three submodels – trip attractors, generators, and detractors – reflecting high pedestrian propensity land uses and population concentrations, along with factors indicating potential pedestrian barriers or safety issues. The high pedestrian demand areas identified through the Pedestrian Priority Model evaluation were used to define the Pedestrian Study Area which then becomes the focus of quality and connectivity assessments. Thresholds for high demand/need across the community were established relative to the community itself and not relative to the City as a whole. The Pedestrian Study Area incorporates all pedestrian facilities that meet one or more of the following criteria:

- Areas with a PPM Score that is one standard deviation greater than the community-specific mean PPM score; or
- Areas with two or more pedestrian collisions over the previous 5-year period; or
- Areas within half a mile of major transit stops¹.

Figure 2-1 displays the Pedestrian Study Area corridors.

2.1.2 Pedestrian Safety (Informational – Analyzed for Existing Conditions Only)

Historic vehicular-pedestrian collision data was obtained from the City of San Diego for the period from 2008 to 2013. This data was geocoded and mapped to display pedestrian-involved collision locations in Mission Valley. Additional focus was placed on these locations during the network development phase.

2.1.3 Pedestrian Environment Quality Evaluation (PEQE)

The quality of all pedestrian facilities (roadway segments, intersections and mid-block crossings) within the Pedestrian Study Area were evaluated using the Pedestrian Environment Quality Evaluation (PEQE) tool under existing conditions. **Table 2.2** outlines the evaluation scale. The quality of the pedestrian environment quality is categorized as High, Medium or Low, based upon the following scoring system:

<i>Low</i>	< 4 points
<i>Medium</i>	= 4 – 6 points
<i>High</i>	> 6 points

The PEQE analysis results (score and rating) are presented in tabular and mapped formats for each individual pedestrian facility within the Pedestrian Study Area, including Circulation Element roadway segments (both sides of the road), study intersections, and mid-block crossings.

¹ Major transit stops are defined as stations containing a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15-minutes or less during the peak commute periods.

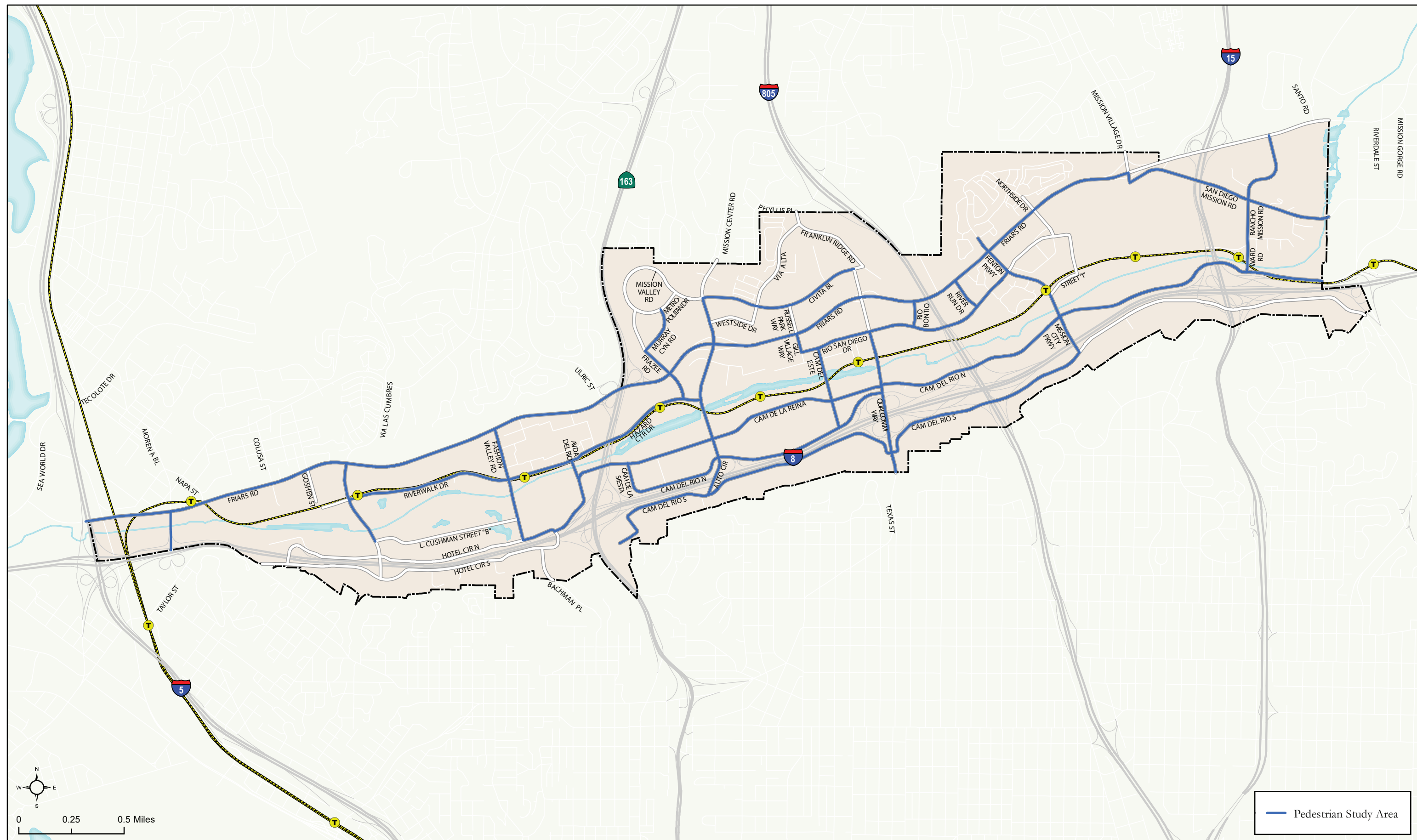


Table 2.2 Pedestrian Environment Quality Ranking System

Facility Type	Measure	Description/Feature	Scoring
Segment <i>between two intersections</i>	1. Horizontal Buffer	Between the edge of vehicular travel way and the edge of clear pedestrian zone	0 point: < 6 feet 1 point: 6 - 14 feet 2 points: > 14 feet or vertical buffer
	2. Lighting		0 point: below standard/requirement 1 point: meet standard/requirement 2 points: exceed standard/requirement
	3. Clear Pedestrian Zone	5' minimum	0 point: has obstructions 2 points: no obstruction
	4. Posted Speed Limit		0 point: > 40 mph 1 point: 30 - 40 mph 2 points: < 30 mph
Maximum			8 points
Intersection by Leg	1. Physical Feature	<ul style="list-style-type: none"> Enhanced/High Visibility Crosswalk Raised Crosswalk/Speed Table Advanced Stop Bar Bulb out/Curb Extension 	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	2. Operational Feature	<ul style="list-style-type: none"> Pedestrian Countdown Signal Pedestrian Lead Interval No-Turn On Red Sign/Signal Additional Pedestrian Signage 	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	3. ADA Curb Ramp		0 point: no ramps and no truncated domes 1 point: ramps only, no truncated domes 2 points: meet standard/requirement
	4. Traffic Control		0 point: no control 1 point: stop sign controlled 2 points: signal/roundabout/traffic circle
Maximum			8 points
Mid-block Crossing	1. Visibility		0 point: w/o high visibility crosswalk 2 points: with high visibility crosswalk
	2. Crossing Distance		0 point: no treatment 2 points: with bulb out or median pedestrian refuge
	3. ADA		0 point: no ramps and no truncated domes 1 point: ramps only, no truncated domes 2 points: meet standard/requirement
	4. Traffic Control		0 point: no control 1 point: flashing beacon (In-pavement, RRFB, etc.) 2 points: signal/pedestrian hybrid beacon (HAWK)
Maximum			8 points

2.1.4 Pedestrian Network Connectivity

Pedestrian network connectivity was assessed using a two-step process: 1) develop the pedestrian network; and 2) perform a pedestrian travelshed analysis for the network. A description of these steps is provided below.

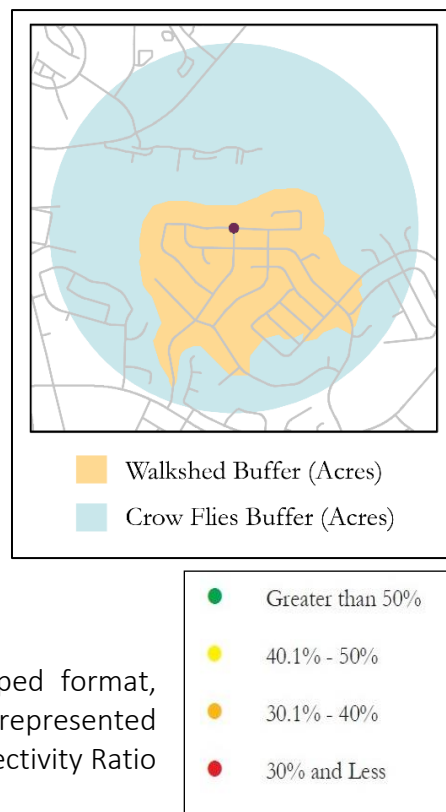
Developing the Pedestrian Network

The SANDAG “Roads_All” shapefile is the base network for the pedestrian travelshed analysis. However, since the Roads_All shapefile does not include all pedestrian connections – such as trolley stations where people accessing stations may traverse large parking lots, universities, parks, shopping centers or other large institutions – they were manually added to the shapefile to reflect the actual pedestrian network within Mission Valley, prior to conducting the travelshed analysis. In addition, all roadway segments in the Roads_All shapefile that do not allow pedestrians are removed from the analysis, including freeway segments and freeway ramps.

Travelshed Analysis

The pedestrian travelshed analysis assesses the level of connectivity provided at each study intersection within the Mission Valley pedestrian study area. The travelshed analysis requires first creating a 0.5-mile pedestrian network buffer at each study intersection. That area is then compared to the area of a 0.5-mile as-the-crow-flies buffer (502 acres) to develop a Pedestrian Connectivity Ratio for each intersection. The higher the Pedestrian Connectivity Ratio, the better the overall connectivity is at the intersection.

The Pedestrian Connectivity Ratio is presented in a mapped format, displaying results for each intersection. Each intersection is represented by a color-symbolized dot, with the color reflecting the Connectivity Ratio scale shown in the legend to the right¹.



2.2 Bicycle

2.2.1 Bicycle Demand

The Bicycle Priority Model (BPM) was used to document relative bicycling demands throughout the Mission Valley community. The BPM was developed during the City of San Diego Bicycle Master Plan Update (adopted in 2011), and consists of a demand and detractor submodels. The demand submodel assesses two forms of cycling demand: inter-community – long trips, typically occurring on higher classification circulation roads, and intra-community – shorter, utility-driven

¹ 65% is typically the highest connectivity ratio that can be achieved in even the most ideal communities (i.e. urban downtown settings with tight street grid networks). Therefore, any community with a connectivity ratio over 50% should be considered ideal.

trips which may occur on a variety of streets. The detractor submodel considers barriers to bicycling comfort and safety, such as posted speed limits, traffic volumes and collisions. The submodels are combined to generate a priority point score for every roadway segment in the community.

2.2.2 Bicycle Safety (Informational – Analyzed for Existing Conditions Only)

Historic vehicular-bicycle collision data was obtained from the City of San Diego for the period from 2008 to 2013. This data was geocoded and mapped to display bicycle-involved collision locations in Mission Valley. Additional focus was placed on these locations during the network development phase.

2.2.3 Bicycle Facility Quality

The Bicycle Level of Traffic Stress (LTS) tool, as documented in the Mineta Transportation Institute Report entitled “Low Stress Bicycling and Network Connectivity”, was utilized to assess the cycling environment quality. All roadways in Mission Valley were assessed using the LTS tool. Results were tabulated and graphically displayed on a map for every roadway segment.

2.2.4 Bicycle Network Connectivity

Bicycle Connectivity Analysis – Bicycle Ratio

A bicycle travelshed analysis was performed to assess the level of connectivity provided at each intersection within Mission Valley. A Bicycle Connectivity Ratio was calculated by comparing the area of a one-mile bicycle network buffer (using all bikeable roadways plus bike paths) at each intersection within Mission Valley to the area of a 1.0-mile as-the-crow-flies buffer (or 2,010.6 acres). A higher Connectivity Ratio indicates better overall bicycle connectivity from the individual intersection. The Bicycle Connectivity Ratio results for each intersection within Mission Valley are reported for Proposed Plan conditions and displayed in a mapped format.

Low-Stress Bicycle Connectivity Analysis

This approach integrates demand, safety, connectivity and quality into two composite evaluation metrics. The three steps used in this evaluation process include the following:

Step 1: Identifying Bicycle Land Uses

Table 2.3 presents land use types identified as bicycle trip generators and attractors, as well as land uses that should not be considered in this evaluation. These land uses are consistent with the BPM’s Intra-Community Bicycle Demand submodel, unless noted otherwise.

All Traffic Analysis Zones (TAZs) containing Bicycle Land Uses were evaluated in Steps 2 and 3.

Step 2: Create Shortest Paths between all TAZs with Bicycle Land Uses

An analysis was performed to develop a community-wide network of shortest paths along bikeable roadways to/from all TAZs containing Bicycle Land Uses. These paths are referred to as the “Unconstrained Paths”. Paths less than 0.25 miles were removed since they are

likely to be made by foot. These results reflect the total number of potential bicycle trip paths within Mission Valley.

Step 3: Assess the Level of Connectivity and Quality of the Bicycle Paths

This assessment quantifies the connectivity of low stress bicycle facilities (LTS score 1 or 2) between TAZs within Mission Valley. This measure results in each TAZ being assigned a percentage reflecting the number of total TAZs reachable via low stress bicycle facilities within the study area.

Table 2.3 Bicycle Land Use Categories

Generators	Attractors	Not Included as Bicycle Land Uses
<ul style="list-style-type: none"> Residential Land Uses¹ 	<ul style="list-style-type: none"> Retail Office² Class I Bike Path Access Points Transit Stations Parks/Recreational Uses/Beaches Schools/College/Universities Neighborhood Civic Uses Inter-community Access Points³ 	<ul style="list-style-type: none"> Retail Catering to Automobiles/Automobile Services (car dealers, service stations, etc.) Passive or Low-Intensity Recreation (Golf Courses, etc.)/Open Space/Preserves Communications/Utilities Infrastructure Industrial/Warehousing/Junkyards/Landfills Agricultural Police/Fire Stations Military Bases

Notes:

1. The Intra-Community Bicycle Demand submodel includes population densities by various types, such as youth, bicycle commuters, and zero-vehicle households. This input has been simplified as “residential land use” for the purposes of the connectivity assessment since having all inputs by TAZs will facilitate GIS analyses.
2. Office land uses were not included in the PPM or the BDM, but were deemed as possibly important at the community level.
3. Inter-community Access Points were not included in the Intra-Community Bicycle Demand submodel since that facet of travel was modeled via the Inter-Community Bicycle Demand submodel. These connection points just outside the community were deemed as important attractions for this community-level connectivity assessment.

The Composite Cycling Evaluation results in the low-stress bicycle connectivity map.

2.3 Transit

2.3.1 Transit Demand

Transit demand was evaluated for all stations/stops within Mission Valley by examining ridership data obtained from the San Diego Metropolitan Transit System (MTS) and by researching commute mode share as reported in recent US Census Bureau data.

2.3.2 Safety Near Transit (Informational – Analyzed for Existing Conditions Only)

Historic collision data within 500 feet of a transit stop or station was obtained from the City of San Diego for the period from 2011 to 2015. This data was geocoded and mapped to display collision locations in Mission Valley. Additional focus was placed on these locations during the network development phase.

2.3.3 Transit Quality

Station Quality – Presence of Amenities

Each transit station/stop was reviewed for the presence of the following amenities:

- Shelters
- Benches
- Trash Receptacles
- Station Signs
- Maps/Wayfinding
- Lighting
- ADA compliancy

The San Diego MTS designates minimum amenity standards for transit stops based on the average number of daily boardings that occur at each stop per the *MTS Design for Transit* manual (1993). **Table 2.4** outlines the standard amenities that should be provided at transit stations/stops based on the projected daily passenger boardings (across all routes), according to MTS.

Table 2.4 Transit Amenity Standards by Ridership Levels

Amenity	Daily Passenger Boardings by Stop/Station				
	< 50	50 - 100	101 - 200	201 – 500	> 500
Sign and Pole	X	X	X	X	
Built-in Sign					X
Expanded Sidewalk			X	X	X
Bench		X	X	X	X
Shelter			X	X	X
Route Designations	X	X	X	X	X
Time Table				X	X
Route Map			X	X	X
System Map					X
Trash Receptacle				X	X
Lighting			X	X	X
ADA Compliant	X	X	X	X	X

Source: Design for Transit, MTS (1993)

Amenities at all stations/stops in the Mission Valley study area are reported in a table, indicating station ridership levels and whether station amenities are sufficient.

Transit Service Quality – Transit Speeds

On-time bus performance can be directly affected by vehicular traffic congestion along roadways serving bus routes. A roadway arterial speed analysis was used to identify locations where on-time performance is currently, or may be impacted under future conditions, due to vehicular traffic congestion. To identify areas where roadway congestions affects transit on-time performance, a Highway Capacity Manual (HCM) arterial speed analysis was performed for all bus route serving roadways.

Existing and future peak hour (AM and PM) arterial speeds and LOS are reported, by direction, for all study roadways serving bus routes. The information is presented in tabular and map formats.

2.3.4 Quality Connections to Transit

The latent demand evaluation described under “Transit Demand” indicates the number of potential transit users (residents and employees) within the vicinity of each major stop/station, using a 0.25-mile pedestrian network walkshed and a 0.75-mile bicycle network travelshed.

The quality connections assessment draws from the quality walking analysis and quality cycling analysis results to identify quality 0.25-mile pedestrian and 0.75-mile bicycle networks surround major transit stations/stops. These distances were based upon information in the San Diego Forward: The Regional Plan, Appendix U4 – SANDAG Regional Transit Oriented Development Strategy, and represent a five-minute travel distance for pedestrians and cyclists.

A Quality Walk Ratio and a Quality Bicycle Ratio was then developed for each major transit station/stop and presented on a map using the following equations:

$$\text{Quality Walk Ratio from Transit} = \frac{\text{Quality Walking Distance from Transit}}{\text{Crow Flies Buffer from Transit}}$$

$$\text{Quality Bicycle Ratio from Transit} = \frac{\text{Quality Cycling Distance from Transit}}{\text{Crow Flies Buffer from Transit}}$$

The resulting Quality Walk Ratio from Transit and Quality Bicycle Ratio from Transit are presented on separate maps, for each major transit station/stop.

2.4 Vehicular System

Freeways and natural topographical barriers were used as general study area boundaries. The primary study area encompasses the Mission Valley Community Planning Area and one segment and intersection beyond, where not separated by freeways and natural barriers, in order to capture potential transportation impacts to the adjacent cities or communities associated with the Mission Valley Community Plan Update.

Roadway Segments: All Circulation Element designated roads, and approximately one segment beyond the Community Planning area were evaluated. Additionally, all new segments were analyzed.

Intersections: All of the ramp intersections that provide access to the community, and intersections where both streets meet one of the following conditions:

- Four or more lanes;
- 3-lanes roadways carrying more than 15,000 ADT; or
- 2-lane roadways carrying more than 10,000 ADT.

Additional intersections needed to conduct arterial analysis, and intersections that did not previously exist were also included for evaluation.

Freeway Segments: All freeway segments within the Community Planning Area and one interchange beyond (approximately 25 freeway segments).

Figure 2-2 displays the study area extent and location of study intersections.

2.4.1 Vehicular Demand

Existing vehicular demand was determined using a combination of Household Travel Survey data obtained from SANDAG and vehicular counts conducted in support of this project. Future vehicular demand is derived from the SANDAG Activity Based Model Series 13 travel forecast, which estimates volumes based on buildout of adopted land uses and planned transportation networks.

2.4.2 Vehicular Safety (Informational – Analyzed for Existing Conditions Only)

Historic vehicular collision data was obtained from the City of San Diego for the period from 2008 to 2013. This data was geocoded and mapped to display vehicular collision locations in Mission Valley. Additional focus was placed on these locations during the network development phase.

2.4.3 Vehicular System Operations

Analysis of the vehicular systems – roadways, intersections and freeways – was prepared for this study in accordance with City of San Diego and SANTEC/ITE Traffic Impact Study Guidelines. The vehicular analysis provides an evaluation of vehicular operations at intersections and along roadway and freeway segments. A description of the methodologies employed to evaluate vehicular travel is outlined throughout this section. Level of Service (LOS) is a quantitative measure representing the quality of service from the driver's perspective. LOS A represents optimal conditions for the driver, while LOS F represents the worst. **Table 2.5** describes generalized definitions of vehicular LOS A through F.

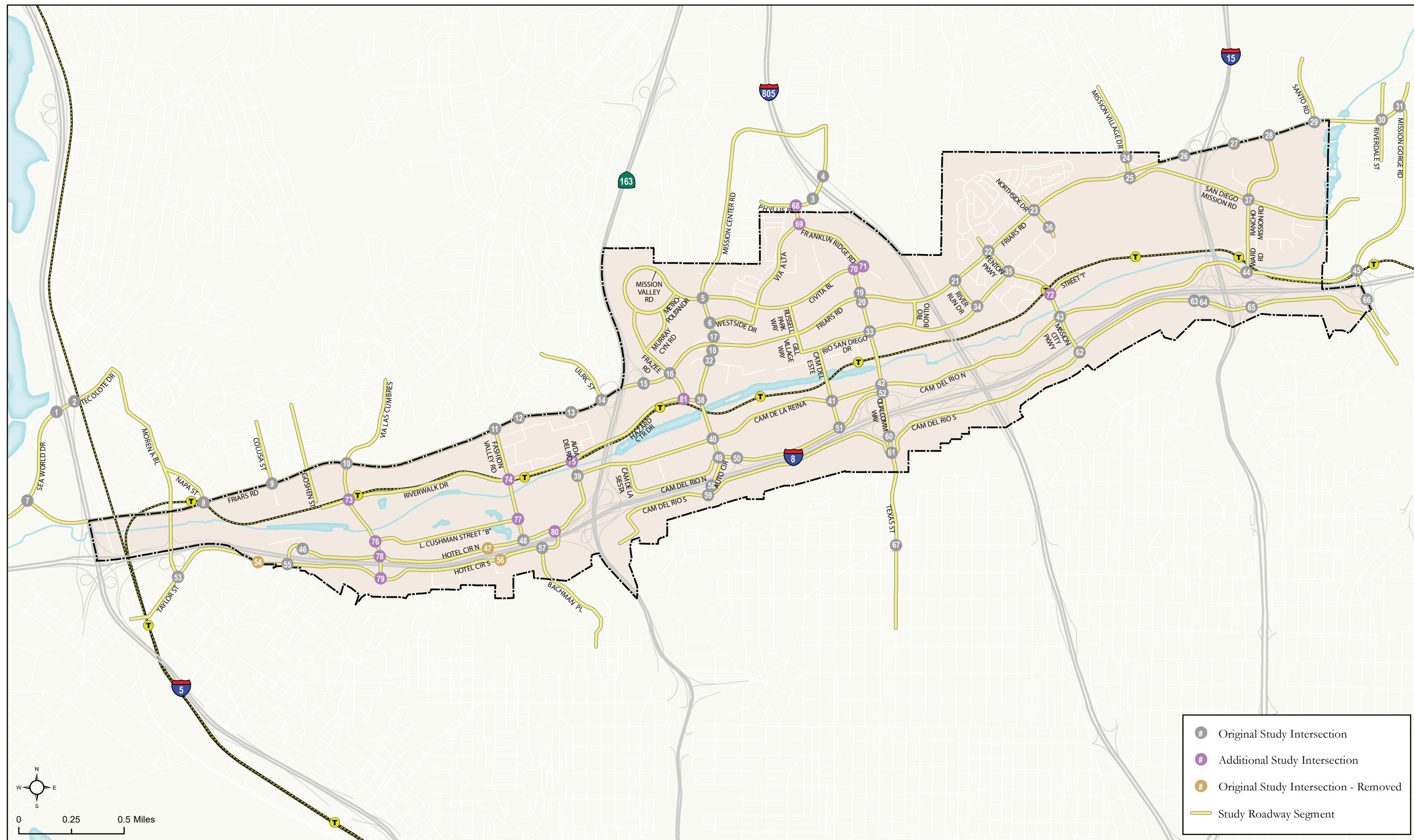


Figure 2-2
Mission Valley Project Study Area and Key Study Intersections

Table 2.5 Vehicular Level of Service Definitions

LOS	Characteristics
A	Primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Controlled delay at the boundary intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B	Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C	Stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	Less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E	Unstable operation and significant delay. Such operations may be due to some combination of adverse signal progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	Flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. Also, LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections have a volume-to-capacity ratio greater than 1.0.

Source: Highway Capacity Manual, Transportation Research Board (2010)

Roadway Segment Analysis

Roadway segment level of service standards and thresholds provided the basis for analysis of arterial roadway segment performance. The analysis of roadway segment level of service is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 2.6** presents the roadway segment capacity and LOS standards utilized to analyze roadways evaluated in this report.

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical and operational attributes. LOS D is considered acceptable for Mobility Element roadway segments in the City of San Diego. Often, a roadway segment that is analyzed to be LOS E or F based on theoretical capacity is found to operate acceptably in practice. In such cases, HCM arterial analysis may be conducted and utilized (or intersection analysis, if arterial analysis is not applicable) to provide a more accurate indication of LOS.

Table 2.6 City of San Diego Roadway Segment Daily Capacity and Level of Service Standards

Roadway Functional Classification	Lanes	Level of Service				
		A	B	C	D	E
Freeway	8	60,000	84,000	120,000	140,000	150,000
Freeway	6	45,000	63,000	90,000	110,000	120,000
Freeway	4	30,000	42,000	60,000	70,000	80,000
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial	8	35,000	50,000	70,000	75,000	80,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial	7	22,500	31,500	45,000	50,000	55,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial	5	17,500	24,500	35,000	40,000	45,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Major Arterial	3	11,250	15,750	22,500	26,250	30,000
Major Arterial	2	7,500	10,500	15,000	17,500	20,000
Major Arterial (one-way)	3	12,500	16,500	22,500	25,000	27,500
Major Arterial (one-way)	2	10,000	13,000	17,500	20,000	22,500
Collector (w/ two-way left-turn lane)	4	10,000	14,000	20,000	25,000	30,000
Collector (w/ two-way left-turn lane)	3	7,500	10,500	15,000	18,750	22,500
Collector (w/ two-way left-turn lane)	2	5,000	7,000	10,000	13,000	15,000
Collector (w/o two-way left-turn lane)	4	5,000	7,000	10,000	13,000	15,000
Collector (w/o two-way left-turn lane)	3	4,000	5,000	7,500	10,000	11,000
Collector (w/o two-way left-turn lane)	2	2,500	3,500	5,000	6,500	8,000
Collector (w/o two-way left-turn lane) – no fronting property	2	4,000	5,500	7,500	9,000	10,000
Collector (one-way)	3	11,000	14,000	19,000	22,500	26,000
Collector (one-way)	2	7,500	9,500	12,500	15,500	17,500
Collector (one-way)	1	2,500	3,500	5,000	6,500	7,500
Sub-Collector (single-family)	2	-	-	2,200	-	-

Source: City of San Diego Traffic Impact Study Manual (1998)
Updated with input from City of San Diego Planning Department Mobility Staff (2017)

Peak Hour Arterial Analysis

The average travel speed is computed from the running time on the arterial segment(s) and the intersection approach delay. Average speed is strongly influenced by the number of signals per mile and the average intersection delay. On a given facility, factors such as inappropriate signal timing, poor progression, and increasing traffic flow can substantially degrade the arterial LOS. **Table 2.7** shows the LOS thresholds used for the arterial speed analysis. The arterial speed analysis was performed utilizing the *Synchro 10.0 (HCM 2000 methodology)* traffic analysis software (by

Trafficware, 2018). HCM 2000, was utilized rather than HCM 2010 method considering HCM 2010 arterial analysis methodology requires detailed traffic information such as traffic flow profile, future access point delay, and queuing accumulation behavior. These variables are not available for future year conditions. As such, the HCM 2000 arterial analysis methodology, which utilized more standard variables such as average speed, segment length, and arrival type, was used.

Table 2.7 Arterial Analysis Level of Service Thresholds

Arterial Class	I	II	III	IV
Range of Free Flow Speed (mph)	55 to 45	45 to 35	35 to 30	35 to 25
Typical Free Flow Speed (mph)	50	40	35	30
Level of Service Analysis	Average Travel Speed (mph)			
A	> 42	> 35	> 30	> 25
B	>34-42	> 28-35	> 24-30	> 19-25
C	>27-34	> 22-28	> 18-24	> 13-19
D	>21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	< = 16	< = 13	< = 10	< = 7

Source: Highway Capacity Manual 2000, Exhibit 15-2

Peak hour arterial analyses were conducted along Friars Road, Mission Center Road, and Qualcomm Way/Texas Street.

Peak Hour Intersection Level of Service Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis, for both signalized and unsignalized intersections. The following assumptions were utilized in conducting all intersection level of service analyses:

- *Pedestrian Calls per Hour*: An assumption of 20 pedestrian calls per hours.
- *Heavy Vehicle Factor*: A 2% heavy vehicle factor was assumed for all intersections within the study area. 2% is the standard, default heavy vehicle factor provided in HCM and Synchro 8.0 software. This number was compared with vehicle classification count data collected in support of this project, which demonstrated most segments have a heavy vehicle factor of 2% or less. **Appendix A** provides the heavy vehicle percentage along segments where vehicle classification data was collected.
- *Peak Hour Factor*: 0.95 or obtained from existing peak hour counts, whichever is greater.
- *Signal Timing*: Obtained from existing signal timing plans (as of September 2015), included as **Appendix B**.

Signalized Intersection Analysis

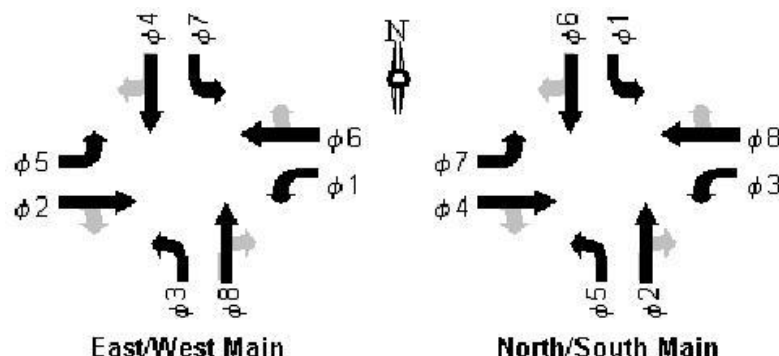
The signalized intersection analysis utilized in this study conforms to the operational analysis methodology outlined in *Highway Capacity Manual (HCM) 2010*. This method defines LOS in terms of delay, or more specifically, average control delay per vehicle (seconds/vehicle).

The *HCM 2010* methodology sets 1,900 passenger-cars per hour per lane (pcphpl) as the ideal saturation flow rate at signalized intersections based upon the minimum headway that can be sustained between departing vehicles at a signalized intersection. The service saturation flow rate, which reflects the saturation flow rate specific to the study facility, is determined by adjusting the ideal saturation flow rate for lane width, on-street parking, bus stops, pedestrian volume, traffic composition (or percentage of heavy vehicles), and shared lane movements (e.g. through and right-turn movements sharing the same lane). The LOS criteria used for this technique are described in **Table 2.8**. The computerized analysis of intersection operations was performed utilizing the *Synchro 10.0 (HCM 2010 methodology)* traffic analysis software (by Trafficware, 2011).

Table 2.8 Signalized Intersection Level of Service HCM Operational Analysis Method

Average Control Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
≤ 10.0	LOS A occurs when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
10.1 – 20.0	LOS B occurs when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
20.1 – 35.0	LOS C occurs when progression is favorable or the cycle length is moderate. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
35.1 – 55.0	LOS D occurs when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
55.1 – 80.0	LOS E occurs when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
> 80.0	LOS F occurs when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, Transportation Research Board (2010)



The HCM 2010 analysis methodology requires strict adherence to standard dual ring National Electrical Manufacturers Association (NEMA) phasing. Conflicting phase overlaps, clustered intersections, or other non-compliant phasing sequences cannot be analyzed using this method. Based upon geometry and phasing assignation per their respective signal timing sheets, the following intersections did not adhere to standard NEMA phasing (as seen in the previous figure):

1. I-5 SB Ramps & Sea World Drive (de-facto free southbound right-turn lane)
8. Napa Street & Friars Road (exclusive pedestrian phase)
25. Friars Road EB & Mission Village Drive (cluster intersection)
42. Qualcomm Way & Camino De La Reina (cluster intersection)
52. Qualcomm Way & I-8 WB Off-Ramp (cluster intersection)
58. Mission Center Road & I-8 EB Ramps (cluster intersection with off-set signal phasing)
59. Mission Center Road & Camino Del Rio South (cluster intersection with off-set signal phasing)
63. I-15 SB Off-Ramp & Camino Del Rio South (cluster intersection)
64. I-15 SB On-Ramp & Camino Del Rio South (cluster intersection)
66. Fairmount Avenue & I-8 EB Off-Ramp (de-facto free eastbound right-turn approach and u-turn overlap)

Adjustments in geometric configuration, phasing, and signal timing were implemented in order to utilize the HCM 2010 methodology. **Appendix C** provides detailed information on the aforementioned adjustments.

Unsignalized Intersection Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the *HCM 2010* unsignalized intersection analysis methodology. The Synchro 8.0 software supports this methodology and was utilized to produce LOS results. The LOS for a side street stop controlled (SSSC) intersection is determined by the computed or measured control delay and is defined for each minor movement. The LOS for an all-way stop controlled (AWSC) intersection is determined by the computed or measured average control delay of all movements. **Table 2.9** summarizes the level of service criteria for unsignalized intersections. Consistent with City policy, LOS E was used in this study as the minimum acceptable LOS for peak hour intersection operations. Queuing analysis was also conducted at all of the study area off-ramps, congested and/or closely spaced intersections, and each metered freeway on-ramp during peak hours.

Table 2.9 Level of Service Criteria for Stop Controlled Unsignalized Intersections

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
>50.0	F

Source: Highway Capacity Manual, Transportation Research Board (2010)

Freeway/State Highway Level of Service Standards and Thresholds

Freeway level of service analysis is based upon procedures developed by Caltrans District 11. The procedure for calculating freeway level of service involves estimating a peak hour volume to capacity (V/C) ratio. Peak hour volumes are estimated from the application of design hour ("K"), directional ("D") and truck ("T") factors to Average Daily Traffic (ADT) volumes. The base capacities were assumed to be 2,350 passenger-car per hour per main lane (pc/h/ln) and 1,410 pc/h/ln for auxiliary lane (60% of main lane capacity), respectively. A 0.95 peak-hour factor (PHF) is utilized for this analysis.

The resulting V/C ratio is then compared to acceptable ranges of V/C values corresponding to the various levels of service for each facility classification, as shown in **Table 2.10**. The corresponding level of service represents an approximation of existing or anticipated future freeway operating conditions in the peak direction of travel during the peak hour.

LOS D or better is used in this study as the threshold for acceptable freeway operations based upon Caltrans and the SANDAG Regional Growth Management Strategy (RGMS) requirements.

Table 2.10 Caltrans District 11 Freeway Segment Level of Service Thresholds

LOS	V/C	Congestion/Delay	Traffic Description
<i>Used for freeways, expressways and conventional highways</i>			
"A"	<0.41	None	Free flow.
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
<i>Used for conventional highways</i>			
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
<i>Used for freeways and expressways</i>			
"F0"	1.01–1.25	Considerable (0-1 hour delay)	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F1"	1.26-1.35	Severe (1-2 hour delay)	Very heavy congestion, very long queues.
"F2"	1.36-1.45	Very severe (2-3 hour delay)	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F3"	>1.46	Extremely severe (3+ hours of delay)	Gridlock.

Source: SANTEC/ITE Guidelines for TIS in the San Diego Region

Ramp Metering Analysis

Ramp metering is a means of controlling the volume of traffic entering the freeway with the goal of improving the traffic operations and flow on the freeway main lanes. Freeway ramp meter analysis estimates the peak hour queues and delays at freeway ramps by comparing existing volumes to the meter rate at the given location.

Meter rates used in the analysis were obtained from Caltrans. Ramp metering analyses to calculate delays at the study area freeway on-ramps were conducted based upon procedures outlined in the *City of San Diego Traffic Impact Study Manual (1998)*.

Ramp metering analysis is conducted at all freeway on-ramps with metering that provide primary freeway outbound access for the community (approximately 11 on-ramps).

2.4.4 Vehicular Connectivity

Senate Bill 743 (SB 743) was signed into law in September 2013, modifying the existing California Environmental Quality Act (CEQA) by removing vehicular delay, level of service (LOS), parking and other vehicular capacity measures as metrics of transportation system impacts for mixed-use, infill or transit-oriented development projects. Vehicle miles travelled (VMT) is considered the new analysis metric used to measure transportation impacts. VMT reflects the type, intensity and location of land uses in relation to the capacity of the vehicular transportation network. It is also influenced by the availability and quality of multimodal facilities, roadway connectivity, and system operations.

3.0 Mission Valley Proposed Plan

This section identifies the Mission Valley community's mobility issues and needs as determined through the existing conditions analysis. The Proposed Plan mobility improvement development process and resulting recommendations area also provided.

3.1 Development of the Proposed Plan

3.1.1 Identification of Issues and Needs

Existing mobility related issues and needs within the Mission Valley community were identified in the *Mission Valley Community Plan Update Mobility Existing Conditions Report; June 2017*. The issues and needs identified in the Existing Conditions Report were used, in conjunction with the other planning efforts and the overall community vision, to develop the recommended mobility improvements incorporated into the Proposed Plan.

3.1.2 Development of Proposed Plan Improvements

Proposed Plan improvements were developed by first cross checking the mobility issues and needs, identified in the Existing Conditions Report, against the mobility issues and needs identified in several other on-going or recent planning efforts, including:

- Midway/Pacific Highway Urban Greening Plan (December 2016)
- I-8 Corridor Study (August 2016)
- San Diego Forward, The Regional Plan (October 2015)
- City of San Diego Bicycle Master Plan (December 2013)
- City of San Diego Pedestrian Master Plan – Phase 4 (December 2013)
- Rosecrans Corridor Mobility Study (February 2010)
- Destination Lindbergh Technical Report: San Diego International Airport (November 2008)
- San Diego International Airport Master Plan (November 2008)

Where possible, the Proposed Plan carried forward improvements from previous planning efforts which have been adopted or vetted by the community. New improvement strategies were then developed for the issues and needs identified in the Existing Conditions Report and to accommodate the anticipated future growth within the community. Additionally, public input received through the outreach efforts was used to shape the recommendations. The following sections outline the mobility issues and needs identified in the Existing Conditions Report and the associated Proposed Plan improvements.

3.2 Pedestrian Environment

3.2.1 Identified Pedestrian Needs

The pedestrian environment affects us all whether we are walking to transit, a store, school, or simply walking from a parked car to a building. Most people prefer walking in places where there are sidewalks shaded with trees, lighting, interesting buildings or scenery to look at, other people outside, neighborhood destinations and a feeling of safety. Pedestrian improvements in areas with

land uses that promote pedestrian activities can help to increase walking as a means of transportation and recreation. Land use and street design recommendations that benefit pedestrians also contribute to the overall quality, vitality, and sense of community within a neighborhood. Pedestrian needs identified in the Mission Valley community include locations with high pedestrian collisions, sidewalk connectivity issues, high existing pedestrian activity, and high pedestrian priority as identified by the updated City of San Diego Pedestrian Priority Model. Pedestrian needs are identified in **Figure 3-1**.

Pedestrian Safety

Pedestrian comfort adjacent to roadways is highly influenced by right-of-way width, vehicular volumes and speed, and adequate separation from vehicles. Pedestrian comfort and safety at intersections is influenced by lighting, crosswalk visibility, crossing distance, and traffic control measures. Additionally, personal safety and comfort considerations, such as planters, public seating, presence of illegal graffiti and sidewalk cleanliness reinforce quality of the facility. Together, these factors play a major role in determining a person's willingness to make a trip by walking.

The central portion of Mission Valley, between SR-163 and I-805, exhibits the greatest concentration of pedestrian collisions within the community. In particular, there are four intersections where two or more pedestrian collisions were reported during the five-year study period (2008-2013), including:

- Friars Road and Frazee Road
- Hazard Center Drive and Frazee Road
- Rio San Diego Drive and Qualcomm Way
- Camino Del Rio South and Qualcomm Way

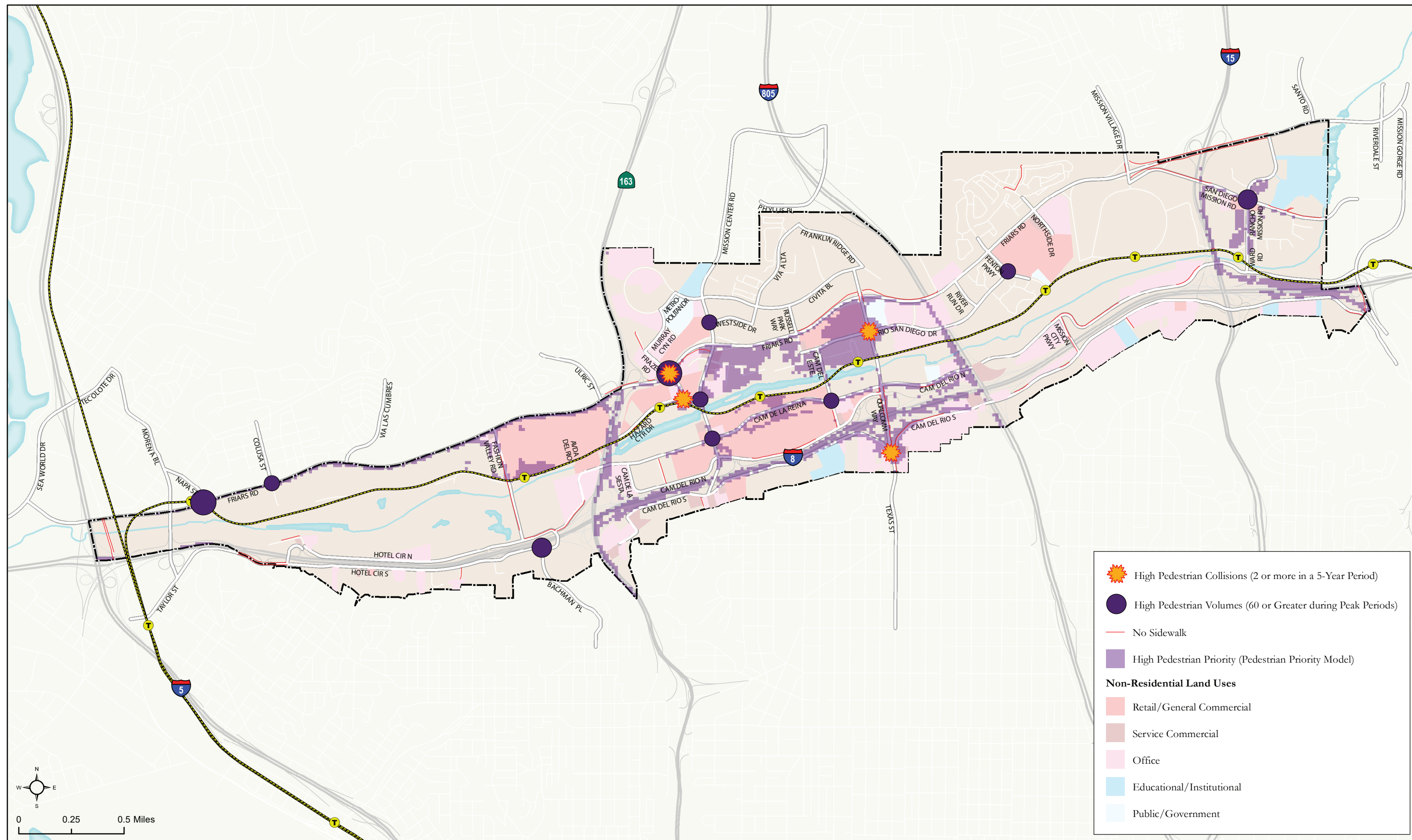
Sidewalk Connectivity

Connectivity is an important consideration when attempting to increase walking activity levels across a community. A disconnected pedestrian network discourages active trip making. Understanding barriers to connectivity, such as low-quality or missing sidewalks, is important for guiding long-range planning recommendations. There are many roadways with missing sidewalk, or sidewalk gaps, in Mission Valley, including major segments of Friars Road, Hotel Circle North and South, and Camino Del Rio North and South. Some of these streets are served by bus routes, with sidewalk gaps inhibiting transit access.

Pedestrian Activity

High pedestrian volumes are generally found near transit stops, retail, general commercial, and office land uses. There are ten high pedestrian volume locations (defined as sixty or more pedestrians during peak periods) in Mission Valley, including:

- Friars Road / Napa Street
- Friars Road / Frazee Road
- Hotel Circle South / Bachman Place
- Camino Del Este / Camino De La Reina
- Rio San Diego Drive / Fenton Parkway
- Mission Center Road / Hazard Center Drive
- Mission Center Road / Camino De La Reina
- Mission Center Road / Westside Drive
- San Diego Mission Road / Rancho Mission Road



Pedestrian Priority Model

Pedestrian Priority Areas were determined using the City of San Diego's Pedestrian Priority Model. The model evaluates community characteristics including demographic data, traffic volumes and speed, pedestrian collisions, presence of street lighting, location of transit stations, and land uses such as residential, office, commercial/retail, schools, and parks. The model uses these factors to identify areas where both pedestrian demand and detractors are high, thereby indicating a need to focus resources in these locations.

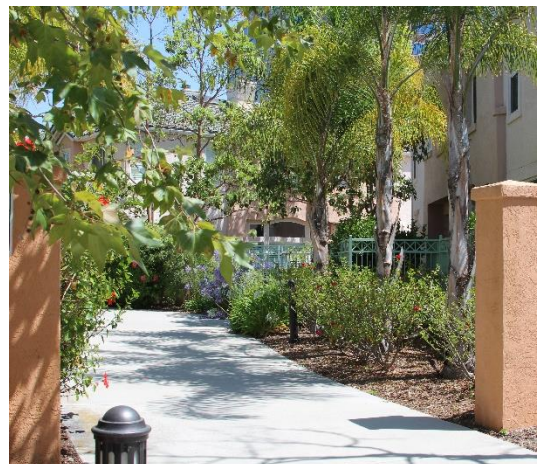
Relatively higher need or priority is exhibited in central Mission Valley, approximately bordered by Friars Road to the north, Camino Del Rio South to the south, I-805 to the east, and SR-163 to the west. Additional high demand areas surround the Fashion Valley Transit Station and Mall, as well as just east of I-15, surrounding Ward Road.

3.2.2 Pedestrian Improvements

Paseos & Pedestrian Route Types

Pedestrian route types are used to categorize pedestrian facilities based on adjacent uses and characteristics of the walking environment. The City of San Diego Pedestrian Master Plan defines size route types, each suggesting a level of treatments or features that best supports the specific area's walking environment. Paseos are one route type that is particularly suitable within the context of Mission Valley.

A series of paseos or walkways will help transform large parcels into permeable environments, resulting in more direct and convenient pedestrian connections. The paseos will aid in creating a stronger bicycle and pedestrian grid network, reducing travel times through improved connectivity between trip origins and destinations. The paseos are used to break up large parcels and are concentrated within the center of the community where four Green Line Trolley stations are closely spaced. They will effectively create shorter blocks for pedestrians, reducing the time it takes to access nearby Trolley stations. The environments surrounding the paseos will vary, with the exception that adjacent vehicles will either be low-speed vehicles or absent altogether. Paseos cut through large parcels, and may run adjacent to buildings, through parking lots or along parcel peripheries – all away from high speed, high volume roadways.



An existing paseo connects the San Diego River Trail to the Hazard Center Trolley Station.

Connector and Neighborhood route types run along roadways with moderate to high vehicular traffic and low pedestrian levels, requiring the most basic level of treatments such as landscaped buffers between the sidewalk and roadway and mandatory features like curb ramps. The Corridor route types are present along roadways that support business and shopping districts with

moderate pedestrian levels and include more enhanced treatments such as pedestrian lighting and trees to shade walkways. District route types support heavy pedestrian levels in mixed-use urban areas, consisting of the premium features like median refuges and controls at crossings, wider minimum walkway widths (>5'), and street furnishings.

Bridge Connections

The Proposed Plan includes six additional bridge connections planned solely for use by pedestrians and bicycles, including the following:

- YMCA to Sefton Field (San Diego River Trail extension)
- Hazard Center Trolley Station to the southern San Diego River Trail
- Mission Valley Center Trolley Station to the northern San Diego River
- Frazee Road across Friars Road
- Friars Road, west of Qualcomm Way
- I-15 Bikeway, from future San Diego River Trail extension to Camino Del Rio South

In addition to the multi-use bridges, two new roadway connections will greatly benefit pedestrians. The extension of Via Las Cumbres from Friars Road to Hotel Circle South will provide a new point for pedestrians to cross the San Diego River and Interstate 8. Via Las Cumbres will also provide access to a potential new Green Line Trolley Station.

The extension of Fenton Parkway to Mission City Parkway/Camino Del Rio North will improve access to the Green Line Fenton Parkway Station and better connect the office uses south of the San Diego River to the commercial and residential areas to the north.

Figure 3-2 displays the Proposed Plan pedestrian route types, multi-use bridges, and roadway extensions, while **Figure 3-3** presents a rendering of a potential multi-use bridge design across Friars Road at Frazee Road.

Intersections

All crossing points at signalized intersections should be upgraded to current City standards, to include the following:

- ADA compliant pedestrian ramps
- Advanced stop bar placement
- High visibility continental cross-walks
- Pedestrian count down signals

The pedestrian treatments shown in **Figure 3-4** should be considered to strengthen the existing pedestrian network and to maximize the benefit of new connections as they are built.

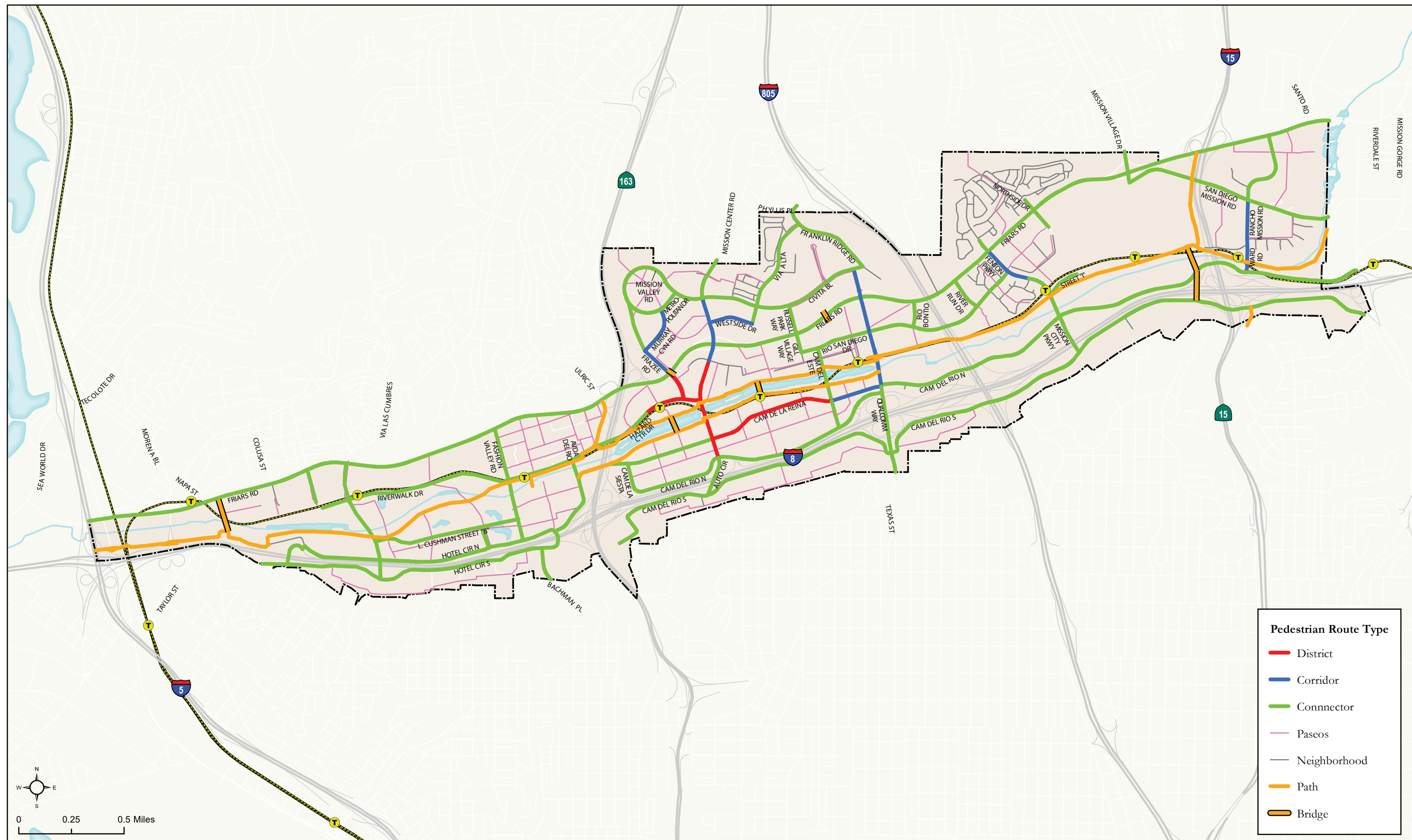
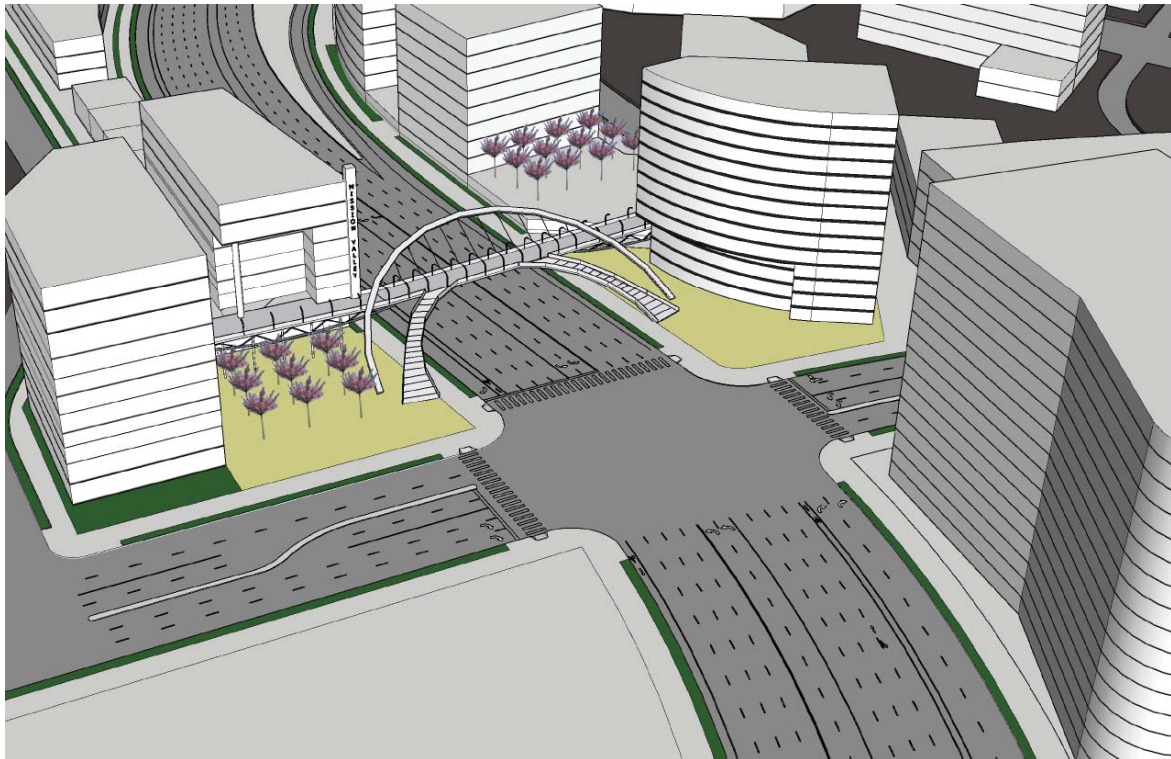
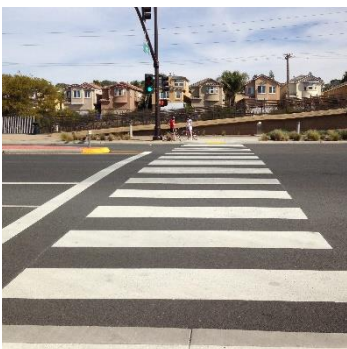


Figure 3-3 Example Implementation of a Multi-Use Bridge Across Friars Road at Frazee Road



Source: M.W. Steele

Figure 3-4 Pedestrian Treatments



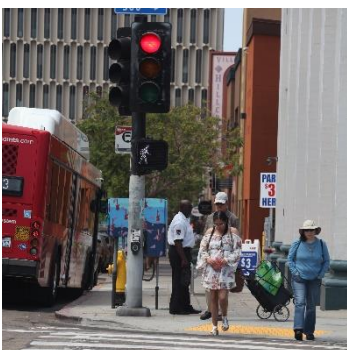
Continental Crosswalks improve crosswalk visibility and are known to improve driver yielding compliance.



Pedestrian Countdown Signals provide pedestrians with a clear indication of how many seconds remain to safely cross.



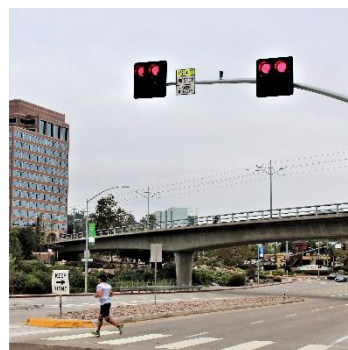
Curb Pop Outs or Curb Extensions shorten pedestrian crossing distances and serve as a traffic calming mechanism.



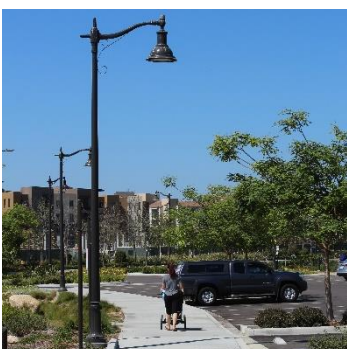
Lead Pedestrian Intervals provide pedestrians a 3-7 second head start when entering an intersection, reinforcing their right-of-way over turning vehicles.



Advance Stop Bars/Limit Lines direct drivers where to stop at intersections and mid-block crossing locations, providing separation between the vehicle and crossing pedestrians.



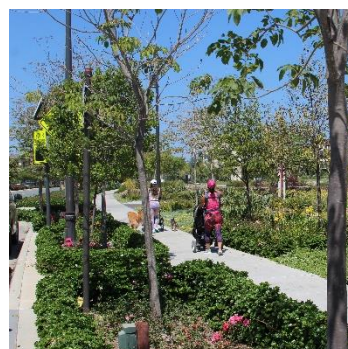
Pedestrian Hybrid Beacons are traffic control signals that help pedestrians and bicyclists cross mid-block across high traffic roadways.



Pedestrian Scale Lighting increases visibility along walkways, creating a more comfortable and inviting environment for pedestrians.



Wayfinding is used to help orient pedestrians and direct them to destinations. Maps and directional signage are two wayfinding examples.



Landscaped Buffers along roadways provide separation between pedestrians and vehicles, creating a more comfortable environment.

Lead Pedestrian Intervals

Lead Pedestrian Intervals (LPI) are recommended to improve pedestrian safety and efficiency at intersection locations along District and Corridor Pedestrian Route Types and at intersections with high existing pedestrian volume locations (defined as sixty or more pedestrians during peak periods). Additionally, locations where Lead Bicycle Intervals are recommended also receive LPIs without any additional modification to the signal timing. LPIs are recommended at the following intersections:

- Mission Center Road / Westside Drive (north and east legs)
- Via Las Cumbres / Friars Road (north and south legs)
- Fashion Valley Road / Friars Road (all legs)
- Mission Center Road / Friars Road WB Ramps (south, east, and west legs)
- Mission Center Road / Friars Road EB Ramps (south, east, and west legs)
- Qualcomm Way / Friars Road WB Ramps (north, east, and west legs)
- Qualcomm Way / Friars Road EB Ramps (south, east, and west legs)
- Fenton Parkway / Friars Road (all legs)
- Mission Center Road / Mission Center Court (all legs)
- Qualcomm Way / Rio San Diego Drive (all legs)
- Fenton Parkway / Rio San Diego Drive (all legs)
- Rancho Mission Road / San Diego Mission Road (all legs)
- Mission Center Road / Hazard Center Drive¹ (south and west legs)
- Mission Center Road / Camino De La Reina (all legs)
- Mission Center Road / Camino Del Rio North (north leg)
- Camino del Este / Camino De La Reina (all legs)
- Ward Road / Camino Del Rio South (north leg)
- Hotel Circle North / Hotel Circle Place (north leg)
- Fashion Valley Road / Hotel Circle North (north leg)
- Hotel Circle North / Hotel Circle South / Taylor Street (west leg)
- Bachman Place / Hotel Circle South (south leg)
- Via Las Cumbres / Riverwalk Drive (east leg)
- Fashion Valley Road / Riverwalk Drive (west leg)
- Fashion Valley Road / Levi Cushman Street “B” (west leg)
- Via Las Cumbres / Hotel Circle North (north leg)
- Via Las Cumbres / Hotel Circle South (south leg)
- Hotel Circle North / Hotel Circle South / Camino De La Reina (east leg)
- Qualcomm Way / Civita Boulevard (west leg)
- Frazee Road / Murray Canyon Road – if signal warrants are met (south and east leg)
- Frazee Road / Friars Road (north, south, and east legs)
- Frazee Road / Hazard Center Drive (north, east, and west legs)
- Napa Street / Friars Road (north and east legs)

¹ The north leg of the Mission Center Road / Hazard Center Drive intersection will remain closed to pedestrians. Pedestrian access at this leg should be reevaluated as redevelopment occurs on either side of Mission Center Road. If pedestrian access is provided, the intersection should be evaluated for protected phasing in the east-west directions and LPI across the north leg.

New Sidewalks

Sidewalk facilities will be implemented along all new roadways as well as the following segments where missing sidewalks were identified through the existing conditions analysis:

- Pacific Highway, from northern to southern community boundary (west and east side)
- Taylor Street, Hotel Circle South to western community boundary (south side)
- Hotel Circle Place, approximately 330' east of western terminus, to approximately 430' to the east (north side)
- Hotel Circle North, Fashion Valley Road to Camino De La Reina (north side)
- Camino De La Reina, Hotel Circle North/South to approximately 1,100' to the northeast (south side)
- Friars Road, Ulric Street to approximately 350' west of Frazee Road (north side)
- Hotel Court, south of Hotel Circle South (west side)
- Fashion Valley Road, from approximately 620' south of Friars Road to southern terminus (west side)
- Camino Del Rio North, from approximately 800' east of Mission Center Road to Bus Access Road (north side)
- Camino Del Arroyo, full extent (east side)
- Frazee Road, north of Murray Canyon Road (west side)
- Friars Road, from approximately 280' east of Frazee Road to EB Friars Road off-ramp at Mission Center Road (south side)
- EB Friars Road off-ramp at Mission Center Road, full extent (south side)
- Glasoe Lane, full extent (west side)
- Camino Del Este, from approximately 180' south of Camino De La Reina to southern terminus – westside
- Qualcomm Way, between Friars Road on- and off-ramps (west and east side)
- Qualcomm Way, Camino De La Reina to Camino Del Rio North (west and east side)
- Qualcomm Way, I-8 WB off-ramp to 100' north of Camino Del Rio South (east side)
- Texas Street, from Camino Del Rio South to southern community boundary (west side)
- WB Friars Road off-ramp at Qualcomm Way, full extent (north side)
- Friars Road, from WB Friars Road off-ramp at Qualcomm Way to approximately 510' west of Rio Bonito Way (north side)
- Camino Del Rio South, Qualcomm Way to approximately 1860' to the east (north side)
- Camino Del Rio South, from approximately 280' west of Mission City Parkway to approximately 570' west of Mission City Parkway (north side)
- Camino Del Rio South, from approximately 1,500' west of Mission City Parkway to approximately 1900' west of Mission City Parkway (north side)
- Mission City Parkway, Camino Del Rio North to I-8 bridge (east side)
- Mission City Parkway, from approximately 490' south of Camino Del Rio North to southern terminus (west side)
- Scheidler Way, south of Camino Del Rio South (east side)
- Friars Road, Qualcomm Way to EB Friars Road off-ramp at Mission Village Drive (south side)

- Friars Road, east of Mission Village Drive ramps to east of I-15 NB ramps (north and south side)
- San Diego Mission Road, from approximately 480' east of Mission Village Drive to Rancho Mission Road (north side)
- San Diego Mission Road, Nazareth Drive to approximately 1,370' to the east (north side)
– *This segment is currently in Final Design/Construction.*

Pedestrian Access Prohibited

Additional segments were identified as missing sidewalks during the existing conditions phase, however, due to the absence of adjacent active land uses or the absence of additional network connections, pedestrian access will be formally prohibited along these segments, thus negating the need for sidewalks:

- Camino Del Rio North, from Camino De La Siesta to Qualcomm Way (south side)
- Mission Center Road, from Camino Del Rio North to Camino Del Rio South (east side)
- Friars Road, between Mission Center Road ramps (both sides)
- EB Friars Road on- and off-ramp at Mission Center Road, full extent (north side)
- WB Friars Road on- and off-ramp at Mission Center Road, full extent (south side)
- Friars Road, between Qualcomm Way ramps (both sides)
- EB Friars Road on- and off-ramp at Qualcomm Way, full extent (north side)
- WB Friars Road on- and off-ramp at Qualcomm Way, full extent (south side)
- Friars Road, between Mission Village Drive ramps (both sides)
- WB Friars Road on- and off-ramp at Mission Village Drive, full extent (south side)
- EB Friars Road on- and off-ramp at Mission Village Drive, full extent (north side)
- Camino Del Rio South, from approximately 2,000' west of Auto Circle to Qualcomm Way (north side)
- Camino Del Rio South, from Mission City Parkway to Scheidler Way (north side)

Consistent with the segments, pedestrian access will be prohibited across the following intersection legs where no active land uses or network connections are accessed:

- Ward Road / Camino Del Rio North (west leg)
- Camino Del Este / Camino Del Rio North (west leg)
- Theater Driveway / Camino Del Rio North (west leg)

3.3 Cycling Environment

3.3.1 Identified Bicycle Needs

Bicycle infrastructure should provide for the safety and comfort of its users, and the bicycle network should be well connected across a community. Safety and comfort are paramount considerations, given that active travelers are more exposed and vulnerable than those inside a vehicle. Unsafe or uncomfortable conditions discourage the decision to make a trip by bike. Network connectivity is also important – safe and comfortable infrastructure will not be useful if destinations cannot be efficiently reached.

Bicycle needs are found throughout Mission Valley. Needs are identified by locations with a high number of bicycle collisions, the amount of stress likely to be experienced by a bicyclist, lack of existing bicycle facilities, and high cycling demand. **Figure 3-5** depicts bicycle needs.

Bicycle Safety

The intersections of Rio San Diego Drive/Station Village Way, and Qualcomm Way/Texas Street were the only locations reported as experiencing two or more bicycle-involved collisions during the five-year analysis period (2008 – 2013). Two segments, Hotel Circle South and Friars Road west of SR-163 were found to have a relatively high frequency of bicycle-involved collisions.

Bicycle Level of Traffic Stress

Bicycle Level of Traffic Stress (LTS) measures the level of comfort a cyclist would experience on a roadway, considering the physical separation from vehicular traffic, vehicular traffic speeds along the roadway segment, number of travel lanes, and factors related to intersection approaches with dedicated right-turn lanes and unsignalized crossings.

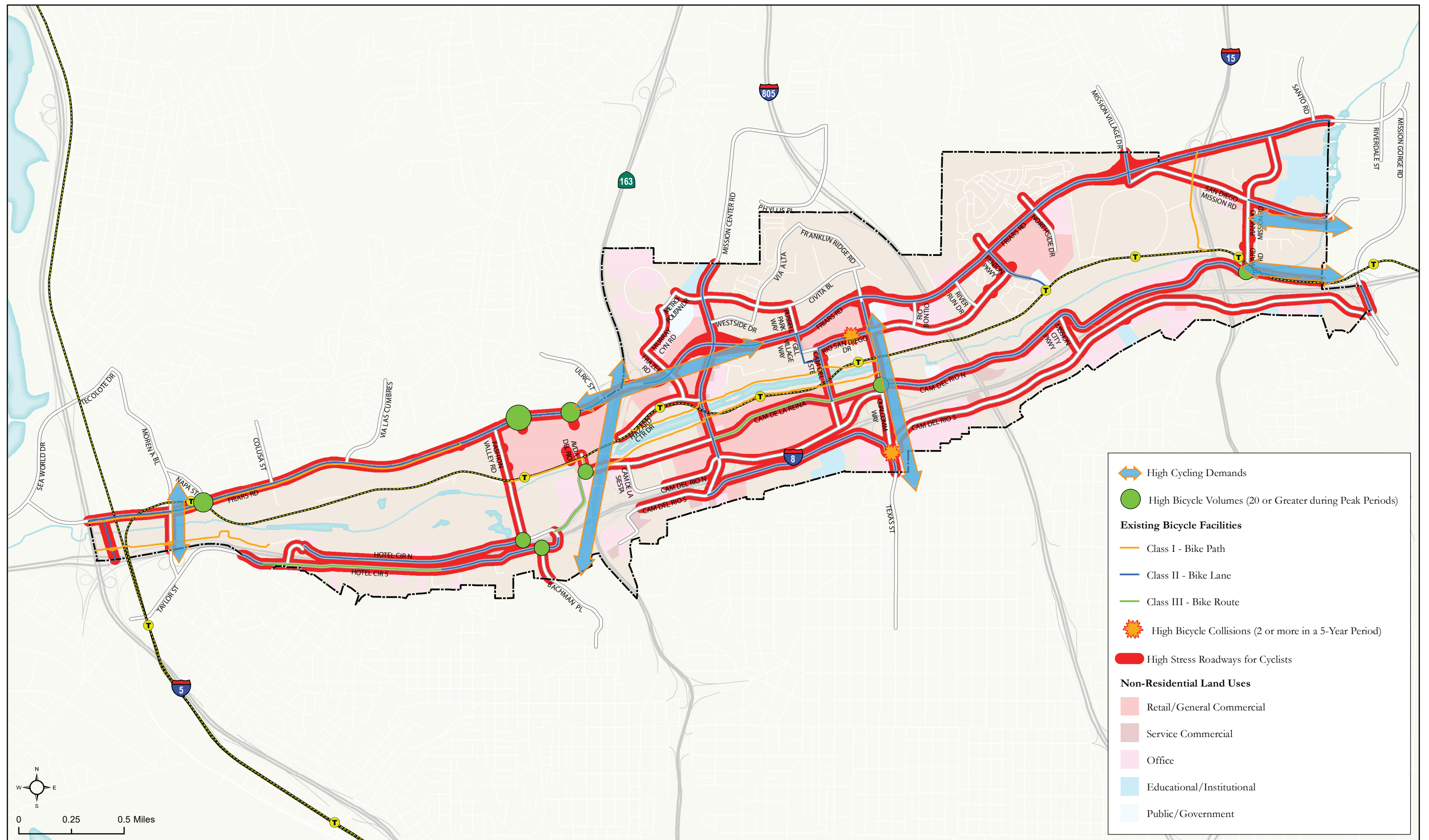
This measurement classifies streets and intersections from LTS 1 (suitable for all ages and abilities) through LTS 4 (suitable for riders who are comfortable sharing the road with vehicles traveling at 35 mph or greater). In general, stress levels are high along most roadways in Mission Valley, regardless of the presence of bicycle facilities. This is largely due to high traffic speeds, the high number of vehicular travel lanes, as well as the limited space allocated to cyclists.

Bicycle Demand

Bicycle demand is estimated through a number of factors, including existing bicycle facilities, land uses (residential, office, commercial/retail, schools, and parks), location of transit stations, and demographic data. Mission Valley exhibits relatively greater demand in the north-south direction. There is also high demand along Friars Road near the cluster of shopping centers. These bicycle travel demand estimates are generally supported by higher observed bicycle volumes.

The following 11 intersections were identified as high bicycle volume locations (defined as 20 or more cyclists observed during peak periods):

- Friars Road / Napa Street
- Friars Road / Via De La Moda
- Friars Road / Avenida Del Rio
- Camino Del Rio North / Qualcomm Way
- Camino Del Rio North / Rancho Mission Road
- Camino Del Rio North / Mission Gorge Road
- Taylor Street / Morena Boulevard
- Hotel Circle North / Fashion Valley Road
- Hotel Circle South / Bachman Place
- Camino De La Reina / Avenida Del Rio
- Texas Street / Madison Avenue



3.3.2 Bicycle Improvements

The planned bicycle improvements were developed while referencing the recommendations identified in the City of San Diego Bicycle Master Plan, as well as SANDAG's Regional Bike Plan. The Proposed Plan bicycle facilities are listed below and displayed in **Figure 3-6**. Implementation of these facilities should consider additional treatments at intersections to improve cyclist safety and comfort (i.e., bike boxes, exclusive bicycle signal phasing, and conflict zone paint).

Class I Bike Path (including all multi-use bridges discussed under Pedestrian Improvements)

- San Diego River Trail extension from terminus at Fashion Valley Road to terminus at Sefton Field/Cottonwood Grove Park
- Parallel to SR-163 from Riverwalk Drive eastern terminus to Friars Road
- Multi-Use Bridge over the San Diego River, south of the Hazard Center Trolley Station
- Multi-Use Bridge over Friars Road, east of Frazee Road
- Multi-Use Bridge over San Diego River, north of the Mission Valley Center Trolley Station
- Multi-Use Bridge over Friars Road, west of Qualcomm Way
- San Diego River Trail extension, from east of I-805 to Del Rio Apartments community
- San Diego River Trail extension, east of Fenton Parkway
- I-15 Bikeway, from future San Diego River Trail extension to Camino Del Rio South
- Hotel Circle Place, from western terminus to San Diego River Trail terminus

Class II Bike Lane

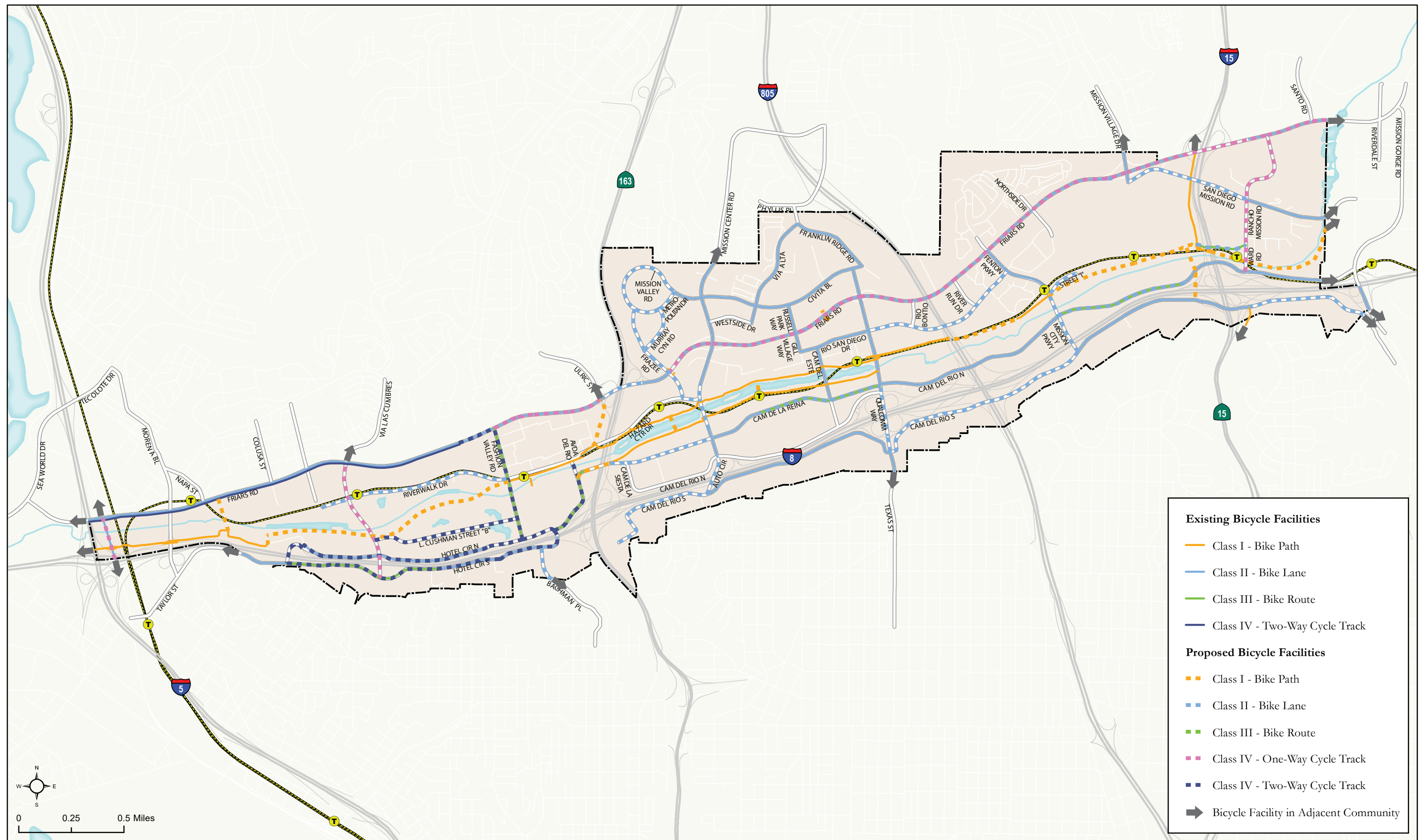
- Friars Road, from Ulric Street/SR-163 SB Ramps to Frazee Road
- Bachmann Place, from Hotel Circle South to community boundary
- Camino De La Reina, from west of Camino De La Siesta to Mission Center Road
- Mission Valley Road/Metropolitan Drive loop (full extent)
- Murray Canyon Road, from Metropolitan Drive to Frazee Road
- Frazee Road, from Mission Valley Road to Murray Canyon Road
- Frazee Road, from Murray Canyon Road to Friars Road (northbound only)
- Frazee Road, from Friars Road to Hazard Center Drive
- Qualcomm Way, from Camino De La Reina to Camino Del Rio South
- Rio San Diego Drive, from Qualcomm Way to Fenton Parkway
- Mission City Parkway, from Fenton Parkway terminus to Camino Del Rio South
- San Diego Mission Road, from Mission Village Drive to Rancho Mission Road
- Camino Del Rio North, from Mission City Parkway to existing Bike Lanes to the east
- Camino Del Rio South, from Auto Circle to approximately 2,100' to the west
- Camino Del Rio South, from Texas Street and Mission City Parkway
- Camino Del Rio South, from I-15 northbound ramps to eastern community boundary
- Riverwalk Drive, from western terminus to Fashion Valley Road
- Rancho Mission Road, from San Diego Stadium to Ward Road
- Auto Circle/Mission Center Road, from Camino Del Rio South to Camino Del Rio North
- Hazard Center Drive, from Frazee Road to Mission Center Road
- New Street "I", from Fenton Parkway/Mission City Parkway to eastern terminus

Class IV Cycle Track

- Via Las Cumbres, from Friars Road to Hotel Circle South (*one-way cycle track*)
- Hotel Circle North & Hotel Circle South (*two-way cycle track*)
- Friars Road, from approximately 900' west of Fashion Valley Road to Fashion Valley Road (*two-way cycle track*)
- Friars Road, from Fashion Valley Road to Ulric Street/SR-163 SB Ramps (*one-way cycle track*)
- Friars Road, from Frazee Road to the eastern community boundary (*one-way cycle track*)
- Fashion Valley Road, from Friars Road to Hotel Circle North (*two-way cycle track*)
- Avenida Del Rio from Riverwalk Drive to Camino De La Reina (*two-way cycle track*) – *currently in Final Design Phase*
- Camino De La Reina from Hotel Circle N to San Diego River Trail extension east of Avenida Del Rio (*two-way cycle track*) – *currently in Final Design*
- Levi Cushman Street “B”, Via Las Cumbres to Fashion Valley Road (*two-way cycle track*)
- Rancho Mission Road, Friars Road to Camino Del Rio North (*one-way cycle track*)
- Pacific Highway, from northern to southern community boundary (*one-way cycle track*)

Bicycle Signal Phasing

- Via Las Cumbres / Friars Road (north and south legs)
- Fashion Valley Road / Friars Road (all legs)
- Hotel Circle Place / Hotel Circle North (north leg)
- Fashion Valley Road / Hotel Circle North (north leg)
- I-15 Northbound Ramps / Camino del Rio South (*implemented across east leg*)
- Hotel Circle North / Hotel Circle South / Taylor Street (west leg)
- Bachman Place / Hotel Circle South (south leg)
- Fashion Valley Road / Riverwalk Drive (west leg)
- Fashion Valley Road / Levi Cushman Street “B” (west leg)
- Via Las Cumbres / Hotel Circle North (north leg)
- Via Las Cumbres / Hotel Circle South (north leg)
- Camino De La Reina / Hotel Circle North (east leg)



Implementation Challenges

The freeway overpasses/underpasses, on- and off-ramps, San Diego River crossings, grade separated crossings, and limited rights-of-way all pose significant challenges towards implementing the Proposed Plan bicycle network. Class I and Class IV facilities may require widening or replacing bridges, potentially making them feasible only in conjunction with additional required improvements. Similarly, some of the multi-use bridges may span environmentally sensitive habitats. Additional and detailed evaluation will be required during project design phase. Examples of these challenges include, but are not limited to the following:

- San Diego River Trail Multi-Use Path extension from Fashion Valley Road terminus to Sefton Field/Cottonwood Grove Park (Class I Multi-Use Path) – This facility will run parallel and cross the San Diego River, potentially traversing environmentally sensitive habitats.
- I-15 Bikeway Multi-Use Path, from future San Diego River Trail extension to Camino Del Rio South – This regional bikeway requires a bridge spanning across I-8 and multiple ramps.
- Friars Road One-Way Cycle Track at SR-163 – The SR-163 interchange at Friars Road is currently being reconstructed. Implementing the bicycle facility will require additional considerations for the ramps which may limit where the facility can be protected.
- Morena Boulevard, Mission Center Road, and Qualcomm Way at I-8 – These interchanges carry high traffic volumes with uncontrolled ramps, weaving traffic, and constrained rights-of-way.

3.4 Public Transit Service and Facilities

3.4.1 Identified Transit Needs

The City of Villages strategy supports expansion of the transit system by calling for multi-family housing, employment centers, and other higher-intensity uses to be located in areas that can be served by high quality transit services. This will allow more people to live and work within walking distance of transit. Mission Valley is relatively well served by transit, with most of the community within a quarter mile of a transit stop. The highest public transit ridership levels in the community are along the Green Line Trolley, as well as at the Fashion Valley Transit Center. Future transit needs in Mission Valley primarily stem from access limitations due to transit network gaps or poor service in terms of on-time performance, safety issues near transit stations, and connectivity issues. **Figure 3-7** illustrates transit needs.

Community Circulators

Some developments within Mission Valley have implemented, or are planning to implement, a community circulator. Examples include the Centerville office complex, which offers lunchtime shuttle services for employees, as well as the Civita residential development, which offers a circulator to connect residents to transit and major community attractions. These circulators are often implemented through conditions established during a proposed development's approval process. While not accessible to all members of the general public, these circulators can facilitate mobility for eligible travelers. Community circulator systems are currently privately financed and operated. Future large developments within the community are likely to continue the trend of

implementing community circulators as a traffic-mitigating community amenity. As community circulators establish routes, additional consideration should be made at providing transit priority measures along routes to improve circulator efficiency and dependability.

Access Limitations

Poor service quality and network gaps are present among many of the bus routes serving the core of Mission Valley. In particular, poor on-time performance along bus routes serving destinations to the north and south of the Fashion Valley Transit Center limit the convenience and reliability of public transit. Bus Route 6, 25, 41, 105, and 928 suffer with on-time performance that is significantly below the goals set by MTS.

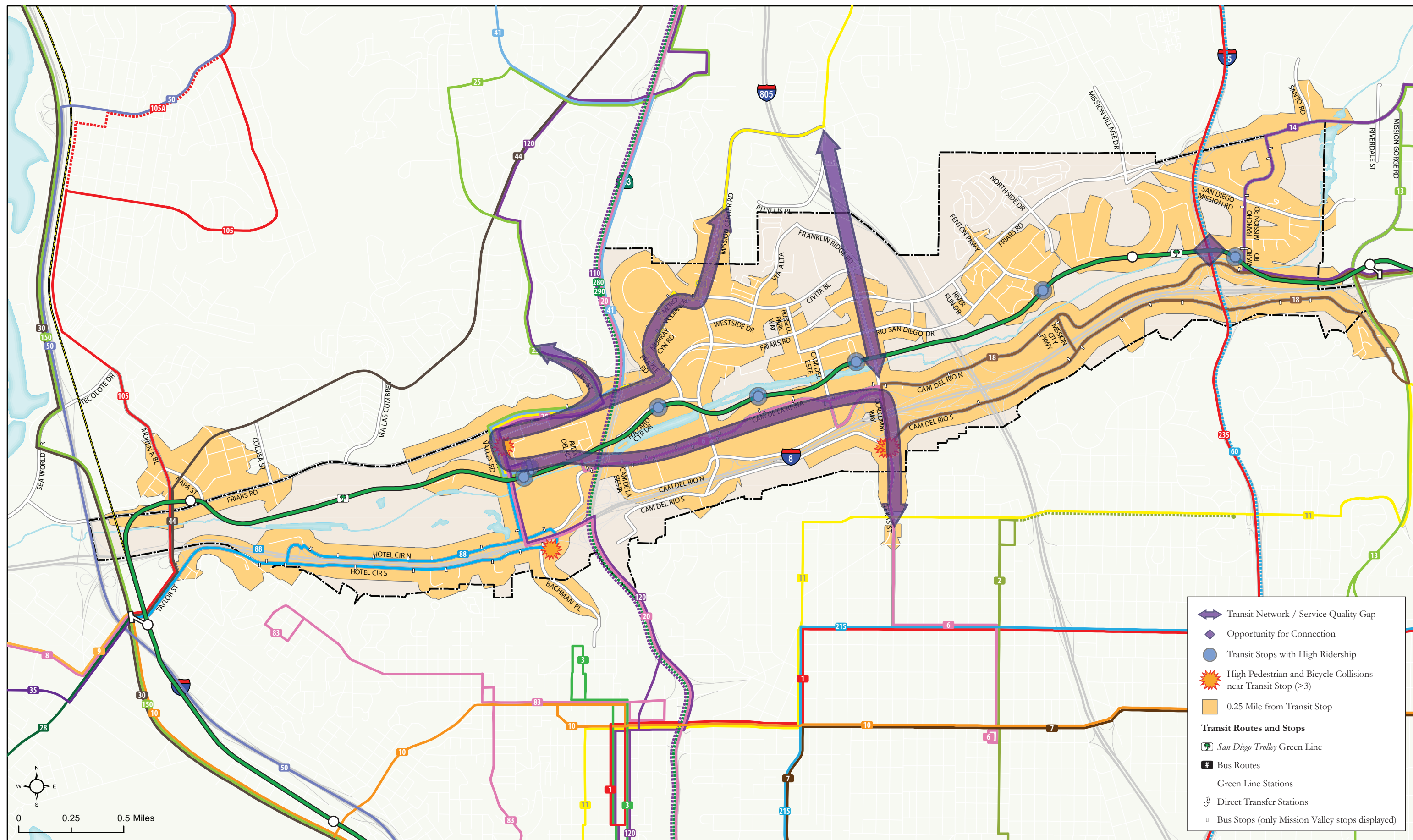
These buses are frequently stuck in the same congestion as private vehicles, indicating a potential need for transit priority measures along congested roadway segments. In addition, a network gap exists near the I-805 corridor, which links Mission Valley to the Serra Mesa and Kearny Mesa communities to the north.

Transit Rider Safety

Most transit users access transit stops by walking or biking. Therefore, high numbers of bicycle and pedestrian collisions near a transit stop may indicate safety issues for transit users at that location. Fashion Valley Transit Center, Hotel Circle South near Bachman Place, and Camino Del Rio South near Qualcomm Way/Texas Street have experienced three or more bicycle- and/or pedestrian-involved collisions during the five-year collision analysis period.

Connectivity

There is a lack of high-quality transit service (light rail, Bus Rapid Transit) serving Mission Valley in the north and south directions. Although there is a Rapid Bus that travels along I-15, there is no bus station serving that route within the community. Future connectivity improvements may be beneficial near the intersection of I-15 and Camino Del Rio North. This location could potentially serve as a transfer point between the MTS Rapid 235, which links Escondido to downtown San Diego, and the Green Line Trolley linking downtown San Diego to Santee. Establishing a connection between these frequent, high-quality transit lines will improve connectivity and expand regional travel opportunities via public transit. The Connectivity Assessment Paper provided in **Appendix D** further describes issues faced by transit operators and emergency responders during flooding and fire events and the benefit additional connections would provide.



Transit Service Quality and Arterial Performance

Many transit routes within Mission Valley utilize major community arterials. The congestion and delay experienced by motorists is thus felt equally by transit users, since there are currently no dedicated transit lanes or priority treatments within the community. The arterial analyses conducted in Chapter 4.4.4 demonstrate delay-prone segments of Friars Road, Mission Center Road, and Qualcomm Way/Texas Street. These roadways serve as routing for a portion of the following transit routes:

Friars Road	Qualcomm Way/Texas Street	Mission Center Road
<ul style="list-style-type: none">• Route 25• Route 928• Route 20• Route 120• Route 41	<ul style="list-style-type: none">• Route 6• Route 18	<ul style="list-style-type: none">• Route 928

The arterials that serve these transit routes often operate at LOS D conditions or below during peak periods along the segments shared with transit. This congestion may be partially responsible for on-time performance challenges, the rate of which is presented in **Table 3.1**.

As shown, the aforementioned routes that utilize congested arterials in Mission Valley experience a schedule adherence that ranges between 58.8% (Route 25) and 88.1% (Route 20). Although many transit routes are regional in scope, serving communities beyond Mission Valley which offer additional potential for delay, the nature of the community as a focal point and transit hub indicates that there is a strong potential that improvements made to the Mission Valley roadway environment can at least partially reduce the delay currently experienced along these routes.

Table 3.1 Mission Valley Transit Performance

Route and Direction	On-Time Performance
Route 20 – 10th Avenue and Broadway to Rancho Bernardo Transit Station	88.1%
Route 18 – From Grantville Trolley Station to Grantville Trolley Station	85.7%
Route 120 – Kearny Mesa Transit Center to 4th Ave & Broadway	83.1%
Route 928 Fashion Valley Transit Center to Kearny Mesa Transit Center	82.9%
Route 41 – Fashion Valley Transit Center to Gilman & Myers (UCSD)	76.1%
Route 6 – 30th St & University Avenue to Fashion Valley Transit Center	74.5%
Route 25 – Kearny Mesa Transit Center to Fashion Valley Transit Center	58.8%

Source: FY2014 SANDAG Passenger Counting Program

Note:

On-time performance factors are based on the entirety of each route's run. Performance factors are not directional.

3.4.2 Planned Transit Improvements

SANDAG's *San Diego Forward: The Regional Plan* (2015) identifies the transit improvements listed below as planned for implementation within the Mission Valley Community prior to the 2050 horizon year. These improvements were incorporated into the Proposed Plan.

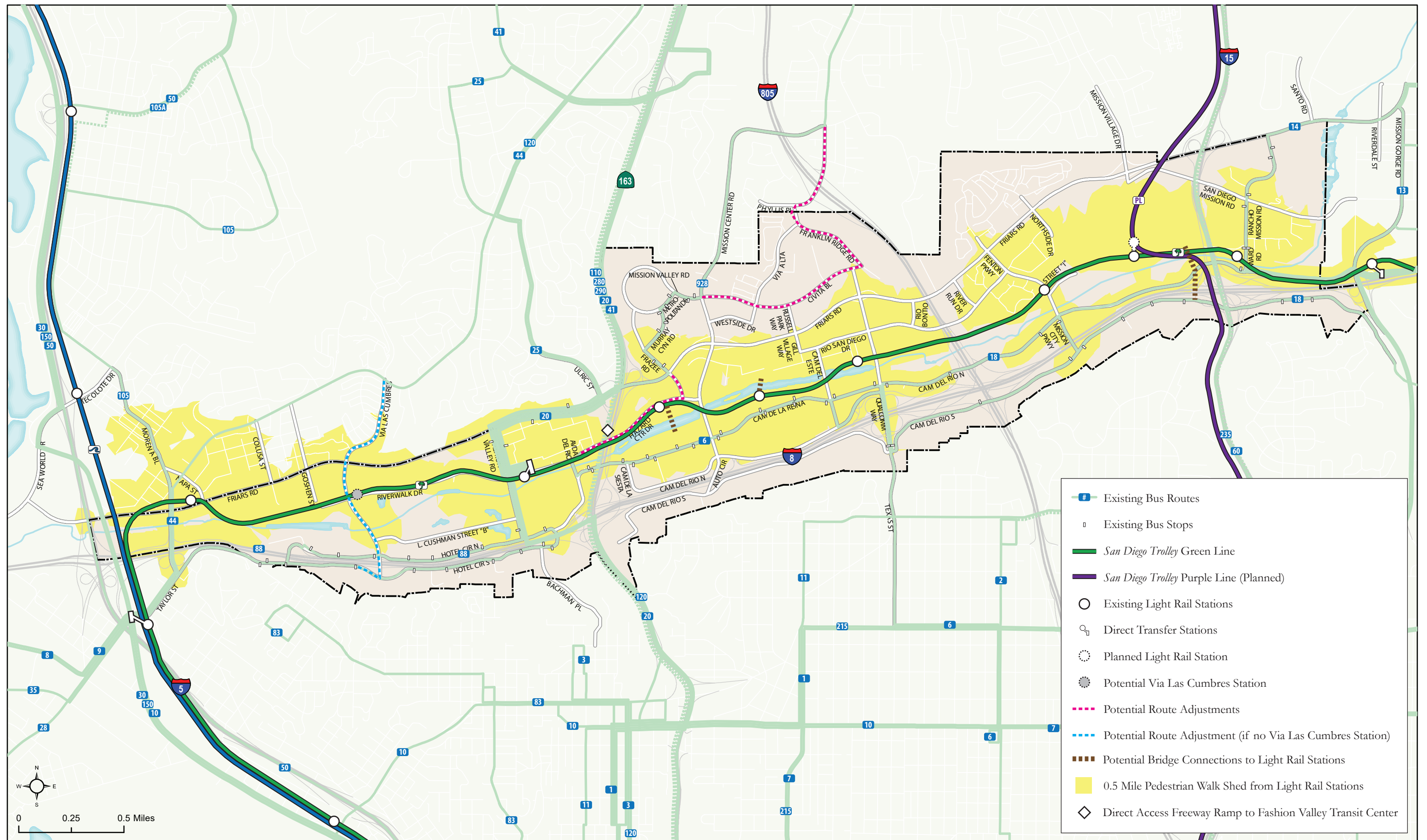
- *Local Bus Service* – Increase local bus service in key corridors (unidentified) to 10-minute headways. Implementation anticipated by 2035.
- *Purple Line (Phase I)* – The initial Purple Line Trolley phase will extend from San Ysidro to Kearny Mesa via Chula Vista, National City, Southeast San Diego, Mid-City, and Mission Valley. Within Mission Valley, the alignment will run north-south, just west of I-15. The station within Mission Valley is planned to connect to the existing Green Line Trolley at the Stadium Station. Implementation anticipated by 2035.
- *Red Line* – The Red Line Trolley will run from Pacific Beach to the El Cajon Transit Center via Balboa Avenue and Kearny Mesa. Implementation anticipated by 2050.
- *Rapid Bus Route 28* – A new Rapid bus route will run from Point Loma to Kearny Mesa via Old Town and Linda Vista. Implementation anticipated by 2035.
- *Rapid Bus Route 41* – A new Rapid bus route will run from the Fashion Valley Transit Center to UTC/UC San Diego via Linda Vista and Clairemont. Implementation anticipated by 2035.
- *Rapid Bus Route 120* – A new Rapid bus route will run from Kearny Mesa to Downtown via Mission Valley. Implementation anticipated by 2035.
- *Rapid Bus Route SR-163 Direct Access Ramps (DARs)* – Kearny Mesa to Downtown via SR-163. Stations at Sharp/Children's Hospital, University Avenue and Fashion Valley Transit Center. Implementation anticipated by 2035.
- *Green Line* – Green Line Trolley frequency enhancements are anticipated by 2035.

Figure 3-8 displays anticipated transit coverage under Proposed Plan buildout conditions.

Transit Priority

As future Rapid Transit routes and community circulator routes are identified and established, additional transit priority measures shall be considered in coordination with MTS and community circulator operators in an effort to maximize route efficiency and on-time performance. The Proposed Plan includes the following transit priority measures:

- *Qualcomm Way, between Camino De La Reina and Camino Del Rio North* – One northbound through lane will be converted to a Transit Only northbound left-turn lane.
- *Qualcomm Way / Camino De La Reina* – A northbound left-turn lane transit queue jump phase will facilitate priority for the Transit Only lane to bypass other left-turning vehicles.
- *Fashion Valley Road / Friars Road* – One westbound left-turn lane will be converted to a Transit Only lane with transit signal priority.



3.5 Street and Freeway System

3.5.1 Identified Street and Freeway Needs

Streets and freeways comprise the framework of our transportation system and play a major role in shaping community form and quality of life. A street system plagued by congestion can have major impacts on the community. Roadways and intersections experiencing level of service D or worse, and locations with a high concentration of reported collisions are shown in **Figure 3-9**.

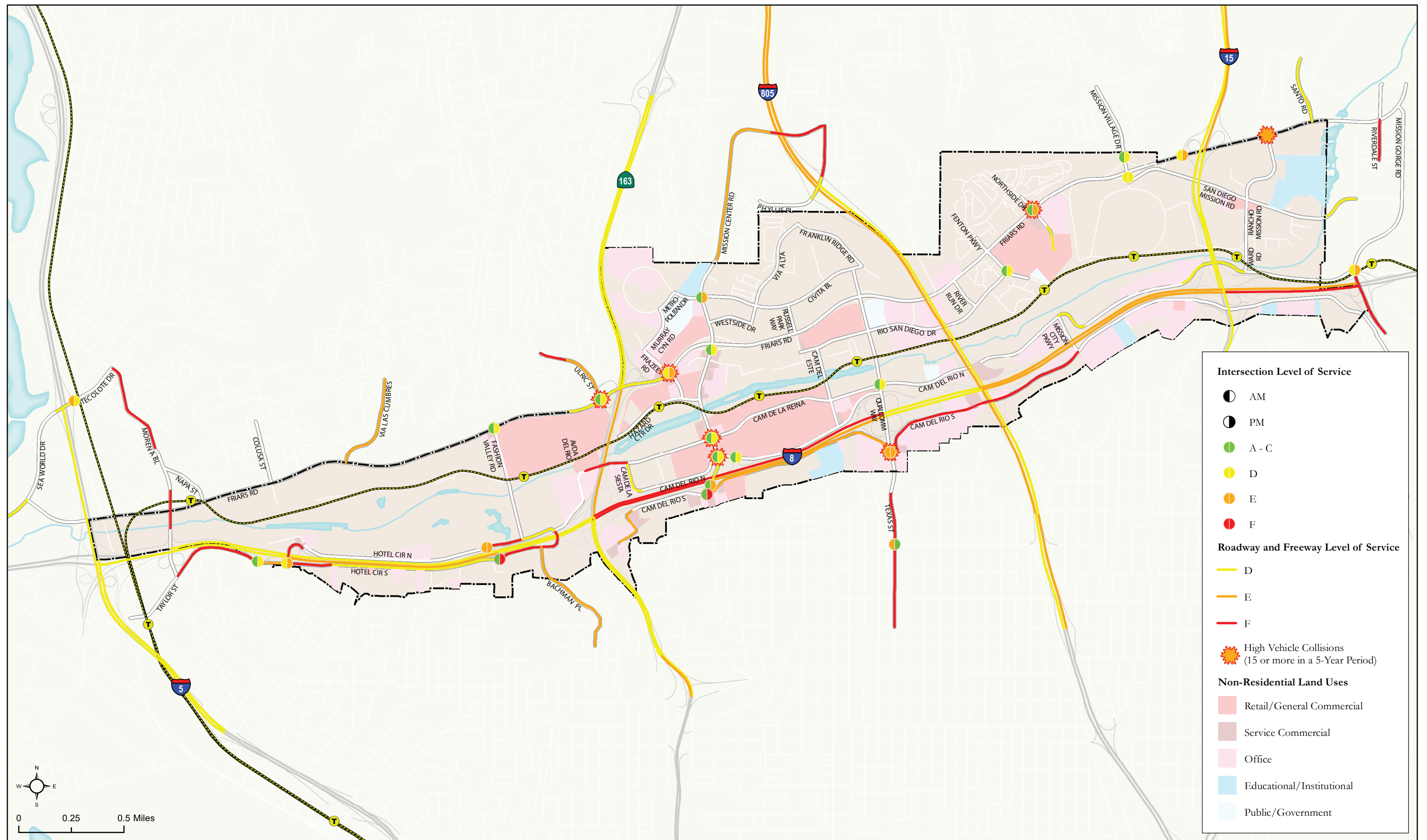
Arterials

Although Mission Valley is readily accessible by freeway, travel to specific points within the community by means of local roadways can be difficult during the peak hours. In the morning and midday peak hours, congestion occurs on the freeways as workers living outside of the community travel to jobs in Mission Valley, while in the evening the surface street system experiences congestion. Evening congestion is due to commuters accessing the freeway network, in addition to motorists coming into the area to frequent the shopping, restaurants, and theaters.

These high vehicular traffic volumes result in a number of roadway segments operating at a substandard level of service under Existing Conditions. In particular, north-south links such as Morena Boulevard, Bachman Place, and Texas Street experience LOS D conditions or below. Many east-west links, such as portions of Friars Road, Camino De La Reina, Hotel Circle North and South, and Camino Del Rio North and South experience LOS D conditions or below.

Freeways

The five freeways that serve Mission Valley are I-5, SR-163, I-805, I-15, and I-8. These freeways are utilized by residents, employees, and patrons of Mission Valley, as well as significant regional pass-through trips. A large portion of the freeway segments within Mission Valley were determined to operate at a poor level of service during the peak commute periods along one or both directions under Existing Conditions. SANDAG, in collaboration with Caltrans, the City of San Diego, the San Diego MTS, and other key stakeholders, developed a multimodal corridor study for I-8 within the City of San Diego which was referenced throughout the development of the Proposed Plan.



Intersections

The following intersections were found to operate at an unacceptable level of service (LOS E or F) during the AM or PM peak hour under Existing Conditions:

- I-5 NB Ramps and Sea World Drive/Tecolote Road – AM LOS E
- Mission Center Road and Mission Valley Road/Civita Boulevard – PM LOS E
- Frazee Road and Friars Road – PM LOS E
- I-5 NB Ramps and Sea World Drive/Tecolote Road – AM LOS E
- Mission Center Road and Mission Valley Road/Civita Boulevard – PM LOS E
- Frazee Road and Friars Road – PM LOS E
- Northside Drive and Friars Road – PM LOS E
- I-15 SB Ramps and Friars Road – PM LOS E
- Fairmount Avenue/Camino Del Rio North and I-8 WB Off-Ramp – PM LOS E
- I-8 WB Ramps/Handlery Hotel Driveway and Hotel Circle North (E) – AM/PM LOS E
- Hotel Circle North and Taylor Street/Hotel Circle South – PM LOS E
- I-8 EB Ramps and Hotel Circle South – PM LOS F
- Mission Center Road and I-8 EB Ramps – PM LOS E
- Mission Center Road and Camino Del Rio South – PM LOS F; Mid-day LOS E
- Texas Street and Camino Del Rio South – AM/PM LOS E
- Texas Street and Madison Avenue – AM LOS E

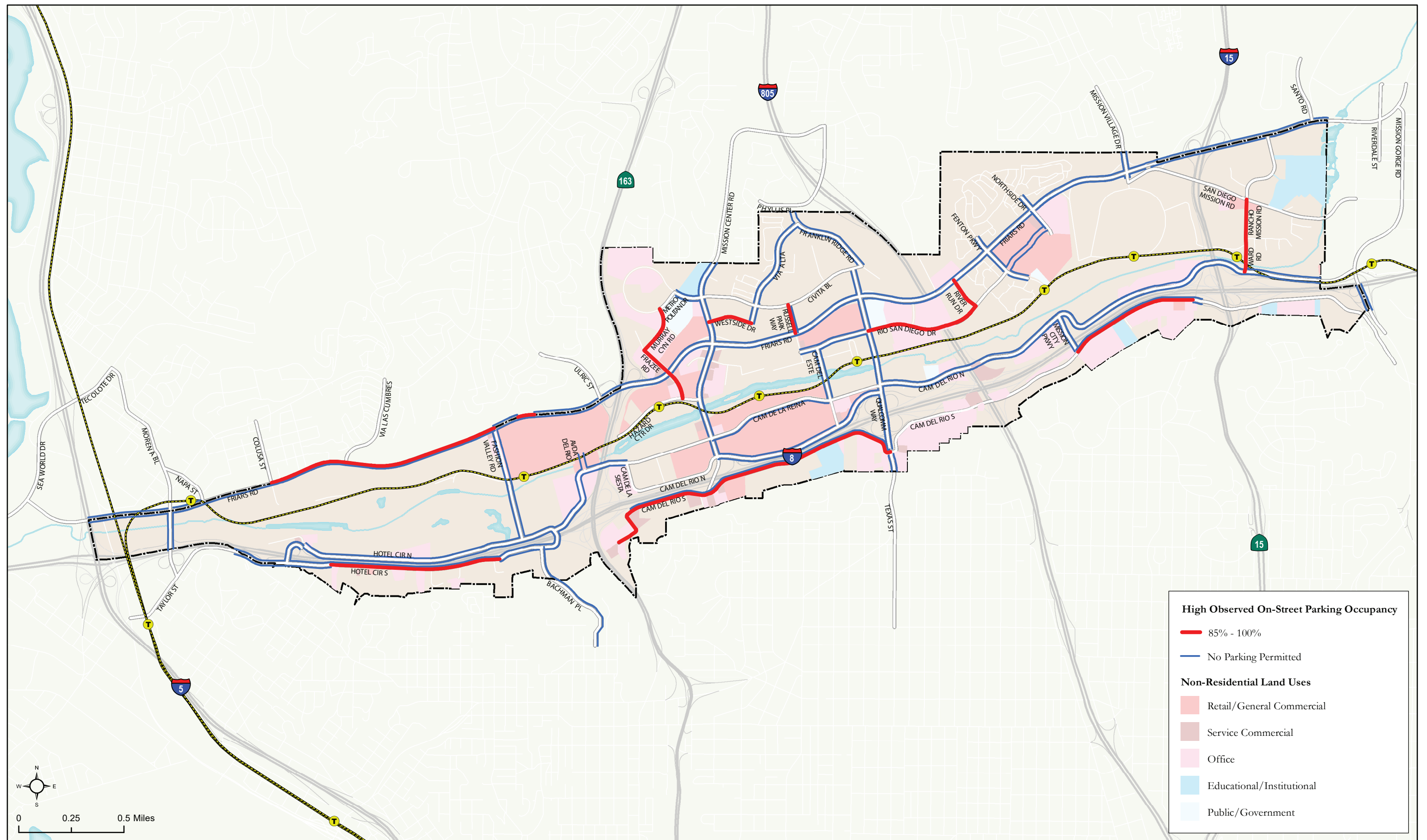
Safety

Several intersections within Mission Valley were reported to have a high number of vehicular collisions, defined as 15 or more collisions during the five-year analysis period, including:

- Friars Road and Ulric Street
- Friars Road and Frazee Road
- Friars Road and Northside Drive
- Friars Road and Rancho Mission Road
- Mission Center Road and Camino De La Reina
- Mission Center Road and Camino Del Rio North
- Camino Del Rio South and Qualcomm Way/Texas Street

Parking

Roadways in the Mission Valley Community with high rates of observed on-street parking occupancy (over 85%) during one or more peak periods are generally located near retail, commercial, or office land uses, as shown in **Figure 3-10**. In particular, segments include Friars Road from Colusa Street to Fashion Valley Road, Friars Road adjacent to the Fashion Valley Mall, Murray Canyon Road, Frazee Road, Westside Drive, Russell Park Way, Rio San Diego Drive, River Run Drive, Rancho Mission/Ward Road, Hotel Circle South, and along Camino Del Rio South west Texas Street and between Mission City Parkway and Interstate 15.



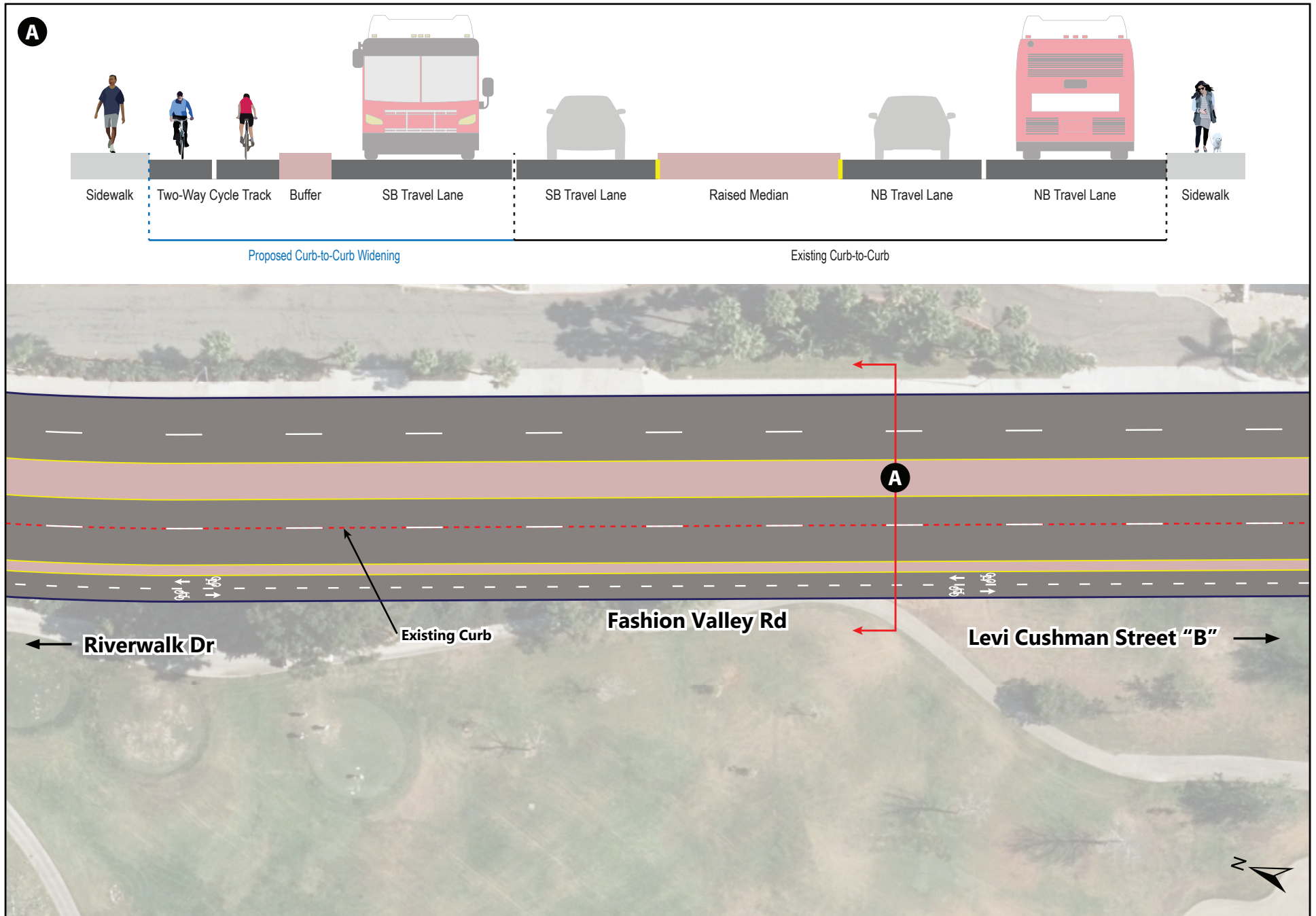
3.5.2 Street and Freeway Improvements

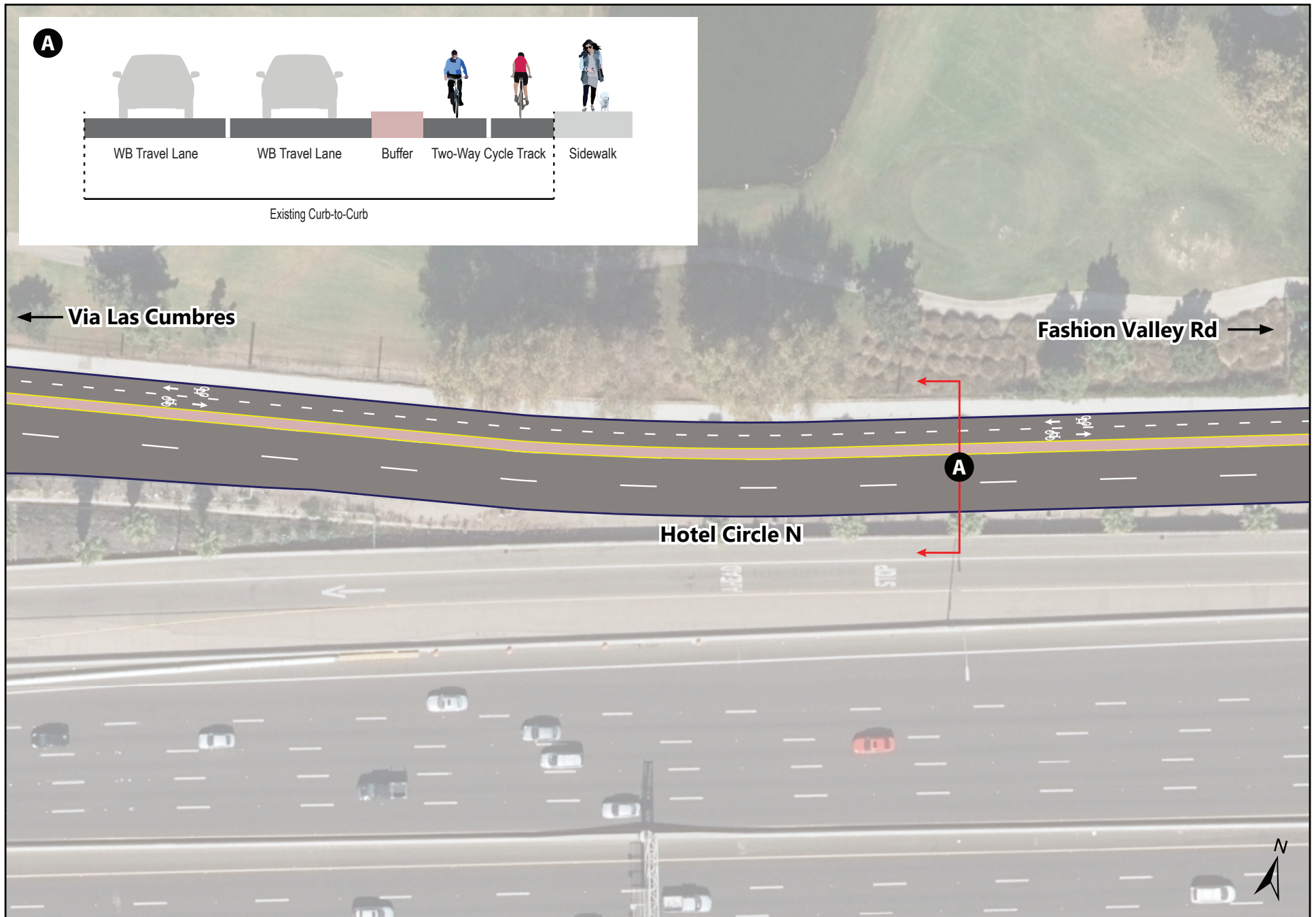
A list of Proposed Plan proposed roadway improvements, new roadways, intersection improvements, new intersections, and freeway improvements are presented throughout this section. Any planned bicycle facility improvements within the specified roadway extents are also identified, however, the full list of bicycle facility improvements is provided in Section 3.3.2 The roadway improvements are predominantly based on the future year traffic volumes that are projected under buildout of the Proposed Plan (displayed in **Figure 4-1**) and to accommodate the multimodal improvements. Full analysis of all Proposed Plan roadways is provided in Chapter 5.

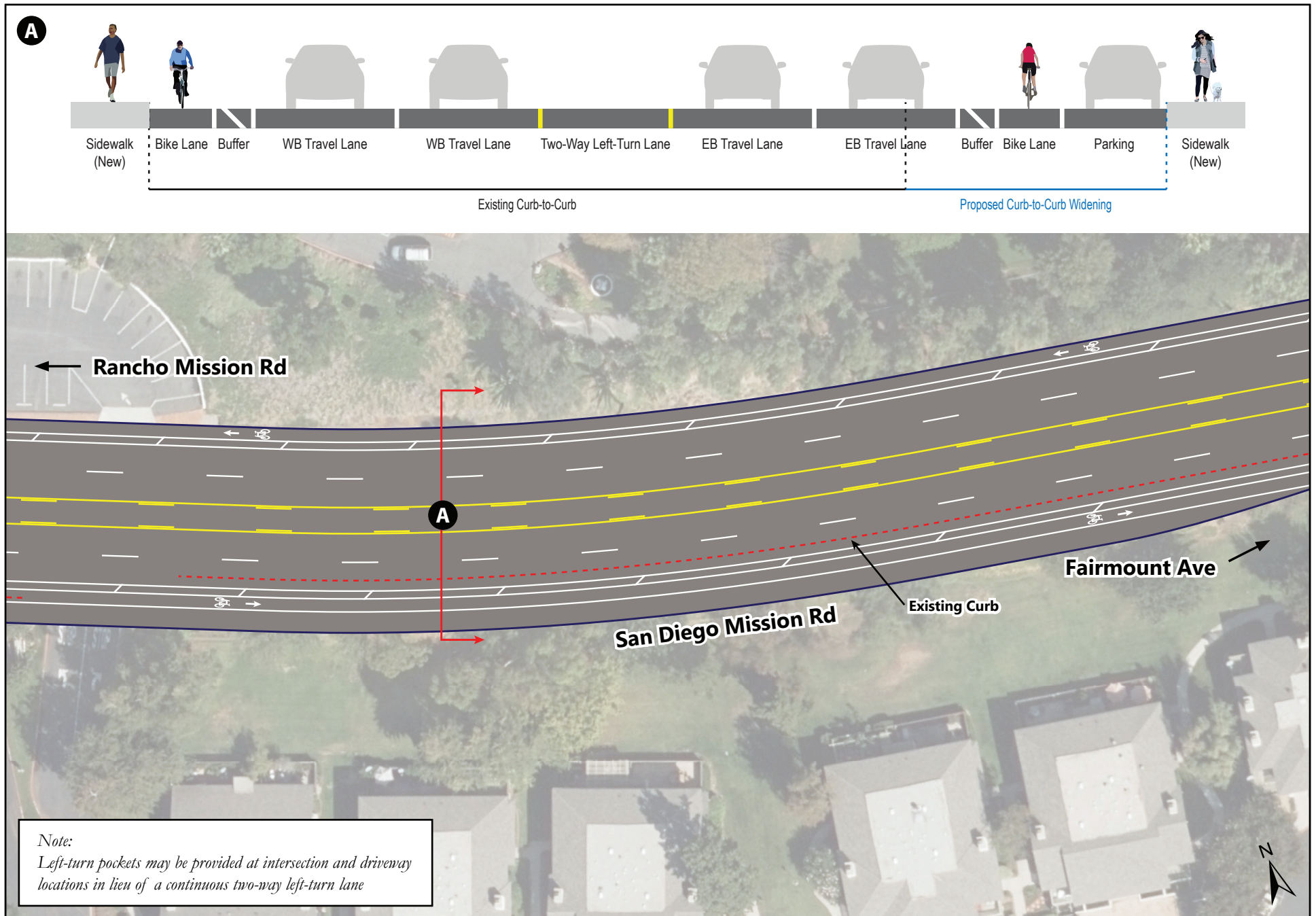
Roadway Modifications

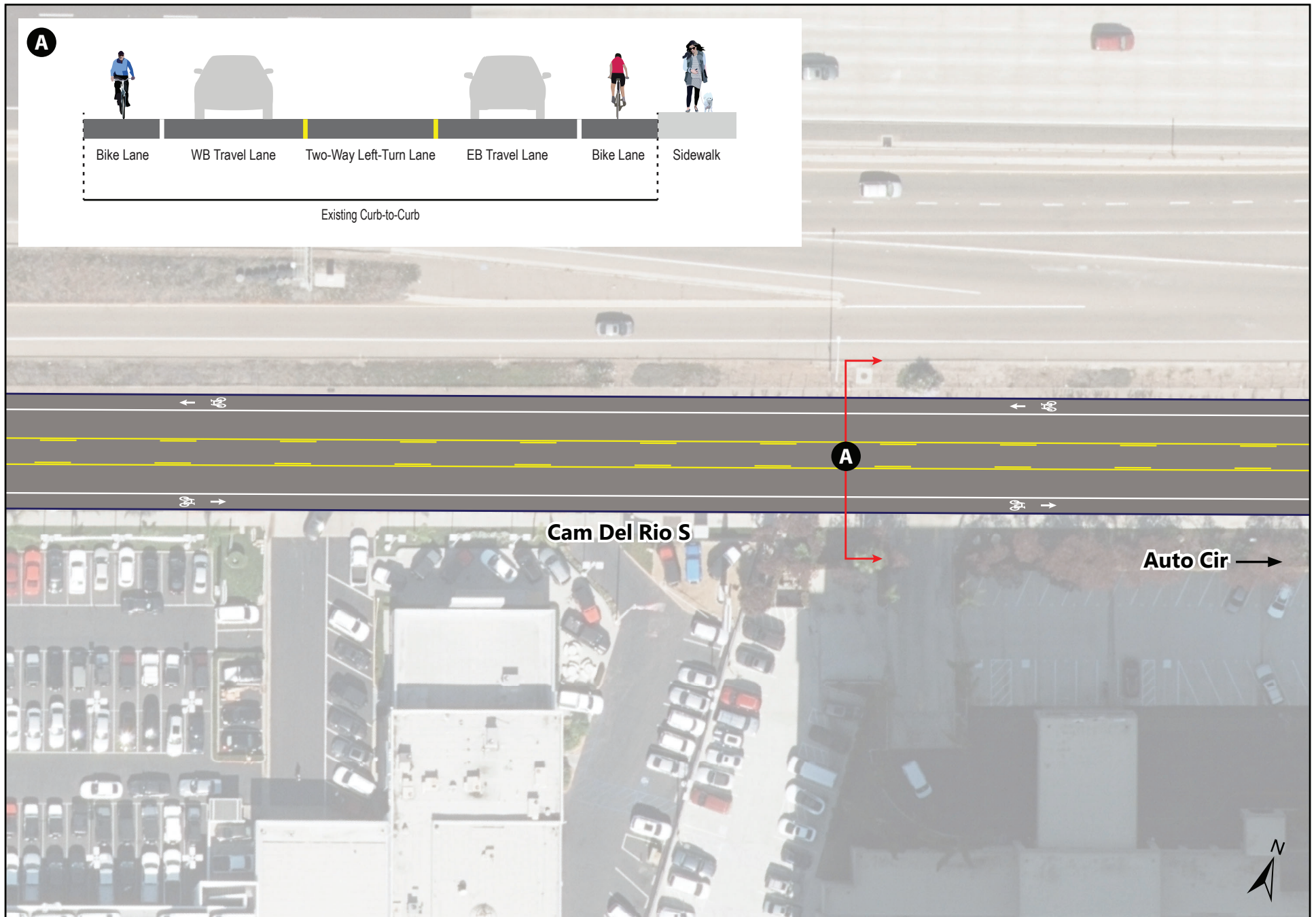
- *Fashion Valley Road, from Friars Road to Hotel Circle North* – Widen the roadway to the west as redevelopment occurs from a 4-Lane Collector without Two-Way Left-Turn Lane to a 4-Lane Major Arterial. The roadway widening will also be used to accommodate a Class IV Cycle Track (two-way) along the west side of the roadway. **Figure 3-11** presents a conceptual representation of Fashion Valley Road.
- *Bachman Place, from Hotel Circle South to the Southern Community Boundary* – Widen this roadway to improve from a 2-Lane Collector to a 4-Lane Collector with Two-Way Left-Turn Lane. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. The widening will also provide for Class II Bike Lanes.
- *Hotel Circle North and Hotel Circle South* – The full length of these two roadways will be transformed from 2-Lane Collector (with two-way left-turn lane) roadways into a one-way couplet with two lanes, running in a counterclockwise direction. The roadways will be classified as 2-Lane Collector (One-Way). The planned Class IV Cycle Track (two-way) will be accommodated through restriping within the existing roadway width along the land use side of each roadway. **Figure 3-12** presents a conceptual representation of Hotel Circle North.
- *Friars Road, from Ulric Street/SR-163 SB Ramps to Mission Center Road* – Improve this section from a 5-/6-Lane Major Arterial to an 8-Lane Prime Arterial, which would require limiting future driveway access. This project is consistent with the SR-163 Interchange Project. The existing Class II Bike Lanes will be maintained from Ulric Street/SR-163 SB Ramps to Frazee Road. The planned Class IV Cycle Tracks (one-way) will be accommodated between Frazee Road and Mission Center Road through lane restriping.
- *Rio San Diego Drive, from River Run Drive to Fenton Parkway* – This segment will be restriped from a 4-Lane Collector to a 2-Lane Collector while maintaining the left-turn pockets. The additional right-of-way will be restriped to accommodate the planned Class II Bike Lanes with buffers between the vehicular travel lane and parking lane. On-street parking will be retained.
- *Camino Del Rio North, from Mission City Parkway to Ward Road* – This segment will be reconstructed to better align with Camino Del Rio North west of Mission City Parkway. The roadway will be classified as a 2-Lane Collector without Two-Way Left-Turn Lane. Class II Bike Lanes will be accommodated/maintained along this segment.

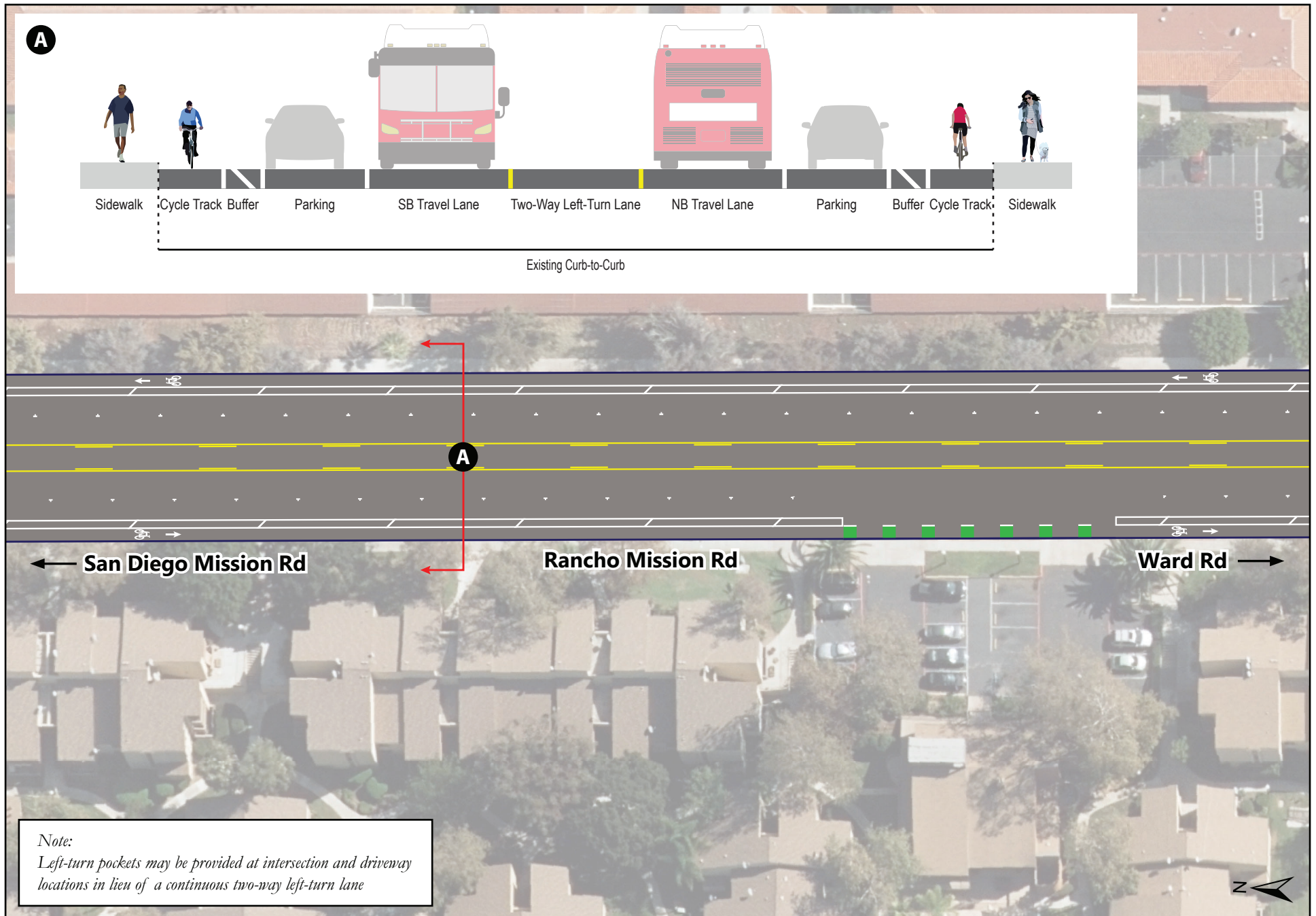
- *Camino Del Rio North, from 1000' West of Fairmount Avenue to the Eastern Community Boundary* – Reclassify this segment from a 4-Lane Major Arterial to a 4-Lane Collector with Two-Way Left-Turn Lane. No infrastructure changes required.
- *San Diego Mission Road, from Mission Village Drive to Rancho Mission Road* – Widen the roadway with redevelopment to improve this segment from a 4-Lane Collector without Two-Way Left-Turn Lane to a 4-Lane with Two-Way Left-Turn Lane and Class II Bike Lanes. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane.
- *San Diego Mission Road, between Rancho Mission Road and Fairmount Avenue* – Widen and restripe this section from a 2-Lane Collector to a 4-Lane Collector with Two-Way Left-Turn lane. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. The existing Class II Bike Lanes will be retained. **Figure 3-13** displays a conceptual representation of San Diego Mission Road.
- *Camino Del Rio South, between the western terminus and Mission City Parkway* – Restripe this section of Camino Del Rio South from a 2-Lane Collector to a 2-Lane Collector with Two-Way Left-Turn Lane. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. On-street parking will be removed in some locations to facilitate implementation of the two-way left-turn lane, left-turn pockets, and/or Class II Bike Lanes. **Figure 3-14** displays a conceptual representation of Camino Del Rio South.
- *Metropolitan Drive, from Mission Valley Road to Frazee Road* – Restripe this roadway from a 2-Lane Collector with Two-Way Left-Turn Lane to a 2-Lane Collector without Two-Way Left-Turn Lane to accommodate Class II Bike Lanes. On-street parking will be retained.
- *Mission Valley Road, from Frazee Road to Metropolitan Drive (clockwise)* - Restripe this roadway from a 2-Lane Collector with Two-Way Left-Turn Lane to a 2-Lane Collector without Two-Way Left-Turn Lane to accommodate Class II Bike Lanes. On-street parking will be retained.
- *Murray Canyon Road, from Frazee Road to Metropolitan Drive* – Restripe this roadway from a 3-Lane Collector with Two-Way Left-Turn Lane to a 2-Lane Collector without Two-Way Left-Turn Lane to accommodate Class II Bike Lanes. On-street parking will be retained.
- *Rancho Mission Road/Ward Road, between Friars Road and Camino Del Rio North* – The full extent of this roadway will be restriped to a 2-Lane Collector with Two-Way Left-Turn Lane to provide for Class IV Cycle Tracks (one-way) in each direction. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. On-street parking will be largely maintained. **Figure 3-15** displays a conceptual presentation of Rancho Mission Road.











Roadway Extensions and New Roadways

To provide better connectivity throughout the Mission Valley community and provide additional access to potential new developments within the existing “super blocks,” the Proposed Plan proposes the following roadway extensions and new roadways:

1. *Goshen Street* – Goshen Street will be extended south from the southern terminus and terminate just north of the Trolley line. This extension will be constructed as a 2-Lane Collector.
2. *Via Las Cumbres* – Via Las Cumbres will be extended from Friars Road to Hotel Circle South as a 4-lane Major Arterial, including grade separation of the trolley tracks, bridges over San Diego River and I-8. The Via Las Cumbres connection between Friars Road and Hotel Circle North and South, and the Via Las Cumbres interchange with I-8, are included in the 1985 Mission Valley Community Plan and the Levi-Cushman Specific Plan. To determine if these improvements should be removed as a part of this Community Plan Update, alternative scenarios were contemplated both with and without the Via Las Cumbres connection and interchange. The evaluation indicated the connections would provide several essential benefits, including:
 - Improved emergency response times through additional access and routing
 - A much-needed high water roadway crossing during flooding events
 - Decreased travel distances and reduced volumes on streets and intersections
 - Improved connections to adjacent communities

As a result, consistent with the 1985 Mission Valley Community Plan, Via Las Cumbres will be extended south from the southern terminus to Hotel Circle South. This extension will be constructed as a 4-lane Major Arterial and will include relocated Interstate 8 on-/off-ramps. The benefits of this connection are further discussed in the Connectivity Assessment Paper provided in **Appendix D**. Class IV Cycle Tracks (one-way) will be provided along the roadway. A conceptual representation of the extension is provided in **Figure 3-16**.

3. *Frazee Road* – Frazee Road will be extended northwards from Murray Canyon Road to Mission Valley Road/Metropolitan Drive. The extension will be constructed as a 2-Lane Collector without Two-Way Left-Turn Lane and will accommodate the planned Class II Bike Lanes.
4. *Franklin Ridge Road* – Franklin Ridge Road will be extended north from Via Alta to Phyllis Place. This extension will be constructed as a 4-Lane Major Arterial.
5. *Qualcomm Way* – Since completion of the Existing Conditions Report, Qualcomm Way, from Civita Boulevard to WB Friars Road on-/off-ramps has been constructed, including Class II Bike Lanes.
6. *Fenton Parkway* – Fenton Parkway will be extended south from the existing southern terminus to Camino Del Rio North as a 4-Lane Collector with a Two-Way Left-Turn Lane. The Fenton Parkway connection over the San Diego River to Camino del Rio North / Mission

City Parkway is included in the adopted Mission Valley Community Plan. To determine if this connection should be removed as a part of this Community Plan Update, alternative scenarios were contemplated both with and without the Fenton Parkway connection. The evaluation indicated the connection would provide several benefits, including:

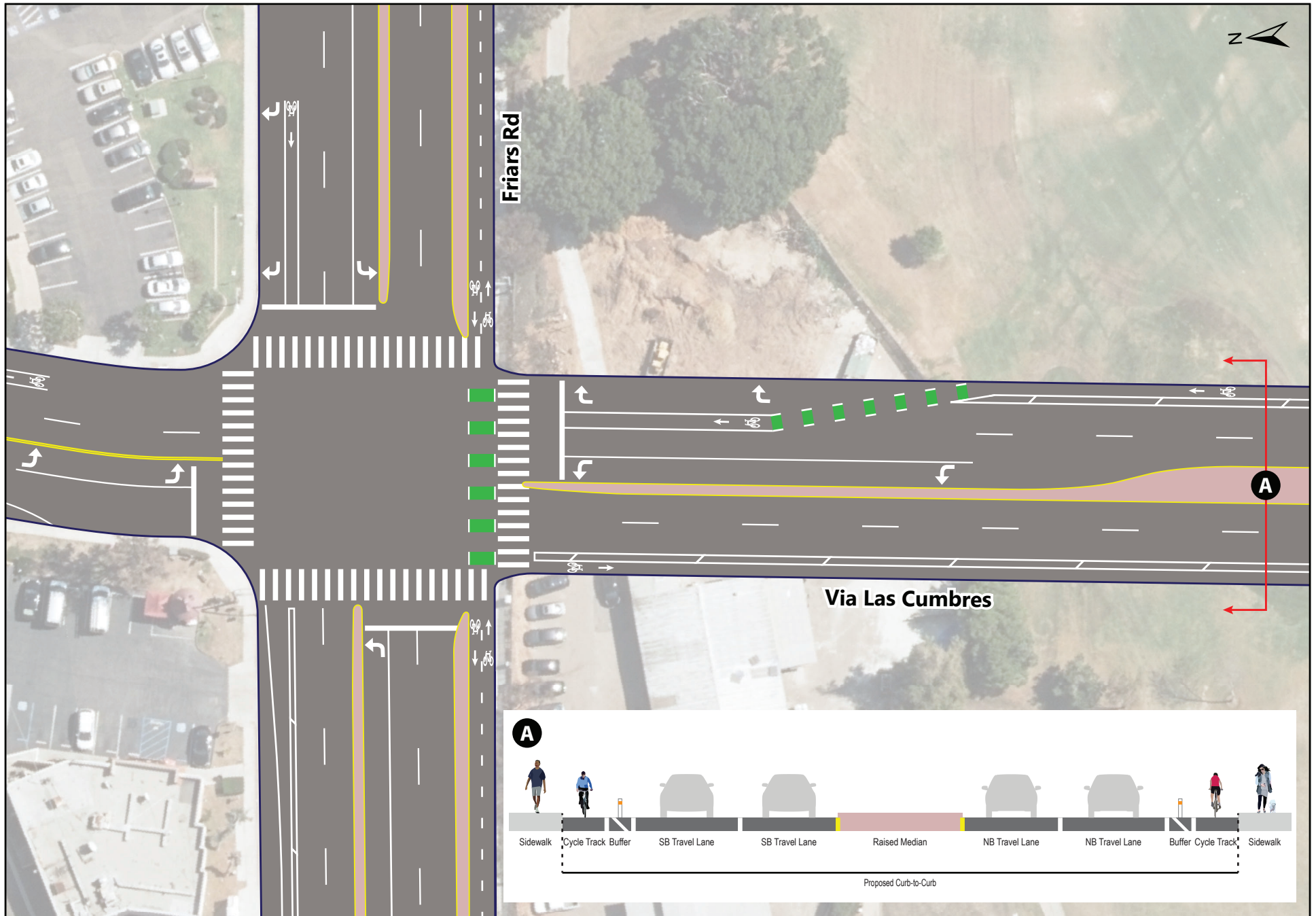
- Improved emergency response times through additional access and routing
- A much-needed high-water roadway crossing during flooding events
- Decreased travel distances and reduced volumes on streets and intersections

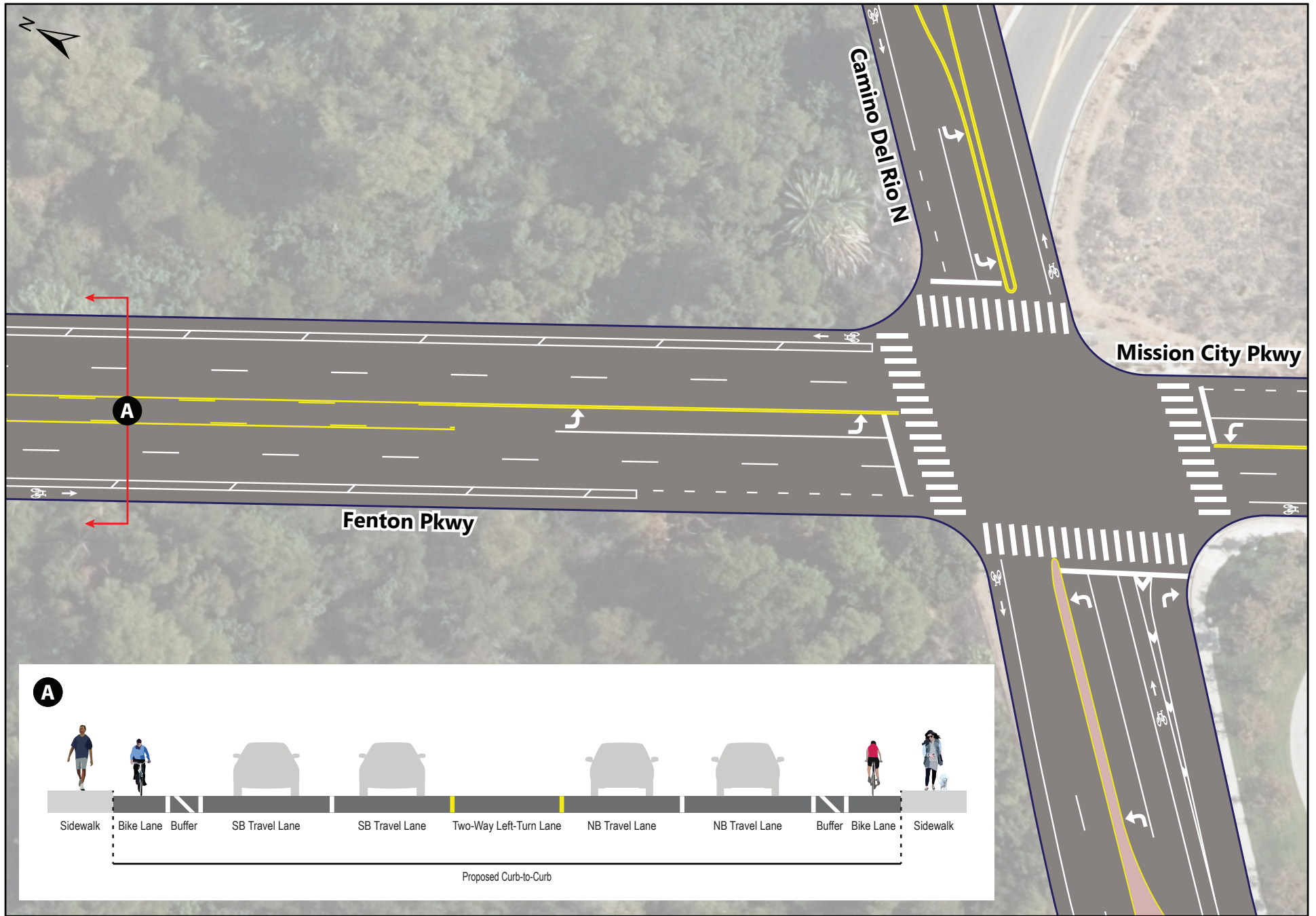
As a result, Consistent with the 1985 Mission Valley Community Plan, Fenton Parkway will be extended south from the southern terminus to the Camino Del Rio North/Mission City Parkway intersection. This extension will be constructed as a 4-Lane Collector with Two-Way Left-Turn Lane. The benefits of this connection are further discussed in the Connectivity Assessment Paper provided in **Appendix D**. Class II Bike Lanes will be provided along the Fenton Parkway extension. A conceptual representation of the extension is provided in **Figure 3-17**.

7. *Riverwalk Drive* – Riverwalk Drive will be extended from Fashion Valley Road to just west of Via Las Cumbres. This extension will be constructed as a 2-Lane Collector with Two-Way Left-Turn Lane, following the existing Riverwalk Drive alignment and continuing along the south side of the Trolley line. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. Class II Bike Lanes will be provided along the extension.
8. *Levi Cushman Street “B”* – Levi Cushman Street “B” will be an east-west running roadway, spanning from Fashion Valley Road in the east to the new Via Las Cumbres extension to the west. This roadway will be constructed as a 4-Lane Collector with Two-Way Left-Turn Lane. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. A Class IV Cycle Track (two-way) will be provided along the new roadway.
9. *Hazard Center Drive* – Hazard Center Drive will be extended west from the western terminus to Avenida Del Rio. This extension will be constructed as a 2-Lane Collector with Two-Way Left-Turn Lane.
10. *New Street “I”* – New Street “I” will be an east-west running roadway, spanning from Fenton Parkway and connecting to the future development on the stadium site. This roadway will be constructed as a 2-Lane Collector with Two-Way Left-Turn Lane. Left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane. Class II Bike Lanes will be provided along the new roadway.
11. *Avenida Del Rio, between Fashion Valley Mall Parking Lot and Camino de La Reina* – This segment will be shifted westward to align more directly with the north-south portion of Camino De La Reina and the Fashion Valley Mall Parking Lot Driveway and will maintain the 4-Lane Collector without Two-Way Left-Turn Lane classification. A Class IV Cycle Track (two-way) will be provided along the realigned roadway.

It should be noted that implementation of these new roadway segments may necessitate additional right-of-way and require the redevelopment of adjacent properties. All roadways will be designed in accordance with the *City of San Diego Street Design Manual* and their corresponding classification.

Figure 3-18 displays the Proposed Plan Roadway classifications. Note the exact alignments of new roadways and extensions will be determined upon further study at the individual project-level. A summary of the roadway modifications is presented in **Table 3.2**.





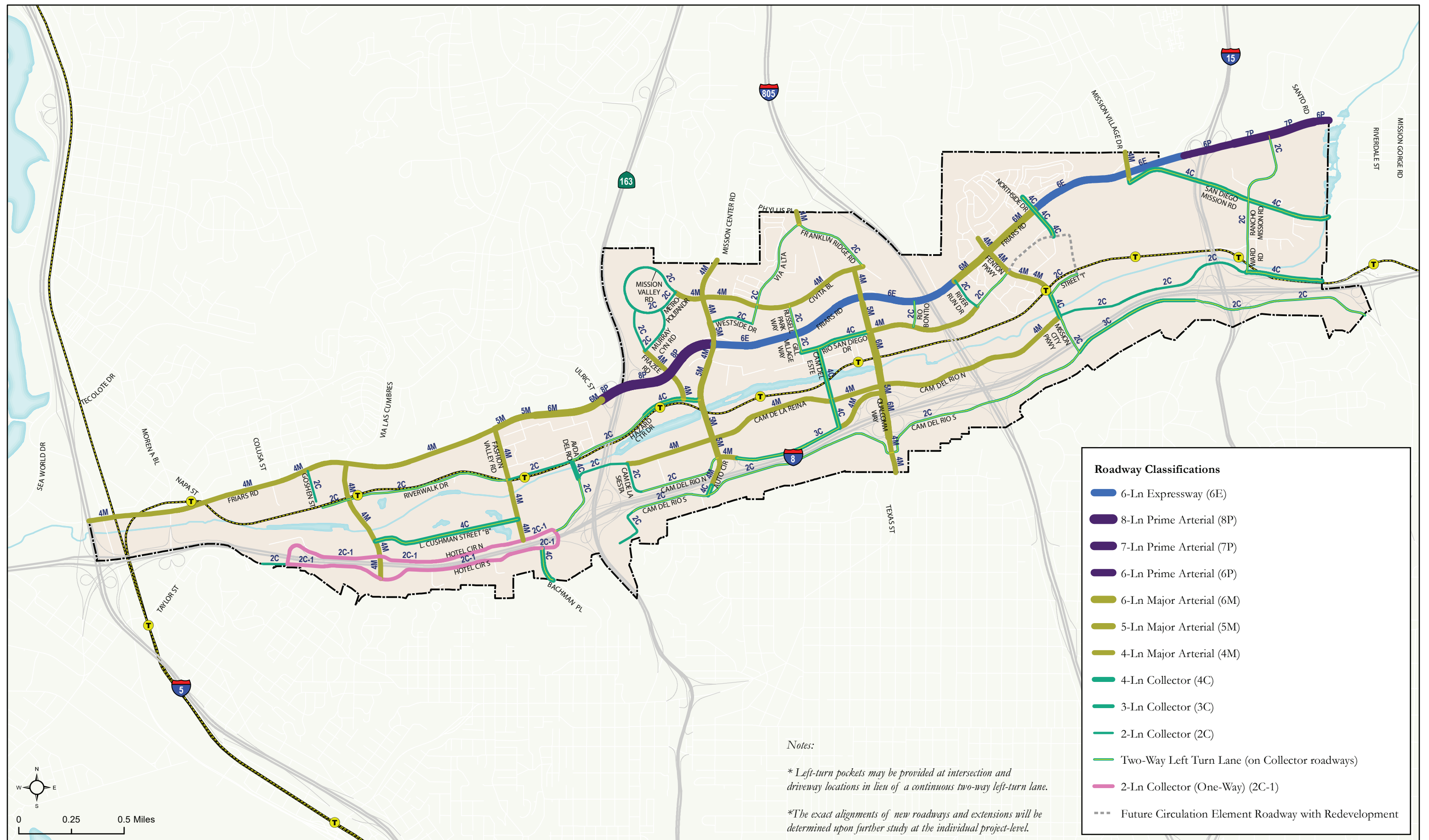


Table 3.2 Planned Roadway Modifications

Roadway	Segment	Existing Functional Classification	Planned Classification Designation ¹
Segment Modifications			
Fashion Valley Road	Friars Road to Hotel Circle North	4-Ln Collector w/o TWLTL	4-Ln Major Arterial
Bachman Place	Hotel Circle South to southern community boundary	2-Ln Collector No Fronting Property	4-Ln Collector w/ TWLTL
Qualcomm Way	Friars Road WB Ramps to Friars Road EB Ramps	2-Ln Collector w/ TWLTL	4-Ln Major Arterial (implemented)
Hotel Circle North	Hotel Circle South to Hotel Circle Place	2-Ln Collector No Fronting Property	One-Way Couplet
Hotel Circle North	Hotel Circle Place to I-8 WB Ramps	2-Ln Collector w/ TWLTL	One-Way Couplet
Hotel Circle North	I-8 WB Ramps to Fashion Valley Road	3-Ln Collector (2 EB, 1 WB)	One-Way Couplet
Hotel Circle North	Fashion Valley Road to Camino De La Reina	2-Ln Collector w/ TWLTL	One-Way Couplet
Hotel Circle North	I-8 WB On-Ramp to Hotel Circle South	2-Ln Collector w/ TWLTL	One-Way Couplet
Friars Road	Ulric Street/SR-163 SB Ramps to SR-163 NB Ramps	6-Ln Major Arterial	8-Ln Prime Arterial
Friars Road	SR-163 NB Ramps to Frazee Road	5-Ln Major Arterial (3 EB, 2 WB)	8-Ln Prime Arterial
Friars Road	Frazee Road to Mission Center Road	6-Ln Prime Arterial	8-Ln Prime Arterial
Rio San Diego Drive	River Run Drive to Fenton Parkway	4-Ln Collector w/ RM	2-Ln Collector w/ TWLTL
Camino Del Rio North	Mission City Parkway to 800 Feet East of Mission City Parkway	2-Ln Collector No Fronting Property	2-Ln Collector w/o TWLTL
Camino Del Rio North	1800 Feet West of Ward Road to Ward Road	2-Ln Collector No Fronting Property	2-Ln Collector w/o TWLTL
San Diego Mission Road	Rancho Mission Road to 950 Feet West of Fairmount Avenue	2-Ln Collector w/ TWLTL	4-Ln Collector w/ TWLTL
San Diego Mission Road	950 Feet West of Fairmount Avenue to Fairmount Avenue	2-Ln Collector No Fronting Property	4-Ln Collector w/ TWLTL
Hotel Circle South	Hotel Circle North to 1200 Feet East of Hotel Circle North	2-Ln Collector No Fronting Property	One-Way Couplet
Hotel Circle South	1200 Feet East of Hotel Circle North to Bachman Place	2-Ln Collector w/ TWLTL	One-Way Couplet
Hotel Circle South	Bachman Place to Hotel Circle North	2-Ln Collector w/ TWLTL	One-Way Couplet
Camino Del Rio South	Western Terminus to 1800 Feet west of Mission Center Road	2-Ln Collector w/ Commercial Fronting	2-Ln Collector w/ TWLTL
Camino Del Rio South	Mission Center Road to Mission City Parkway	2-Ln Collector w/ Commercial Fronting	2-Ln Collector w/ TWLTL
Metropolitan Drive	Mission Valley Road to Murray Canyon Road (clockwise)	3-Ln Collector w/ TWLTL (2 NB, 1 SB)	2-Ln Collector w/o TWLTL (NFP)
Metropolitan Drive	Murray Canyon Road to Frazee Road (clockwise)	2-Ln Collector w/ TWLTL	2-Ln Collector w/o TWLTL (NFP)

Table 3.2 Planned Roadway Modifications

Roadway	Segment	Existing Functional Classification	Planned Classification Designation¹
Mission Valley Road	Frazee Road to Metropolitan Drive (clockwise)	2-Ln Collector w/ TWLTL	2-Ln Collector w/o TWLTL (NFP)
Murray Canyon Road	Metropolitan Drive to Frazee Road	3-Ln Collector w/ TWLTL (2 NB, 1 SB)	2-Ln Collector w/o TWLTL (NFP)
Rancho Mission Road	Friars Road and San Diego Mission Road	3-Ln Collector w/ TWLTL (2 NB, 1 SB)	2-Ln Collector w/ TWLTL
Rancho Mission Road	San Diego Mission Road to Camino Del Rio North	4-Ln Collector w/o TWLTL	2-Ln Collector w/ TWLTL
New Roadways			
Goshen Street	Friars Road to southern terminus	<i>Does not exist</i>	2-Ln Collector w/o TWLTL
Via Las Cumbres	Friars Road to Hotel Circle South	<i>Does not exist</i>	4-Ln Major Arterial
Frazee Road	Mission Valley Road/Metropolitan Drive to Murray Canyon Road	<i>Does not exist</i>	2-Ln Collector w/ TWLTL
Franklin Ridge Road	Phyllis Place to Via Alta	<i>Does not exist</i>	4-Ln Major Arterial
Qualcomm Way	Civita Boulevard to Friars Road WB Ramps	<i>Does not exist</i>	4-Ln Major Arterial (Implemented)
Fenton Parkway	New Street I to Camino Del Rio North	<i>Does not exist</i>	4-Ln Collector w/ TWLTL
Riverwalk Drive	Via Las Cumbres to Fashion Valley Road	<i>Does not exist</i>	2-Ln Collector w/ TWLTL
Levi Cushman Street "B"	Via Las Cumbres to Fashion Valley Road	<i>Does not exist</i>	4-Ln Collector w/ TWLTL
Hazard Center Drive	Avenida Del Rio to Hazard Center Drive western terminus	<i>Does not exist</i>	2-Ln Collector w/ TWLTL
New Street I	Mission City Parkway to eastern terminus	<i>Does not exist</i>	2-Ln Collector w/ TWLTL

Note: ¹ In some instances, left-turn pockets may be provided at intersection and driveway locations in lieu of a continuous two-way left-turn lane.

On-Street Parking Removal

Many of the Proposed Plan improvements identified throughout this Chapter are intended to be implemented within the existing curb-to-curb environments. As such, the removal of existing on-street parking may be required to aid implementation, in some instances. It is anticipated that any additional parking demand associated with future developments will be accommodated on-site.

The Proposed Plan recommendations are intended to improve the mobility network for all modes of travel, including substantial investments in pedestrian, bicycle, and transit access improvements. Combined with the existing Green Line Trolley and transit services, and the planned transit network expansions and service enhancements, these improvements will provide attractive alternatives to personal vehicles, potentially alleviating future on-street parking demands.

On-street parking will be removed at the following locations as network improvements are implemented:

- Camino De La Reina, Camino De La Siesta to Signalized Driveway west of Mission Center Road (approximately 575' west of Mission Center Road)
- Camino De La Reina, Westfield Driveway to Qualcomm Way
- Rio San Diego Drive, Qualcomm Way to River Run Drive
- San Diego Mission Road, from east of bridge over I-15 to Rancho Mission Road
- Camino Del Rio South, from Auto Circle to approximately 2,100' to the west
- Camino Del Rio South, I-15 NB Ramps to eastern community boundary
- Hazard Center Drive, from Frazee Road to Mission Center Road
- Rancho Mission Road, from western terminus to Ward Road

Intersections

Several intersections were modified to accommodate buildout of the roadway segment classifications. Buildout intersection geometry is provided in Chapter 5. Additionally, new intersection legs and twelve new intersections are recommended for the Mission Valley community. A summary of new intersections, new intersection legs, and major control modifications is presented in **Table 3.3**. Additionally, the roadway network was evaluated to identify intersection locations, both existing and new intersections, that would benefit from the implementation of a roundabout or signalization. Traffic signal warrants were conducted at the intersections where signalization is recommended. Figure 4C-103 (CA) of the California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition – Revision 3 (March 9, 2018) was utilized and all intersections would meet the warrants. Signal warrant worksheets are included in **Appendix B**.

Consistent with the proposed changes to the California Manual on Uniform Traffic Control Devices (MUTCD) and the Caltrans' Intersection Control Evaluation process, all proposed signal modifications, including new signals, should evaluate alternative intersection controls such as roundabouts, at the project-level.

Table 3.3 Planned Intersection Modifications

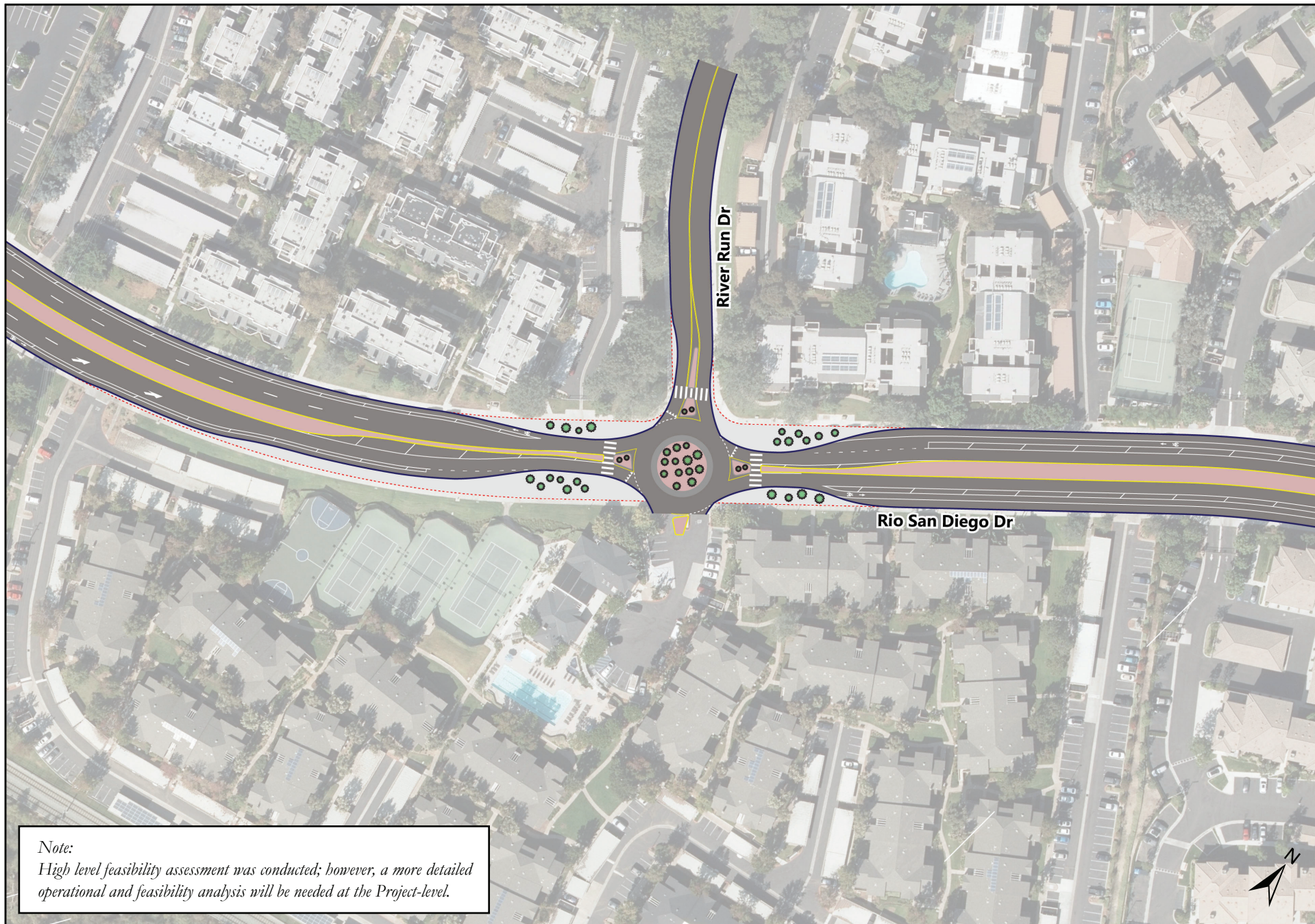
No.	Intersection	Improvement	Proposed Plan Control
5	Mission Center Road / Civita Boulevard	Split Phase to Protected (EW)	Signalized
10	Via Las Cumbres / Friars Road	Add south leg	Signalized
34	River Run Drive / Rio San Diego Drive	Single lane roundabout	Roundabout ¹
39	Avenida Del Rio / Camino De La Reina	Relocate intersection to the west (with bridge realignment)	Signalized
43	Mission City Parkway / Camino Del Rio North	Add north leg (bridge to Fenton Parkway)	Signalized
68	Phyllis Place / Franklin Ridge Road	New intersection	Signalized
69	Via Alta / Franklin Ridge Road	New intersection	Signalized
70	Civita Boulevard / Qualcomm Way	New intersection ²	Signalized
71	Civita Boulevard / Franklin Ridge Road	New intersection ²	Signalized
72	New Street "I" / Fenton Parkway	New intersection	Signalized
73	Riverwalk Drive / Via Las Cumbres	New intersection	Signalized
74	Riverwalk Drive / Fashion Valley Road	Modify to accommodate Riverwalk Drive extension	Signalized
75	Avenida Del Rio / Fashion Valley Mall Driveway	Relocate intersection to the west (with bridge realignment)	Signalized
76	Levi Cushman Street "B" / Via Las Cumbres	New intersection	Signalized
77	Levi Cushman Street "B" / Fashion Valley Road	New intersection	Signalized
78	Hotel Circle North / Via Las Cumbres	New intersection	Signalized
79	Hotel Circle South / Via Las Cumbres	New intersection	Signalized
80	Hotel Circle South / Camino De La Reina	Convert to accommodate One-Way Collector/Cycle Track	Signalized
--	Frazee Road / Murray Canyon Road	Add north leg & signalize	Signalized
--	Goshen Street / Friars Road	Add south leg	SSSC

Notes:

¹ High level feasibility assessment was conducted; however, a more detailed operational and feasibility analysis will be needed at the project-level.

² Intersection implemented since Existing Conditions Report.

Figure 3-19 provides a conceptual representation of the River Run Drive / Rio San Diego Drive roundabout.



New Intersections

Phyllis Place / Franklin Ridge Road

This intersection will be constructed to include 1 northbound left-turn lane, 1 eastbound through lane, 1 eastbound shared right-turn through lane, 2 westbound left-turn lanes, and 1 westbound through lane.

Via Alta / Franklin Ridge Road

This intersection will be constructed to include 1 northbound left-turn lane, 1 northbound shared right-turn through lane, 1 southbound left-turn lane, 1 southbound shared right-turn through lane, 1 eastbound left-turn lane, and 1 eastbound shared right-turn through lane.

Civita Boulevard / Qualcomm Way

This intersection will be constructed to include 1 northbound left-turn lane, 1 northbound right-turn lane with overlap phase, 1 eastbound through lane, 1 eastbound shared right-turn through lane, 1 westbound left-turn lane, and 1 westbound through lane.

Civita Boulevard / Franklin Ridge Road

This intersection will be constructed to include 1 northbound left-turn lane, 1 northbound through lane, 1 southbound shared right-turn through lane, 1 southbound right-turn lane, 1 eastbound left-turn lane, and 1 eastbound right-turn lane.

New Street "I" / Fenton Parkway

This intersection will be constructed to include 2 northbound through lanes, 1 northbound shared right-turn through lane, 1 southbound left-turn lane, 2 southbound through lane, 1 westbound left-turn lane, and 1 westbound right-turn lane.

Riverwalk Drive / Via Las Cumbres

This intersection will be constructed to include 1 northbound through lane, 1 northbound shared right-turn through lane, 1 southbound left-turn lane, 2 southbound through lanes, 1 westbound left-turn lane, and 1 westbound right-turn lane

Riverwalk Drive / Fashion Valley Road

Reconstruct the west leg to provide 1 eastbound left-turn lane and 1 eastbound shared right-turn through lane. Restripe the east leg to provide 1 westbound left-turn lane and 1 westbound shared right-turn through lane.

Levi Cushman Street "B" / Via Las Cumbres

This intersection will be constructed to include 1 northbound through lane, 1 northbound shared right-turn through lane, 1 southbound left-turn lane, 2 southbound through lanes, 1 westbound left-turn lane, and 1 westbound right-turn lane.

Levi Cushman Street “B” / Fashion Valley Road

This intersection will be constructed to include 1 northbound left-turn lane, 2 northbound through lanes, 1 southbound through lane, 1 northbound shared right-turn through lane, 1 eastbound left-turn lane, and 1 eastbound right-turn lane.

Hotel Circle North / Via Las Cumbres

This intersection will be constructed to include 1 northbound left-turn lane, 2 northbound through lanes, 1 southbound through lane, 1 southbound shared right-turn through lane, 1 southbound right-turn lane, 1 westbound shared left-turn through lane, 1 westbound through lane, and 1 westbound right-turn lane. These improvements are consistent with the I-8 Corridor Study.

Hotel Circle South / Via Las Cumbres

This intersection will be constructed to include 1 northbound shared right-turn through lane, 2 southbound left-turn lanes. These improvements are consistent with the I-8 Corridor Study.

Hotel Circle South / Camino de La Reina

This intersection will be constructed to include 1 northbound through lane, 1 northbound right-turn lane, and 1 westbound right-turn lane. These improvements are consistent with the I-8 Corridor Study.

Freeway Improvements

Freeway improvements within the Mission Valley study area are identified within this section. The improvements were derived from the Revenue Constrained scenario of SANDAG’s *San Diego Forward: The Regional Plan* (2015), the currently adopted regional transportation plan, and are anticipated to be implemented by 2050.

SR-163/Friars Road Interchange

Phase I of this improvement will widen and improve Friars Road and the overcrossing from Avenida de las Tiendas to Mission Center Road, and reconstruct the interchange to include improvements to ramp intersections. Phase II will consist of the construction of new connector roadways and structures. Phase III will consist of the construction of auxiliary lanes along northbound and southbound SR-163. Phase I is anticipated to be implemented by 2020.

I-15, from I-8 to SR-163

Two managed lanes will be added to this segment of I-15, one in each direction. This segment will consist of eight freeway lanes and two managed lanes. This improvement is anticipated to be implemented by 2035.

I-5, from I-8 to La Jolla Village Drive

Two managed lanes will be added to this segment of I-5, one in each direction. This segment will consist of eight/ten freeway lanes and two managed lanes. This improvement is anticipated to be implemented by 2050.

I-5, from I-15 to I-8

Unspecified operational improvements are anticipated to be implemented along this segment of I-5 by 2050.

I-8, from I-5 to SR-125

Unspecified operational improvements are anticipated to be implemented along this segment of I-8 by 2050.

I-805, from SR-15 to SR-163

Four managed lanes will be added to this segment of I-805, two in each direction. This segment will consist of eight/ten freeway lanes and four managed lanes. This improvement is anticipated to be implemented by 2050.

3.6 Currently Planned Improvements

The following section outlines the mobility-related Capital Improvement Projects identified within Mission Valley. In addition to these improvements, projects within Mission Valley included in the City's Transportation Unfunded Needs List (TUNL) (September 2018) are identified. It should be noted that this list is updated on a regular basis and only reflects a snapshot of the needs and planned improvements throughout the community at the time when this report was prepared.

3.6.1 Pedestrian

Capital Improvement Projects

The following Capital Improvement Projects were identified in the Council District 7 CIP Project List (2018):

Camino del Este Path Crossing Improvements (CIP Project B13088) – Installation of two High Intensity Activated crosswalks (HAWKS) on Camino del Este at the intersections with the northern and southern San Diego River Bike Paths. These installations will include a street lighting system at each crossing, pedestrian push buttons, a vehicle detection system, crosswalk and pedestrian curb ramps. This project is fully funded with implementation anticipated during 2019.

San Diego Mission Road Sidewalk (CIP Project B13130) – Installation of a sidewalk along the south side of San Diego Mission Road, from the San Diego River Bridge eastward to the Fairmount Avenue intersection. This project is partially funded and does not have an anticipated date for implementation.

Friars Road Street Lights - Citywide Street Lights Group 1602 (CIP Project B16008) – Installation of 2 street lights along Friars Road, west of Fashion Valley Road. This project is fully funded with implementation anticipated to be complete in during 2019.

Citywide Street Lights Group 1702 (CIP Project B17051) – This project is partially funded with an undetermined implementation date. The following improvements are planned:

- Installation of 10 street lights along Friars Road, west of Fashion Valley Road
- Installation of 3 street lights along Hazard Center Drive

Camino de la Reina Street Lights - Citywide Street Lights Group 15 (CIP Project B15012) – Installation of 6 street lights along Camino de la Reina, west of Camino de la Siesta. This project is fully funded with implementation anticipated to be complete in during 2019.

Transportation Unfunded Needs List (TUNL)

The following pedestrian improvements were identified in the City of San Diego's TUNL (obtained on September 18, 2018):

- Bike/Ped Bridges – North and South San Diego River Bike Paths at Camino Del Este
- Bike/Ped Bridge – San Diego River Bike Path at Qualcomm Way (south side)
- Sidewalk and Curb Ramps – San Diego Mission Road from San Diego River to Fairmount Avenue (south side)
- Sidewalk – San Diego Mission Road from Fairmount Avenue to Rancho Mission Road (north side)
- Sidewalk and Curb Ramps – Taylor Street from Morena Boulevard to Hotel Circle South (south side)
- Sidewalk and Curb Ramps – Camino del Rio South from Texas Street to I-805 Overpass (south side)
- Sidewalk – Hotel Circle South from 875 to 1335 Hotel Circle South (south side)
- Sidewalk – Mission Center Road from Murray Ridge Road to Mission Valley Road
- Sidewalk at Bus Stop – Hotel Circle South & Bachman Place
- Sidewalk and Curb Ramps – Qualcomm Way from Camino Del Rio North to Camino De La Reina (west side)
- Remove Nose of Median from Crosswalk – River Run Drive at Friars Road (Southeast Leg)
- Streetlights – Four Locations on Hotel Circle South, south of Camino De La Reina (east side)
- Streetlights – Four Locations on Camino Del Rio North, east of Mission City Parkway
- Streetlights – River Run Drive, 165' north of Rio San Diego Drive (east side)
- Streetlights – Camino De La Reina, 175' east of Avenida Del Rio (north side)
- Streetlights – Five locations on Camino De La Reina, west of Camino De La Siesta (north side)
- Streetlights – Thirteen locations on Friars Road, west of Fashion Valley Road (south side)
- Streetlights – Hazard Center Drive, 225' west of Frazee Road (south side)
- Streetlights – Two locations on Hazard Center Drive, west of Hazard Center Driveway
- Streetlights – Friars Road, 210' east of Napa Street (south side)
- Streetlights – Two locations on Texas Street, south of Camino Del Rio South (east side)
- Streetlights – Four locations on Rancho Mission Road, south of San Diego Mission Road
- Streetlights – Friars Road, 1200' east of Via Las Cumbres (north side)
- Streetlights – Two locations on Camino De La Reina, east of Westfield Driveway (south side)

- Streetlights – Five locations on Camino Del Rio South, east of Auto Circle (south side)
- Streetlights – Five locations on Camino Del Rio South, east of I-15 SB Off-Ramp (south side)
- Streetlights – Eight locations on Camino Del Rio South, west of Texas Street (south side)
- Crosswalk Treatments – Ward Road / Rancho Mission Road – Category D crosswalk treatments for proposed uncontrolled marked crosswalk location
- Crosswalk with Countdown Timers – Civita Boulevard / Mission Center Road (south leg)
- Pedestrian Push Buttons, Audible and Countdown Timers – Friars Road / Rancho Mission Road

3.6.2 Bicycle

Capital Improvement Projects

The street light projects identified in the previous section will also benefit cyclists.

Transportation Unfunded Needs List (TUNL)

The following bicycle improvements were identified in the City of San Diego's TUNL (obtained on September 18, 2018):

- Bike/Ped Bridges – North and South San Diego River Bike Paths at Camino Del Este
- Bike/Ped Bridge – San Diego River Bike Path at Qualcomm Way (south side)
- Class I – Hotel Circle South from Camino De La Reina to Bachman Place
- Class I – San Diego River Bike Path from Sefton Ball Field to YMCA; from Qualcomm Stadium to Zion Avenue; from Friars Road to Hotel Circle Place; from Hotel Circle Place to Fashion Valley Bike Path; from I-805 to Fenton Parkway
- Class I – Camino De La Reina from Hotel Circle North to Camino De La Reina Bike Path
- Improve Fencing – San Diego River Bike Path at Sunset Cliffs Boulevard/I-8 WB Off-Ramp
- Class II – Camino Del Rio N from Mission City Parkway to I-15
- Bike Facility – Hotel Circle South from Taylor Street to Bachman Place

3.6.3 Transit

As noted in Section 3.5.2, the Proposed Plan is consistent with SANDAG's *San Diego Forward, The Regional Plan* (2015). No additional improvements were identified.

3.6.4 Vehicular

Capital Improvement Projects

SR-163/Friars Road (CIP Project S00851) – This project is fully funded with an undetermined implementation date. The following improvements are planned:

- New southbound SR-163 to westbound Friars Road off-ramp
- Widening of Friars Road overcrossing structure to 8-lanes to Frazee Road
- Third westbound lane on Friars Road to Fashion Valley Road
- Right-turn lane on southbound Frazee Road to westbound Friars Road
- Modifications to the existing ramps
- Improvements to weaving issues on existing southbound SR-163 lanes

- Auxiliary lane on southbound SR-163 from Genesee Avenue to westbound I-8, requiring to widen the bridge over the San Diego River

Transportation Unfunded Needs List (TUNL)

The following improvements were identified in the City of San Diego's TUNL (obtained on September 18, 2018):

- Construct 4-Lane Major – Camino De La Reina, from Fashion Valley Road to Napa Street
- Widen to 4-Lanes – Camino Del Rio North, from Mission City Parkway to I-15
- Install Two Hook Ramps – from Camino Del Rio North at WB I-8
- Widen to 4-Lanes – Camino Del Rio South, from I-805 to Mission City Parkway
- Widen to 4-Lanes – Camino Del Rio South, from Mission Center Road to I-805
- Widen to 4-Lanes – Hazard Center Road, from 500' east of SR-163 bridge to Avenida Del Rio
- Restripe to 3-Lanes – Hotel Circle South, at EB I-8/Presidio Overcrossing and EB Hotel Circle Ramps
- Construct New On- and Off-Ramps – WB I-8 / Qualcomm Way
- Widen to Extend Existing Dual Left-Turn Lanes – Mission Center Road, from Friars Road to Camino Del Rio North
- Install Raised Median – Friars Road, from I-15 SB On-Ramp to Mission Village Drive NB On-Ramp
- V-Calm Sign – Rancho Mission Road
- Two V-Calm Signs – Friars Road, between Fashion Valley Road and Via Las Cumbres
- Longer Mast Arm for WB Traffic – Friars Road / Rancho Mission Road
- Protected Left-Turn Phasing – Camino Del Este / Camino De La Reina
- Emergency Vehicle Preemption – Friars Road / Frazee Road; Hazard Center Drive / Mission Center Drive; Fashion Valley Road / Hotel Circle North; Friars Road / Riverdale Street; Friars Road / Ulric Street

4.0 Modeling and Forecasting

This chapter summarizes the Future Year travel demand model forecasting process utilized to project the future travel patterns within Mission Valley community, under buildout of the community plan conditions. Future Year traffic volumes were derived from a SANDAG Series 13 Transportation Forecast Model run, which was verified per the City of San Diego's Small Study Area Traffic Modeling Process (April 2012) and calibrated for the Mission Valley community. Section 4.1 describes the Base Year model calibration process and Section 4.2 describes the process used to develop Future Year volumes.

4.1 Base Year Model Calibration

The Base Year model calibration process included verification and validation of Base Year model inputs (population, employment and roadway network), as well as additional adjustments to the Base Year model (roadway speeds, centroid loadings, etc.) to calibrate the model to better represent existing travel patterns within the Mission Valley community. Detailed descriptions of each validation step are provided.

4.1.1 Base Year Land Use Verification/Validation

To ensure the existing land uses were correctly represented in the SANDAG Series 13 Base Year model, the following existing land use data was collected throughout the entire Mission Valley community and verified/adjusted in the Base Year model to correctly match field conditions:

- Descriptions (land use type and code)
- Proper measurement unit types (employees, square feet, units, rooms, students, acres)
- Quantities

Land use types, descriptions and quantities were crosschecked with ground conditions using Google Earth aerial imagery, field verification, as well as contacting the individual businesses or property owners, as necessary. Base Year land use inputs override for the project study area are provided in **Appendix E**.

4.1.2 Base Year Roadway Network Verification/Validation

The SANDAG Series 13 Base Year roadway network was compared to field conditions to ensure an accurate model network. The following variables were compared and adjusted to match actual conditions:

- | | |
|--------------------------------------|-------------------------|
| • TAZ loading points | • Street classification |
| • Number of lanes for roadways | • Roadway speed limits |
| • Traffic controls | • Turn restrictions |
| • Posted speed limits | • Bicycle facilities |
| • Signalized intersection geometrics | • Multi-use paths |

4.1.3 Base Year Ground Count Validation & Adjustment

Historical traffic volumes over the past 7 years were compiled from the City of San Diego Traffic Count Database and other recent studies to compare to the model output. This database included multiple counts representing the same location on numerous segments, as well as the counts input into the model, and were selected based upon nearby trip generators and traffic patterns along each roadway segment and year of data. If available, counts from 2012 were used (SANDAG Series 13 Base Year), followed by data from 2011, 2013, and finally 2015. Abnormally high or low traffic volumes were assumed to be outliers, and thus were not selected to be a model input. Adjustments were made as needed to ensure the Base Year model output accurately reflected available traffic count information.

4.1.4 Model Sensitivity Adjustment

Model calibration was performed by running a Base Year model estimate and comparing the results to the selected ground counts discussed above. Roadway segments that did not meet the model calibration targets established by the City of San Diego were identified for additional adjustments. These adjustments included relocation of TAZ connectors and centroids, TAZ splitting, adjustments of roadway speed (to represent congestion), and in rare cases, ground count adjustments (using historic counts older than three years).

4.1.5 Base Year Final Calibration Results

Nine (9) model runs were conducted to establish a Base Year model that met calibration targets. Model calibration results and the final Base Year model roadway network are provided in **Appendix F**.

4.2 Future Year Traffic Forecast Volume

The Future Year model was developed by inputting the Future Year land uses and roadway network into the calibrated Base Year model, described in the previous sections, with the following adjustment/assumptions:

- Buildout of the Proposed Plan land uses within the project study area (land use assumptions are provided in **Appendix G**).
- Future roadway network within the study area with the following roadway assumptions:
 - Via Las Cumbres, between Friars Road to Hotel Circle North: 4-Lane Major Arterial, with intersections at Riverwalk Drive and Levi Cushman “Street B”;
 - Fenton Parkway, between existing terminus and Camino Del Rio North: 4-Lane Major Arterial, with intersection at New Street “I”;
 - Riverwalk Drive, between Via Las Cumbres and Fashion Valley Road: 2-Lane Collector with Two-Way Left-Turn Lane;
 - Levi Cushman Street B, between Via Las Cumbres and Fashion Valley Road: 2-Lane Collector with Two-Way Left-Turn Lane;
 - Hotel Circle North, between Hotel Circle South and Taylor Street: 2-Lane Collector (one-way counterclockwise couplet);

- Hotel Circle South, between Taylor Street and Hotel Circle North: 2-Lane Collector (one-way counterclockwise couplet; and
- SR-163 at Friars Road Interchange project.
- Year 2050 land uses outside of the study area.
- Year 2050 roadway/transit network outside of the study area.
- Year 2050 transit network both inside and outside of the study area.

The model inputs described above were reviewed by the project team and approved by City staff prior to running the model forecasts. Future Year forecast volumes were reviewed and adjusted by the project team and City staff based on a comparison between the Base Year 2012 traffic volume and historic counts. Adjustment documentation and methodologies are provided in **Appendix H**. **Figure 4-1** shows the final projected ADT used to develop and analyze the Proposed Plan circulation network, as described in the next chapter.

4.2.1 Vehicle Miles Traveled (VMT)

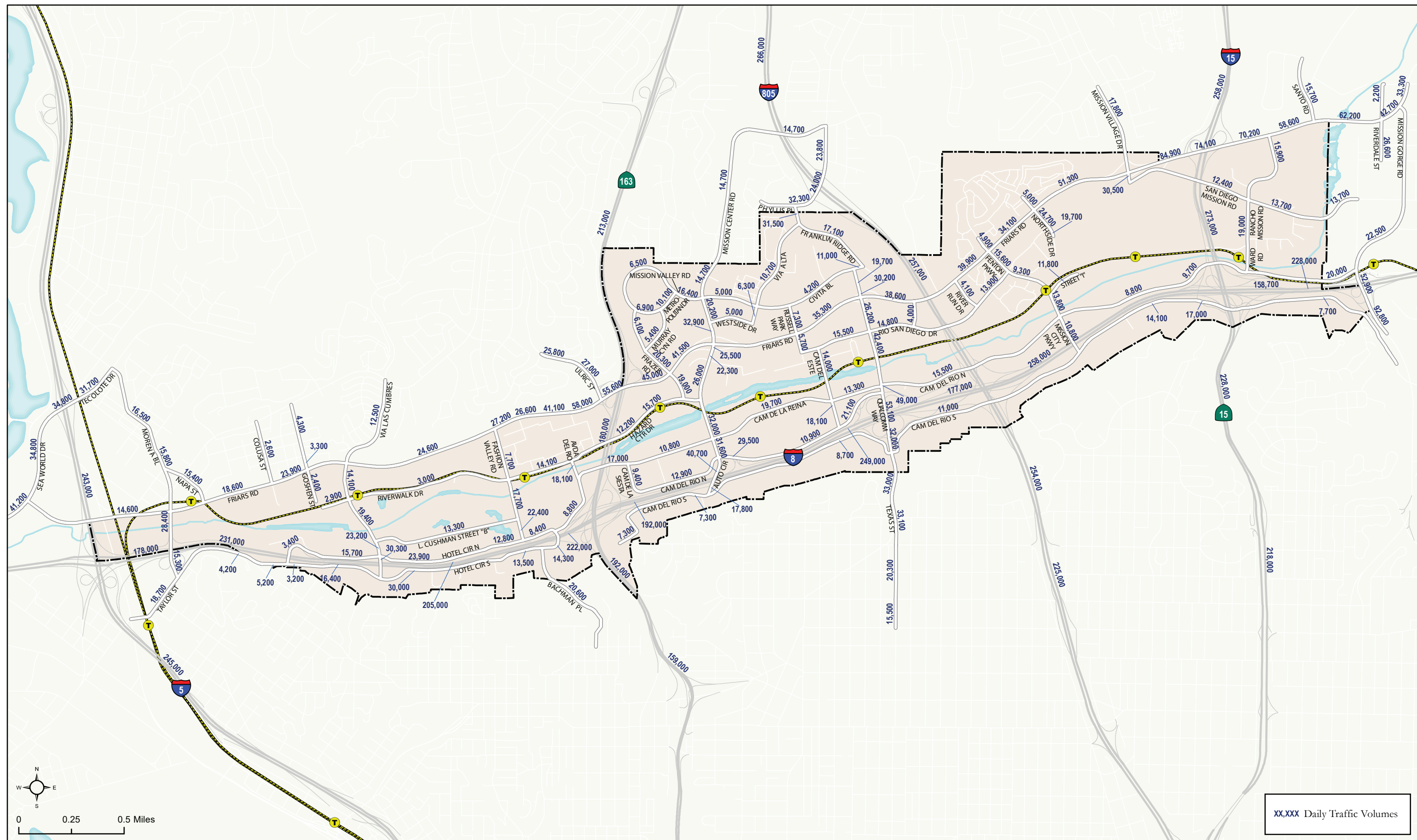
There are many ways to extract, calculate, and summarize vehicle miles traveled (VMT) data. Following are definitions of VMT data that was extracted from the activity-based travel demand model (ABM) in order to measure and evaluate the effect of the Proposed Plan on VMT. These VMT metrics are provided in Table 4.1

Community Planning Area Vehicle Miles Traveled for Greenhouse Gas (GHG) Analysis

The Community Planning Area VMT is used to allocate greenhouse gas emissions (GHG) attributable to the community, and is calculated based on the San Diego ITE Technical White Paper, [*Vehicle Miles Traveled Calculations Using the SANDAG Regional Travel Demand Model, May 2013 \(ITE White Paper\)*](#). The method is consistent with the International Council for Local Environmental Initiatives (ICLEI) - Local Governments for Sustainability US Community Protocol for Accounting and Reporting GHG Emissions (Community Protocol) which recommends using model data of all travel originating or terminating within the jurisdictional boundaries of a community.

The recommended method presented in the Community Protocol recognizes that local governments possess the authority to influence GHG emissions from passenger vehicle trips both inside and outside of a community's geographic boundaries. The ITE White Paper describes in detail how the model is used to disaggregate VMT and the appropriate method for allocating VMT to a study area for the purposes of a GHG analysis. The method includes the following:

- Internal to Internal (I-I) VMT – all VMT should be included in the analysis. Intrazonal VMT is calculated separately from interzonal VMT but both should be included.
- Internal to External (I-E) and External to Internal (E-I) VMT – 50% of the VMT should be included in the analysis.
- External to External (E-E) VMT – should not be included in the analysis.



Note that in this context, Internal means internal to the study area (community planning area in this case) and external means outside the study area. Once the model VMT is disaggregated into the categories described above, the study area VMT (for GHG purposes) can be summed as follows:

$$\text{Total Study Area VMT} = (\text{I-I intrazonal VMT}) + (\text{I-I interzonal VMT}) + 50\% * (\text{I-E VMT} + \text{E-I VMT}).$$

Community Planning Area VMT per Service Population

Table 4.1 presents Community Planning Area VMT per Service Population, calculated to provide a normalized comparison of the Mission Valley Community Planning Area VMT under Base Year and Proposed Plan conditions. This takes the Community Planning Area VMT for GHG purposes and divides it by the sum of projected residents and employees in the community.

Table 4.1 Vehicle Miles Traveled (VMT) Scenario Comparison

Measure (miles)	Base Year	Proposed Plan	Δ in Value	Δ in %
Community VMT	1,646,678	2,357,653	710,975	43.2%
Population	20,801	72,440	51,639	248.3%
Employees	45,559	64,670	19,111	41.9%
Service Population (Residents + Employee)	66,360	137,110	70,750	106.6%
Community VMT per Service Population	24.8	17.2	-7.6	-30.7%

Source: SANDAG Series 13 Regional Model – Mission Valley CPU Subarea Model (2018)

Commute Auto Round Trip Tour Length

Work tours are available from the individual trip model. This metric identifies all work tours from the individual model (San Diego County residents) that are drive alone or HOV. The ABM has a record and location of all travelers' home and work location. Only trips with a home location or an employment location within Mission Valley are retained. At-work subtours, such as going to lunch and back, were not included in this analysis. The identified round-trip tour lengths are then averaged (mean).

Table 4.2 provides commute auto round trip tour length for employees and residents under Base Year and Proposed Plan conditions for Mission Valley.

Table 4.2 Commute Auto Round Trip Tour Length

Measure (miles)	Mission Valley			
	Base Year	Proposed Plan	Δ in Value	Δ in %
Average Auto Commute Distance – Round Trip Tour (Employee)	23.2	19.2	-4.0	-17.2%
Average Auto Commute Distance – Round Trip Tour (Resident)	24.2	22.2	-2.0	-8.3%

Source: SANDAG Series 13 Regional Model – Mission Valley CPU Subarea Model (2018)

5.0 Proposed Plan Analysis

The Proposed Plan analysis results for the pedestrian, bicycle, transit, and vehicular modes are presented throughout this Chapter.

5.1 Pedestrian Assessment and Results

This section presents Proposed Plan pedestrian network analysis results, which assumes implementation of the improvements identified in Chapter 3. Pedestrian network connectivity and quality are each discussed.

5.1.1 Pedestrian Network Connectivity

Figure 5-1 displays pedestrian network connectivity to/from pedestrian study area intersections. This analysis calculates the percent of area accessible to pedestrians within a half-mile network buffer from the respective intersection (connectivity ratio). A connectivity ratio of 50% or greater is considered to be ideal.

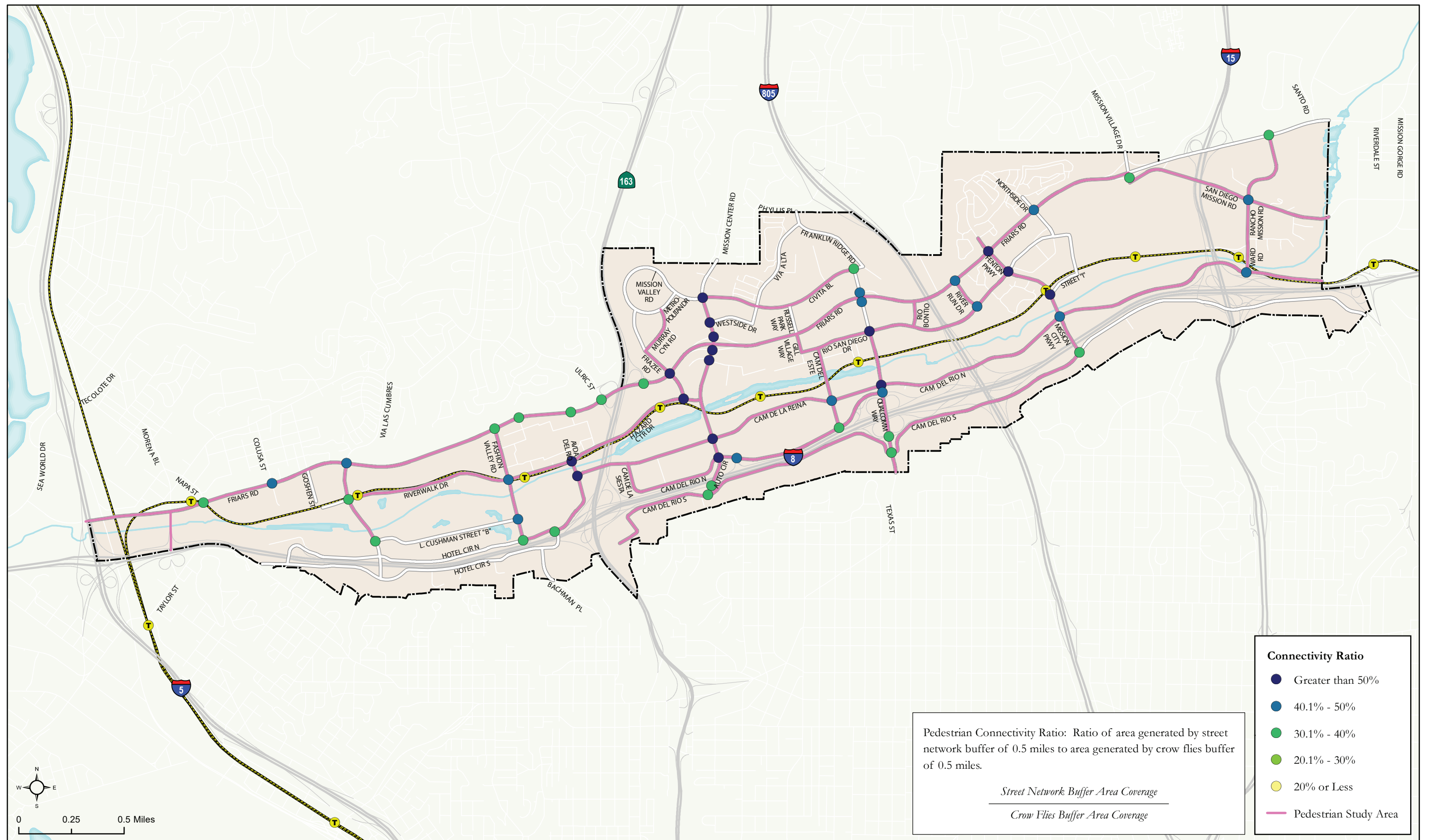
As shown, pedestrian connectivity is at ideal levels (> 50% connectivity ratio) in the center of the community (north of I-8), along Fenton Parkway, and Avenida Del Rio. Connectivity is generally lower adjacent to natural and physical barriers, such as the hillside along Friars Road and the freeway.

5.1.2 Pedestrian Network Quality

Pedestrian Environmental Quality Evaluation (PEQE) provides an assessment of pedestrian facilities. For roadway segments, the evaluation considers horizontal buffer, lighting, a clear pedestrian zone, and the posted speed limit. Intersection analyses look at physical features that serve as safety mechanisms (enhanced crosswalk, curb bulb out, advanced stop bar), operational features (pedestrian countdown signal, lead pedestrian interval, no-turn on red sign/signal, additional pedestrian signage), ADA standard curb ramps, and traffic control. An overview of the inputs and scoring criteria is provided in Chapter 2.

The evaluation was performed for all Pedestrian Study Area segments depicted in Figure 2-1. The PEQE results for Proposed Plan conditions under are displayed in **Figure 5-2**. **Table 5.1a** presents the PEQE scoring for each roadway, while **Table 5.1b** shows intersection scoring and **Table 5.1c** covers mid-block crossing locations. PEQE calculation worksheets are provided in **Appendix I**.

As shown, intersection and segment scores along Pedestrian Route Types identified as Districts and Corridors (previously shown in Figure 3-2) received a score of High due to the additional operational and physical features planned along these high-pedestrian activity roadways. Additionally, Path Route Types scored High due to the physical separation from the roadway. All three mid-block crossing locations received High scores. The remainder of the Pedestrian Study Area received Medium scores, appropriate for the respective environments.



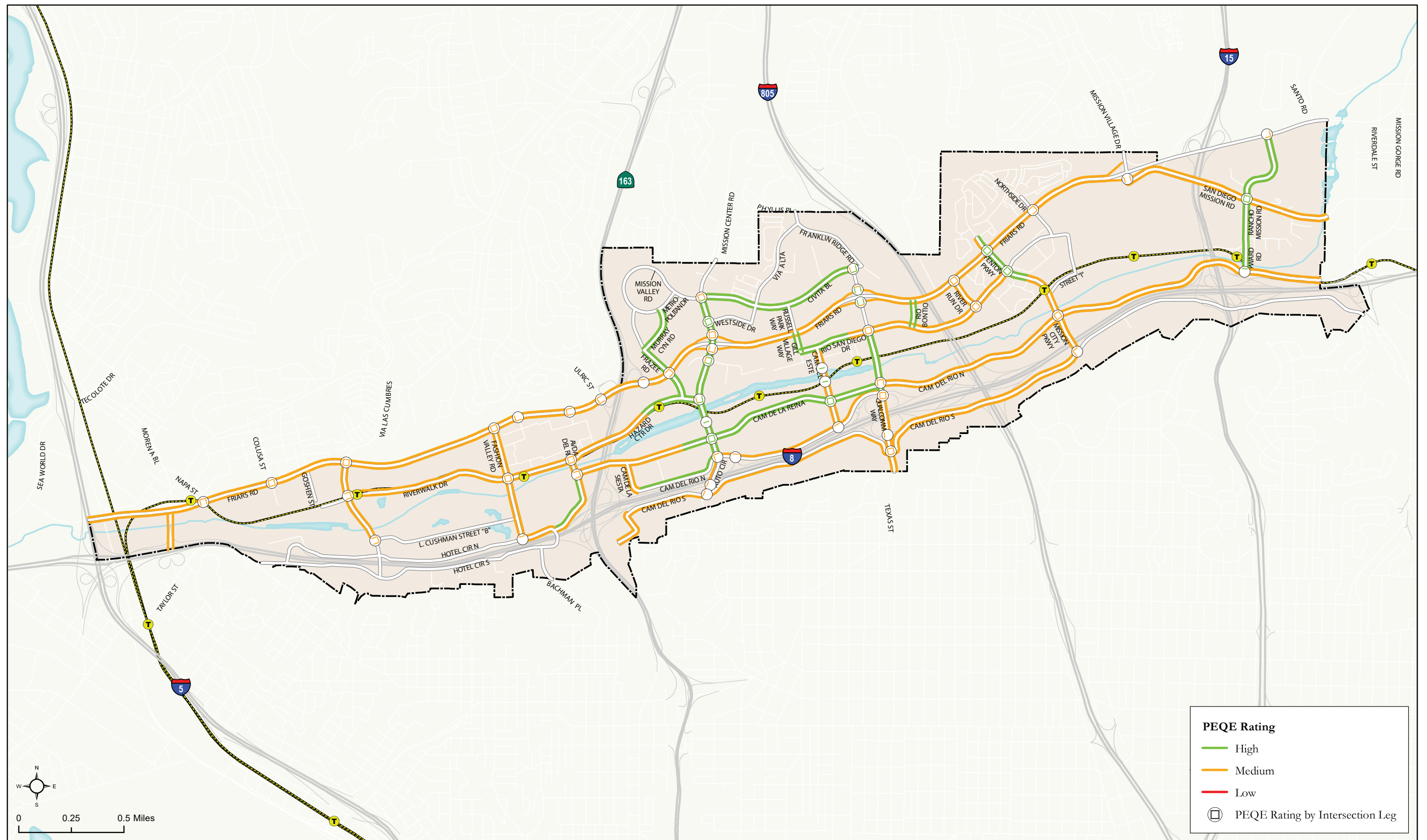


Figure 5-2
 Pedestrian Environmental Quality Evaluation (PEQE) - Proposed Plan Conditions

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Civita Boulevard	Mission Center Road	Via Alta	7	High	7	High	Connector
Civita Boulevard	Via Alta	Russell Park Way	7	High	7	High	Connector
Civita Boulevard	Russell Park Way	Qualcomm Way	7	High	7	High	Connector
Friars Road	Sea World Drive	Napa Street	5	Medium	5	Medium	Connector
Friars Road	Napa Street	Colusa Street	5	Medium	5	Medium	Connector
Friars Road	Colusa Street	Donahue St	5	Medium	5	Medium	Connector
Friars Road	Donahue St	Fresno St	5	Medium	5	Medium	Connector
Friars Road	Fresno St	Goshen St	5	Medium	5	Medium	Connector
Friars Road	Goshen St	Gaines St	5	Medium	5	Medium	Connector
Friars Road	Gaines St	Via Las Cumbres	5	Medium	5	Medium	Connector
Friars Road	Via Las Cumbres	Fashion Valley Road	5	Medium	5	Medium	Connector
Friars Road	Fashion Valley Road	Via De La Moda	5	Medium	5	Medium	Connector
Friars Road	Via De La Moda	Fashion Valley Driveway	5	Medium	5	Medium	Connector
Friars Road	Fashion Valley Driveway	Avenida De Las Tiendas	5	Medium	5	Medium	Connector
Friars Road	Avenida De Las Tiendas	Ulric Street/SR-163 SB Ramps	5	Medium	5	Medium	Connector
Friars Road	Ulric Street/SR-163 SB Ramps	SR-163 NB Ramps	5	Medium	5	Medium	Connector
Friars Road	SR-163 NB Ramps	Frazee Road	5	Medium	5	Medium	Connector
Friars Road	Gill Village Way	Qualcomm Way	5	Medium	5	Medium	Connector
Friars Road	Qualcomm Way	Rio Bonito Way	5	Medium	5	Medium	Connector
Friars Road	Rio Bonito Way	River Run Drive	5	Medium	5	Medium	Connector
Friars Road	River Run Drive	Fenton Parkway	5	Medium	5	Medium	Connector
Friars Road	Fenton Parkway	Northside Drive	5	Medium	5	Medium	Connector
Hazard Center Drive	Avenida Del Rio	Hazard Center W. Driveway	5	Medium	5	Medium	Connector

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Hazard Center Drive	Hazard Center W. Driveway	Hazard Center E. Driveway	8	High	8	High	District
Hazard Center Drive	Hazard Center E. Driveway	Frazee Road	8	High	8	High	District
Hazard Center Drive	Frazee Road	Mission Center Road	8	High	8	High	District
Rio San Diego Drive	Gill Village Way	Camino Del Este	7	High	7	High	Connector
Rio San Diego Drive	Camino Del Este	Station Village Way	7	High	7	High	Connector
Rio San Diego Drive	Station Village Way	Qualcomm Way	6	Medium	6	Medium	Connector
Rio San Diego Drive	Qualcomm Way	Rio Bonito Way	6	Medium	6	Medium	Connector
Rio San Diego Drive	Rio Bonito Way	River Run Drive	6	Medium	6	Medium	Connector
Rio San Diego Drive	River Run Drive	Fenton Parkway	6	Medium	6	Medium	Connector
San Diego Mission Road	Friars Road EB Ramps	Rancho Mission Road	6	Medium	6	Medium	Connector
San Diego Mission Road	Rancho Mission Road	Eastern Community Boundary	6	Medium	6	Medium	Connector
Hotel Circle North	Fashion Valley Road	Camino De La Reina	6	Medium	6	Medium	Connector
Camino De La Reina	Hotel Circle North	Avenida Del Rio	7	High	7	High	Path
Camino De La Reina	Avenida Del Rio	Camino De La Siesta	6	Medium	6	Medium	Path
Camino De La Reina	Camino De La Siesta	Camino Del Arroyo	6	Medium	6	Medium	Connector
Camino De La Reina	Camino Del Arroyo	Mission Valley West Driveway	6	Medium	6	Medium	Connector
Camino De La Reina	Mission Valley West Driveway	Mission Center Road	7	High	7	High	Connector
Camino De La Reina	Mission Center Road	Park in the Valley Drwy	7	High	7	High	District
Camino De La Reina	Park in the Valley Drwy	Camino Del Este	7	High	7	High	District
Camino De La Reina	Camino Del Este	Qualcomm Way	7	High	7	High	Corridor
Camino Del Rio North	Camino De La Siesta	Camino Del Arroyo	7	High	--	--	Connector
Camino Del Rio North	Camino Del Arroyo	Mission Center Road	7	High	--	--	Connector
Camino Del Rio North	Mission Center Road	I-8 WB Ramps	6	Medium	--	--	Connector

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Camino Del Rio North	I-8 WB Ramps	Theater Driveway	6	Medium	--	--	Connector
Camino Del Rio North	Theater Driveway	Camino Del Este	6	Medium	--	--	Connector
Camino Del Rio North	Camino Del Este	I-8 WB Ramps	5	Medium	--	--	Connector
Camino Del Rio North	I-8 WB Ramps	Qualcomm Way	5	Medium	--	--	Connector
Camino Del Rio North	Qualcomm Way	Mission City Parkway	4	Medium	5	Medium	Connector
Camino Del Rio North	Mission City Parkway	Ward Road	5	Medium	5	Medium	Connector
Camino Del Rio North	Ward Road	Fairmount Avenue	5	Medium	5	Medium	Connector
Camino Del Rio South	Western Terminus	Mission Center Road	--	--	6	Medium	Connector
Camino Del Rio South	Mission Center Road	Texas Street	--	--	5	Medium	Connector
Camino Del Rio South	Texas Street	Mission City Parkway	5	Medium	5	Medium	Connector
Morena Boulevard	Linda Vista Road	I-8 WB Ramps	6	Medium	6	Medium	--
Fashion Valley Road	Friars Road	Riverwalk Drive	6	Medium	6	Medium	Connector
Fashion Valley Road	Riverwalk Drive	Hotel Circle North	6	Medium	6	Medium	Connector
Avenida Del Rio	Fashion Valley Parking Lot	Camino De La Reina	6	Medium	6	Medium	Connector
Frazee Road	Ralph's Driveway	Friars Road	8	High	8	High	Corridor
Frazee Road	Friars Road	Hazard Center Driveway	8	High	8	High	District
Frazee Road	Hazard Center Driveway	Hazard Center Drive	8	High	8	High	District
Mission Center Road	Mission Valley Road	Westside Drive	8	High	8	High	Corridor
Mission Center Road	Westside Drive	Friars Road WB Ramps	8	High	8	High	Corridor
Mission Center Road	Friars Road WB Ramps	Friars Road EB Ramps	7	High	7	High	Corridor
Mission Center Road	Friars Road EB Ramps	Mission Center Court	7	High	7	High	Corridor
Mission Center Road	Mission Center Court	Hazard Center Drive	7	High	7	High	District
Mission Center Road	Hazard Center Drive	HAWK Beacon	7	High	7	High	District

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Mission Center Road	HAWK Beacon	Camino De La Reina	7	High	7	High	District
Mission Center Road	Camino De La Reina	Camino Del Rio North	7	High	7	High	District
Auto Circle	Camino Del Rio North	I-8 EB Ramps	--	--	6	Medium	Connector
Auto Circle	I-8 EB Ramps	Camino Del Rio South	--	--	6	Medium	Connector
Camino Del Este	Rio San Diego Drive	Station Village Lane	6	Medium	6	Medium	Connector
Camino Del Este	Station Village Lane	Camino De La Reina	6	Medium	6	Medium	Connector
Camino Del Este	Camino De La Reina	Camino Del Rio North	6	Medium	6	Medium	Connector
Qualcomm Way	Rio San Diego Drive	Camino Del Rio North	7	High	7	High	Corridor
Qualcomm Way	Camino Del Rio North	I-8 WB Ramps	7	High	7	High	Connector
Qualcomm Way	I-8 WB Ramps	I-8 EB Ramps	7	High	7	High	Connector
Qualcomm Way	I-8 EB Ramps	Camino Del Rio South	7	High	7	High	Connector
Texas Street	Camino Del Rio South	Community Boundary	6	Medium	6	Medium	Connector
River Run Drive	Friars Road	Rio San Diego Drive	6	Medium	6	Medium	Connector
Fenton Parkway	Portofino Driveway	Friars Road	7	High	6	Medium	Connector
Fenton Parkway	Friars Road	Rio San Diego Drive	7	High	7	High	Corridor
Fenton Parkway	Rio San Diego Drive	Del Rio Apartments Driveway	7	High	7	High	Corridor
Fenton Parkway	Del Rio Apartments Driveway	Street I	6	Medium	6	Medium	Connector
Fenton Parkway	Street I	Camino Del Rio North	6	Medium	6	Medium	Connector
Mission City Parkway	Camino Del Rio North	Camino Del Rio South	6	Medium	6	Medium	Connector
Rancho Mission Road	Friars Road	Caminito Cuervo	7	High	7	High	Connector
Rancho Mission Road	Caminito Cuervo	San Diego Mission Road	8	High	8	High	Connector
Ward Road	San Diego Mission Road	Camino Del Rio North	7	High	7	High	Corridor
Via Las Cumbres	Friars Road	Riverwalk Drive	5	Medium	5	Medium	Connector

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Via Las Cumbres	Riverwalk Drive	L. Cushman Street B	5	Medium	5	Medium	Connector
Riverwalk Drive	Via Las Cumbres	Fashion Valley Road	6	Medium	6	Medium	Connector
Gill Village Way	Friars Road	Rio San Diego Drive	7	High	7	High	Connector
Rio Bonito Way	Friars Road	Rio San Diego Drive	7	High	7	High	Connector

Table 5.1b PEQE Intersection Analysis Results – Proposed Plan Conditions

Intersection	North Leg		South Leg		East Leg		West Leg	
	Score	Grade	Score	Grade	Score	Grade	Score	Grade
Mission Center Road / Civita Boulevard	6	Medium	7	High	6	Medium	6	Medium
Napa Street / Friars Road	6	Medium	--	--	6	Medium	6	Medium
Colusa Street / Friars Road	6	Medium	6	Medium	6	Medium	6	Medium
Via Las Cumbres / Friars Road	6	Medium	6	Medium	6	Medium	6	Medium
Fashion Valley Road / Friars Road	6	Medium	6	Medium	6	Medium	6	Medium
Via De La Moda / Friars Road	--	--	6	Medium	--	--	6	Medium
Avenida De Las Tiendas / Friars Road	6	Medium	6	Medium	--	--	6	Medium
Ulric Street / SR-163 SB / Friars Road	6	Medium	6	Medium	--	--	6	Medium
SR-163 NB / Friars Road	6	Medium	--	--	--	--	--	--
Frazee Road / Friars Road	6	Medium	6	Medium	6	Medium	--	--
Mission Center Road / Friars Road WB	6	Medium	6	Medium	6	Medium	6	Medium
Mission Center Road / Friars Road EB	--	--	6	Medium	6	Medium	6	Medium
Qualcomm Way / Friars Road WB	6	Medium	--	--	7	High	7	High
Qualcomm Way / Friars Road EB	--	--	6	Medium	7	High	7	High
River Run Drive / Friars Road	6	Medium	6	Medium	6	Medium	6	Medium
Fenton Parkway / Friars Road	7	High	7	High	7	High	7	High
Northside Drive / Friars Road	6	Medium	6	Medium	6	Medium	--	--
Mission Center Road / Hazard Center Drive	--	--	7	High	7	High	6	Medium
Qualcomm Way / Rio San Diego Drive	6	Medium	6	Medium	6	Medium	6	Medium
River Run / Rio San Diego Drive	4	Medium	4	Medium	4	Medium	4	Medium
Fenton Parkway / Rio San Diego Drive	7	High	7	High	7	High	7	High
Mission Village Drive / Friars Road EB Ramps	--	--	--	--	6	Medium	6	Medium
Rancho Mission Road / San Diego Mission Road	7	High	7	High	7	High	7	High
Via Las Cumbres / Riverwalk Drive	6	Medium	6	Medium	6	Medium	--	--
Via Las Cumbres / L. Cushman Street B	6	Medium	6	Medium	6	Medium	--	--
Fashion Valley Road / Riverwalk Drive	6	Medium	6	Medium	6	Medium	6	Medium
Fashion Valley Road / Hotel Circle N	6	Medium	--	--	--	--	--	--
Ave Del Rio / Camino De La Reina	6	Medium	6	Medium	6	Medium	--	--
Ave Del Rio / Hazard Center Drive	6	Medium	6	Medium	6	Medium	6	Medium
Mission Center Road / Camino De La Reina	7	High	7	High	7	High	7	High
Camino Del Este / Camino De La Reina	7	High	7	High	7	High	7	High
Qualcomm Way / Camino De La Reina	6	Medium	--	--	6	Medium	6	Medium
Mission Center Road / Camino Del Rio North	6	Medium	--	--	--	--	6	Medium
I-8 WB Ramps / Camino Del Rio North	6	Medium	--	--	--	--	--	--

Table 5.1b PEQE Intersection Analysis Results – Proposed Plan Conditions

Intersection	North Leg		South Leg		East Leg		West Leg	
	Score	Grade	Score	Grade	Score	Grade	Score	Grade
Camino Del Este / Camino Del Rio North	6	Medium	--	--	--	--	6	Medium
Qualcomm Way / Camino Del Rio North	6	Medium	6	Medium	6	Medium	6	Medium
Mission City Parkway / Camino Del Rio North	6	Medium	6	Medium	6	Medium	6	Medium
Ward Road / Camino Del Rio North	7	High	--	--	--	--	--	--
Auto Circle / Camino Del Rio South	--	--	--	--	--	--	6	Medium
Texas Street / Camino Del Rio South	6	Medium	6	Medium	6	Medium	6	Medium
Mission City Parkway / Camino Del Rio South	6	Medium	--	--	--	--	6	Medium
Mission Center Road / Westside Drive	7	High	7	High	7	High	7	High
Mission Center Road / Mission Center Court	7	High	7	High	7	High	6	Medium
Auto Circle / I-8 EB Ramps	--	--	--	--	--	--	6	Medium
Qualcomm Way / I-8 EB Ramps	--	--	--	--	--	--	6	Medium
Rancho Mission Road / Friars Road	--	--	6	Medium	6	Medium	--	--
Qualcomm Way / Civita Boulevard	--	--	7	High	7	High	6	Medium

Table 5.1c PEQE Mid-Block Crossing Analysis Results – Proposed Plan Conditions

Location	Score	Grade
Mission Center Road / San Diego River Trail (south)	8	High
Camino Del Este / San Diego River Trail (north)	8	High
Camino Del Este / San Diego River Trail (south)	8	High

Table 5.2 summarizes the PEQE analysis results by mile for each of the three pedestrian environment grade categories. Under Proposed Plan conditions, a much larger share of segments receive High PEQE grades when compared to existing (23.1% vs. 5.2%), and Medium grades (76.9% for Proposed Plan vs. 36.0% for existing). These improvements can be attributed to building out the roadways to the respective design standards, including features such as sidewalks, lighting, and landscaped buffers.

Table 5.2 PEQE Segment Analysis Results by Grade Mileage – Proposed Plan Conditions

Grade	Mileage	Percent
High	9.9	23.1%
Medium	33.0	76.9%
Low	--	--
TOTAL	42.9	100%

Table 5.3 summarizes the PEQE analysis results by the number of intersection approaches identified for each pedestrian environment grade category. All intersection legs exhibit Medium or High PEQE score characteristics under the Proposed Plan. This is a large increase in quality crossings when compared to existing conditions, which found over 60% of intersection legs to consist of Low scoring features. Similar to the segments, the intersections along pedestrian route types identified as Districts and Corridors (previously shown in Figure 3-2) received a score of High due to the additional operational and physical features planned along these high-pedestrian activity roadways.

Table 5.3 PEQE Intersection Analysis Results by Grade – Proposed Plan Conditions

Grade	Number of Approaches	Percent
High	38	27.0%
Medium	103	73.0%
Low	--	--
TOTAL	141	100%

5.2 Cycling Assessment and Results

Bicycle conditions are evaluated under Proposed Plan conditions in terms of network connectivity, quality, and coverage. The Proposed Plan assumes implementation of the bicycle network previously shown in Figure 3-6, and additional bicycle improvements identified in Chapter 3.

Table 5.4 summarizes the Proposed Plan bicycle facilities by network mileage. The overall network mileage increases by 17 miles when compared to existing conditions. This growth is largely attributed to the increase in protected bicycle facilities, including Class I Multi-Use Paths and Class IV Cycle Tracks (both one- and two-way). Over 50% of the Proposed Plan bicycle network will be comprised of protected facilities (22.1 miles), compared to 26% or 7.3 miles of the existing network.

Table 5.4 Bicycle Facilities by Network Mileage – Proposed Plan Conditions

Facility Type	Proposed Plan	
	Mileage	Percent
Class I – Multi-Use Path	9.8	23.1%
Class II – Bike Lane	20.4	48.0%
Class III – Bike Route	--	--
Class IV – Two-Way Cycle Track	6.4	15.1%
Class IV – One-Way Cycle Track	5.9	13.9%
TOTAL	42.5	100%

5.2.1 Bicycle Network Connectivity

Figure 5-3 displays bicycle network connectivity to/from study area intersections. This analysis calculates the percent of area accessible to cyclists within a one-mile network buffer from the respective intersection (connectivity ratio). A connectivity ratio of 50% or greater is considered to be ideal.

As shown, bicycle connectivity is at ideal levels (> 50% connectivity ratio) in the center of the community, similar to pedestrians, where intersections are more closely spaced. The new multi-use bridges limit the barrier effects of the San Diego River by providing additional crossing points that are at distances accessible to most bicyclists, improving connectivity at many locations within the community.

5.2.2 Bicycle Network Quality

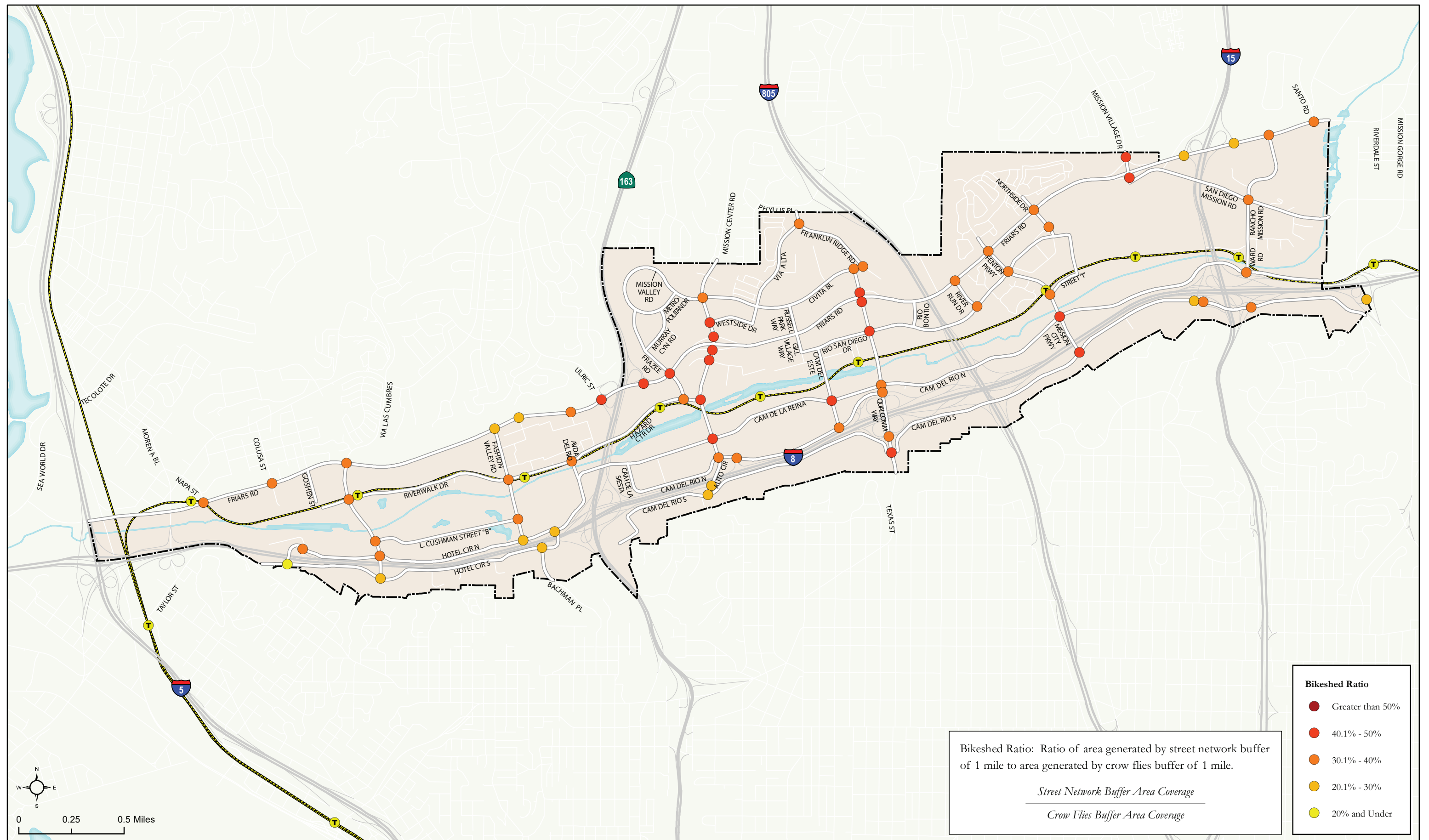
Bicycle Level of Traffic Stress (LTS) classifies the street network into categories according to the level of stress the environment causes cyclists. The assessment considers physical separation from vehicular traffic, posted speed limits, number of travel lanes, and factors related to intersection approaches with dedicated right-turn lanes and unsignalized crossings.

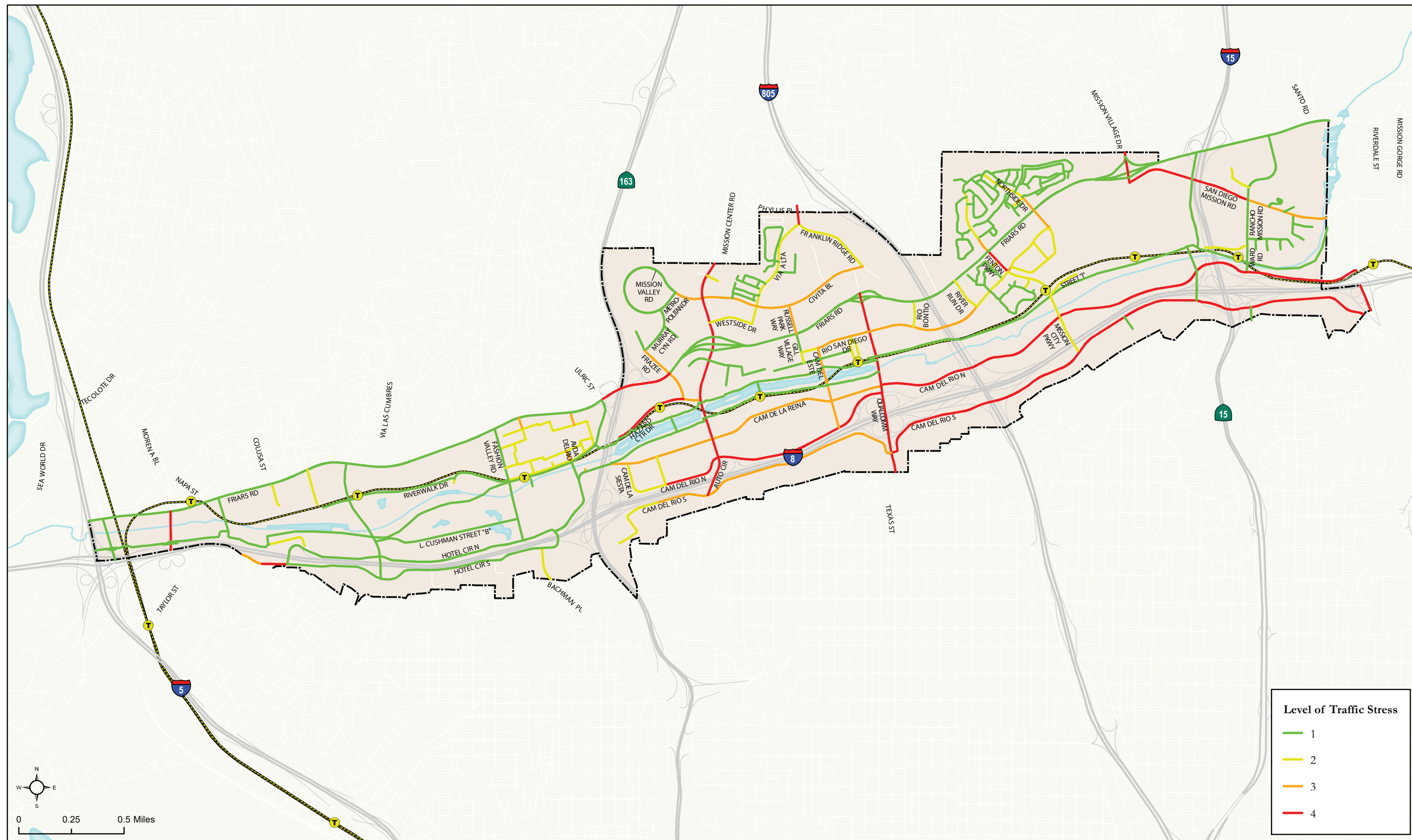
Figure 5-4 displays the bicycle LTS analysis results for all bikeable roadways within Mission Valley under Proposed Plan conditions. The LTS analysis includes roadways with bicycle facilities and roadways without facilities yet where bicyclists are permitted (non-freeway roads). Table 5.5 summarizes the LTS analysis results by linear miles for each of the four LTS categories.

Table 5.5 LTS Analysis Results by Grade Mileage – Proposed Plan Conditions

Level of Traffic Stress	Mileage	Percent
LTS 1	34.0	58.6%
LTS 2	7.7	13.3%
LTS 3	6.2	10.7%
LTS 4	10.1	17.4%
TOTAL	58.0	100%

The Proposed Plan bicycle network relies heavily on protected facilities which provide physical separation from vehicular traffic. The increase in protected facilities is reflected in the high prevalence of facilities scored as LTS 1, accounting for over 56% of network mileage under the Proposed Plan compared to 29% of facilities under existing conditions. Under existing conditions, over 46% of facilities were identified as LTS 4, dropping to 10% with implementation of the Proposed Plan network. LTS 4 segments still remain due to vehicular speeds and volumes along roadways where a protected facility is infeasible, such as Mission Center Road and Camino Del Rio North.





5.2.3 Combined Bicycle Network Connectivity and Quality Assessment

The combined bicycle network connectivity and quality assessment calculates the percent of TAZs with bicycle accessible land uses (residential, commercial, recreational, and/or educational land uses) that a cyclist can reach using only facilities scored as LTS 1 and/or 2 under Proposed Plan conditions. The Proposed Plan network assessment results are displayed in **Figure 5-5**.

The increase in quality connectivity is the result of an expanded bicycle network, consisting of over twenty miles of protected bicycle facilities, as well as the addition of multiple bicycle/pedestrian bridges. The greatest increases are shown in areas west of SR-163, and between I-8 and Friars Road to the east of SR-163.

5.3 Public Transit Services and Facilities Assessment and Results

Public transit services and facilities are evaluated under Proposed Plan conditions, which assumes implementation of the improvements outlined in Chapter 3. The assessment consists of projected transit boardings and alightings and the amenities required based on future ridership.

5.3.1 Transit Stop/Station Average Daily Boardings/Alightings and Amenities

Table 5.6 displays the projected transit boardings and alightings by route for each transit stop under Proposed Plan conditions. Implementation of the planned transit network expansion, operational enhancements and Proposed Plan improvements are forecast to result in a large increase in transit ridership throughout Mission Valley.

Table 5.7 displays the projected boardings and alightings at each transit stop/station along with the amenities required, based on the future ridership levels. As shown in the table, based on future ridership, the following stations will require additional amenities:

- 10064 (Route 88 – Taylor Street & I-8 EB Ramp): ADA access
- 10100 (Route 6 – Camino De La Reina & Camino Del Arroyo): bench
- 10433 (Route 88 – Hotel Circle South & I-8 WB Ramp): ADA access
- 10471 (Route 928 – Metropolitan Drive & Mission Valley Road): shelter, route map, lighting
- 10475 (Route 928 – Metropolitan Drive & Murray Canyon Road): bench
- 10505 (Route 6 – Camino De La Reina & Camino Del Este): expanded sidewalks, shelter, time table, route map, trash receptacle
- 11248 (Route 6 – Camino De La Reina & Camino Del Arroyo): bench, ADA access
- 11276 (Route 6 – Camino De La Reina & Qualcomm Way): bench, shelter, route map
- 11687 (Route 6 – Texas Street & Camino Del Rio South): shelter, route map
- 12778 (Route 928 – Frazee Road & Friars Road): shelter, time table, route map, trash receptacle
- 13510 (Route 120 – Hotel Circle South & Bachman Place): ADA access
- 60741 (Route 928 – Mission Center Road & Sevan Court): ADA access
- 99379 (Route 88 – Hotel Circle North & Camino De La Reina): ADA access
- 99449 (Route 18 – Camino Del Rio North & Ward Road): expanded sidewalk, bench, shelter, route map, ADA access

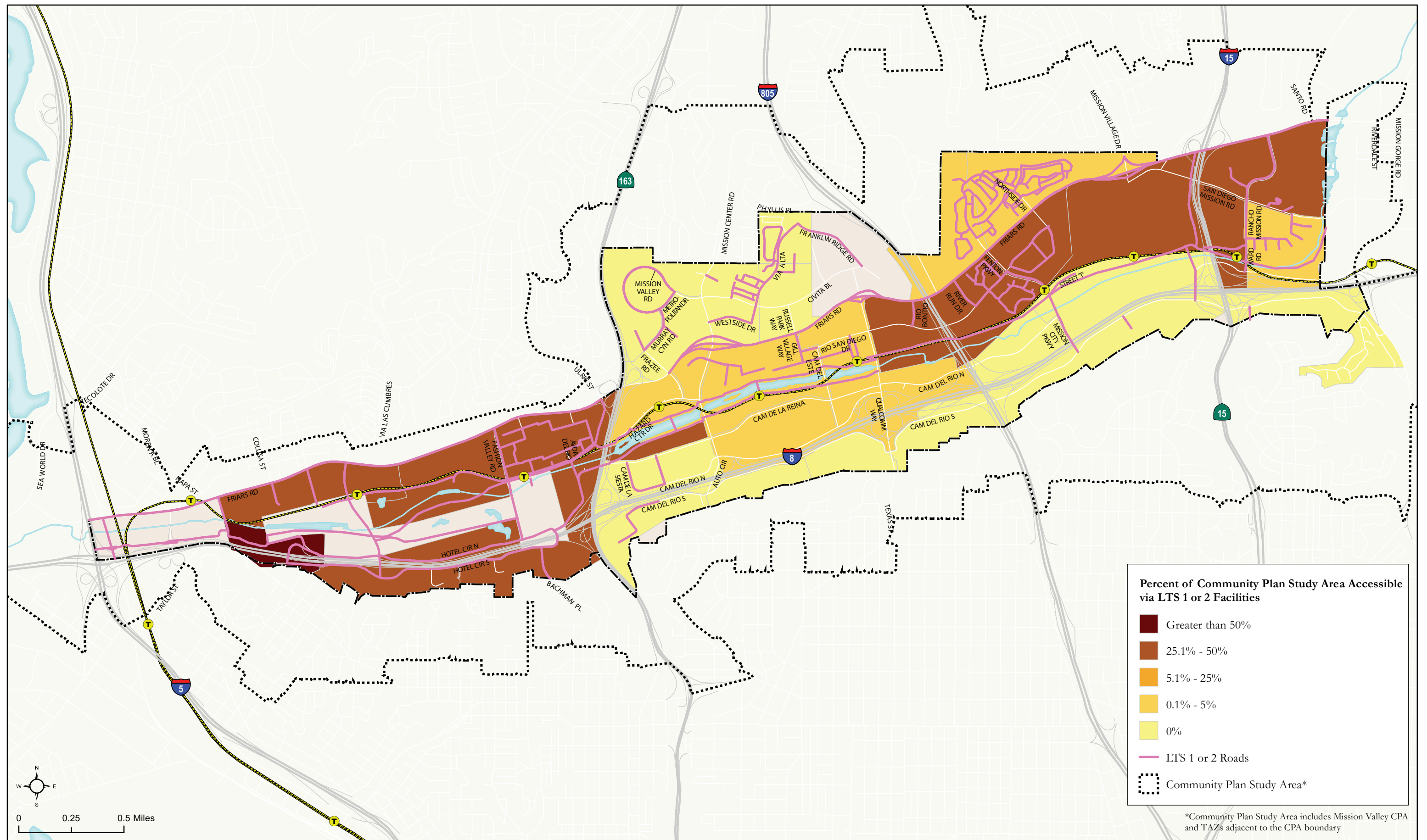


Table 5.6 Average Daily Boardings and Alightings by Route – Proposed Plan Conditions

Route and Location	Stop ID	Direction	Boardings	Alightings	Total
Route 6 – Fashion Valley Transit Center to 30th Street & University Avenue					
Fashion Valley Transit Center	94045	EB	298	184	482
Camino De La Reina & Avenida Del Rio	13392	EB	43	26	69
Camino De La Reina & Camino De La Siesta	10479	EB	7 ¹	10 ¹	17 ¹
Camino De La Reina & Camino Del Arroyo	10100	EB	99	66	165
Camino De La Reina & Mission Valley West	13036	EB	24 ¹	22 ¹	46 ¹
Camino De La Reina & Mission Center Rd	10485	EB	223	65	288
Camino De La Reina & Westfield Drwy	13037	EB	185 ¹	51 ¹	236 ¹
Camino De La Reina & Michaels	10500	EB	87	49	136
Camino De La Reina & Camino Del Este	10505	EB	341	97	438
Texas St & Camino Del Rio South	11687	SB	180	21	201
Route 6 – 30th Street & University Avenue to Fashion Valley Transit Center					
Texas St & Camino Del Rio South	12813	WB	14	161	175
Camino De La Reina & Qualcomm Wy	11276	WB	130	188	318
Camino De La Reina & Camino Del Este	10879	WB	55	92	147
Camino De La Reina & Saks 5th Ave	99380	WB	6 ¹	39 ¹	45 ¹
Camino De La Reina & Park In the Valley Drwy	13102	WB	30	161	191
Camino De La Reina & Mission Center Rd	10860	WB	43	199	242
Camino De La Reina & Mission Valley West	13001	WB	17 ¹	22 ¹	39 ¹
Camino De La Reina & Camino Del Arroyo	11248	WB	73	106	179
Camino De La Reina & Camino De La Siesta	11242	WB	7 ¹	5 ¹	12 ¹
Camino De La Reina & Avenida Del Rio	13393	WB	21	40	61
Fashion Valley Transit Center	94045	EB	187	290	477
Route 14 – Grantville Trolley Station to Baltimore Drive & Lake Murray Boulevard					
Ward Rd & Mission San Diego Trolley	13397	NB	230	2	232
Rancho Mission Rd & San Diego Mission Rd	13398	NB	38	3	41
Rancho Mission Rd & Friars Rd	10968	NB	10	73	83
Route 14 – Baltimore Drive & Lake Murray Boulevard to Grantville Trolley Station					
Rancho Mission Rd & Friars Rd	10588	SB	100	11	111
Rancho Mission Rd & San Diego Mission Rd	13404	SB	2	27	29

Table 5.6 Average Daily Boardings and Alightings by Route – Proposed Plan Conditions

Route and Location	Stop ID	Direction	Boardings	Alightings	Total
Ward Rd & Mission San Diego Trolley	13405	SB	1	372	373
Route 18 – From Grantville Trolley Station to Grantville Trolley Station					
Camino Del Rio North & Ward Rd	99449	WB	141	104	245
Camino Del Rio North & 3456	99260	WB	3 ¹	6 ¹	9 ¹
Mission City Pkwy & Camino Del Rio North	99261	WB	0	38	38
Camino Del Rio South & 3160	99262	WB	0	5	5
Camino Del Rio South & 2828	99263	WB	28 ¹	36 ¹	64 ¹
Texas St & Camino Del Rio South	12813	WB	1	55	56
Camino Del Rio North & Qualcomm Wy	99864	WB	31	57	88
Camino Del Rio North & 2655	13040	EB	3 ¹	9 ¹	12 ¹
Camino Del Rio North & Mission City Pkwy	10182	EB	8 ¹	9 ¹	17 ¹
Camino Del Rio South & Mission City Pkwy	10556	EB	0	4	4
Camino Del Rio South & Scheidler Wy	10194	EB	2	0	2
Camino Del Rio South & 3505	13009	EB	12 ¹	9 ¹	21 ¹
Camino Del Rio South & 3661	10210	EB	0	1	1
Camino Del Rio South & Point Loma Nazarene	13043	EB	0 ¹	2 ¹	2 ¹
Camino Del Rio South & 4141	13079	EB	1 ¹	1 ¹	2 ¹
Route 20 – 10 th Avenue and Broadway to Rancho Bernardo Transit Station					
Fashion Valley Transit Center	94048	NB	307	772	1,079
Route 20 – Rancho Bernardo Transit Station to 10 th Avenue and Broadway					
Fashion Valley Transit Center	94042	SB	839	355	1,194
Hotel Circle South & Bachman Pl	13510	WB	Removed with realignment		
Route 25 – Fashion Valley Transit Center to Kearny Mesa Transit Center					
Fashion Valley Transit Center	94046	NB	255	0	255
Fashion Valley Rd & Friars Rd	12400	NB	12	0	12
Friars Rd & Via De La Moda	13390	EB	21	0	21
Route 25 – Kearny Mesa Transit Center to Fashion Valley Transit Center					
Friars Rd & Avenida De Las Tiendas	13389	WB	8	19	27
Fashion Valley Rd & Friars Rd	11995	SB	0	70	70
Fashion Valley Transit Center	94046	SB	0	283	283

Table 5.6 Average Daily Boardings and Alightings by Route – Proposed Plan Conditions

Route and Location	Stop ID	Direction	Boardings	Alightings	Total
Route 41 – Fashion Valley Transit Center to Gilman Drive & Myers Drive (UCSD)					
Fashion Valley Transit Center	8	NB	782	0	782
Fashion Valley Rd & Friars Rd	12400	NB	13	0	13
Friars Rd & Via De La Moda	13390	EB	46	17	63
Route 41 – Gilman Drive & Myers Drive (UCSD) to Fashion Valley Transit Center					
Friars Rd & Avenida De Las Tiendas	13389	WB	11	55	66
Fashion Valley Rd & Friars Rd	11995	SB	0	33	33
Fashion Valley Transit Center	94038	SB	0	918	918
Route 88 – Old Town Transit Center to Fashion Valley Transit Center					
Taylor St & I-8 East (Ramp)	10064	EB	3	11	14
Hotel Circle South & I-8 West (Ramp)	10433	EB	4 ¹	13 ¹	17 ¹
Hotel Circle South & 2201	13030	EB	28 ¹	22 ¹	50 ¹
Hotel Circle South & 1605	12998	EB	5	15	20
Hotel Circle South & 1333	13032	EB	27 ¹	18 ¹	45 ¹
Hotel Circle South & Mission Valley Resort	12999	EB	<i>Removed with realignment</i>		
Hotel Circle South & 625	13033	EB	7 ¹	10 ¹	17 ¹
Hotel Circle South & Bachman Pl	13034	EB	5	21	26
Hotel Circle North & Camino De La Reina	99379	WB	0 ¹	4 ¹	4 ¹
Fashion Valley Rd & Hotel Circle North	11225	NB	1 ¹	7 ¹	8 ¹
Fashion Valley Transit Center	94044	WB	18	5	23
Route 88 – Fashion Valley Transit Center to Old Town Transit Center					
Fashion Valley Transit Center	94044	WB	18	5	23
Fashion Valley Rd & Hotel Circle North	11623	SB	0 ¹	3 ¹	3 ¹
Hotel Circle North & 950	13098	WB	3 ¹	4 ¹	7 ¹
Hotel Circle North & 1550	13067	WB	8 ¹	8 ¹	16 ¹
Hotel Circle North & 1650	13096	WB	8 ¹	15 ¹	23 ¹
Hotel Circle North & 1904	13066	WB	13 ¹	6 ¹	19 ¹
Hotel Circle North & 2270	13095	WB	2 ¹	3 ¹	5 ¹
Hotel Circle North & Hotel Circle Pl	10818	WB	12 ¹	9 ¹	32 ¹
Taylor St & I-8 East (Ramp)	10816	WB	27	2	29

Table 5.6 Average Daily Boardings and Alightings by Route – Proposed Plan Conditions

Route and Location	Stop ID	Direction	Boardings	Alightings	Total
Route 120 – 4th Avenue & Broadway to Kearny Mesa Transit Center					
Fashion Valley Rd & Hotel Circle North	11225	NB	160	120	280
Fashion Valley Transit Center	94037	NB	476	943	1,419
Route 120 – Kearny Mesa Transit Center to 4th Avenue & Broadway					
Fashion Valley Transit Center	94041	SB	1093	429	1,522
Hotel Circle South & Bachman Pl	13510	WB	196	176	372
Route 928 Fashion Valley Transit Center to Kearny Mesa Transit Center					
Fashion Valley Transit Center	94040	SB	374	0	374
Fashion Valley Rd & Friars Rd	12400	NB	29	0	29
Friars Rd & Via De La Moda	13390	EB	37	0	37
Frazee Rd & Friars Rd	12778	NB	247	35	282
Murray Canyon Rd & Mission Heights Rd	10483	NB	3 ¹	4 ¹	7 ¹
Metropolitan Dr & Murray Canyon Rd	10475	NB	81	188	269
Mission Valley Rd & Mission Center Rd	91130	NB	75	79	154
Mission Center Rd & Sevan Ct	60741	NB	1 ¹	2 ¹	3 ¹
Route 928 – Kearny Mesa Transit Center to Fashion Valley Transit Center					
Mission Center Rd & Sevan Ct	12069	SB	4 ¹	1 ¹	5 ¹
Mission Valley Rd & Mission Center Rd	91312	SB	84	64	148
Metropolitan Dr & Mission Valley Rd	10471	SB	165	63	228
Murray Canyon Rd & Metropolitan Dr	91133	SB	17 ¹	1 ¹	18 ¹
Murray Canyon Rd & Mission Heights Rd	11250	SB	31	1	32
Frazee Rd & Friars Rd	11652	SB	48	87	135
Friars Rd & Avenida De Las Tiendas	13389	WB	8	32	40
Fashion Valley Rd & Friars Rd	11995	SB	0	94	94
Fashion Valley Transit Center	94040	NB	0	470	470
Green Line Trolley – 12th & Imperial Avenue to Santee					
Riverwalk Station (future)	N/A	EB	865	558	1,423
Fashion Valley Transit Center	75047	EB	2,122	1,846	3,968
Hazard Center Station	75048	EB	1,531	1,187	2,718
Mission Valley Center Station ²	75050	EB	1,611	687	2,298

Table 5.6 Average Daily Boardings and Alightings by Route – Proposed Plan Conditions

Route and Location	Stop ID	Direction	Boardings	Alightings	Total
Rio Vista Station	75053	EB	1,570	1,262	2,832
Fenton Parkway Station	75055	EB	459	520	979
Qualcomm Stadium Station	75056	EB	1,033	791	1,824
Mission San Diego Station ²	75059	EB	4,182	3,927	8,109
Green Line Trolley – Santee to 12th & Imperial Avenue					
Mission San Diego Station ²	75058	WB	3,782	3,855	7,637
Qualcomm Stadium Station	75057	WB	735	964	1,699
Fenton Parkway Station	75054	WB	158	731	889
Rio Vista Station	75052	WB	1,190	1,437	2,627
Mission Valley Center Station	75051	WB	866	1,232	2,098
Hazard Center Station	75049	WB	950	1,524	2,474
Fashion Valley Transit Center	75046	WB	1,868	1,826	3,694
Riverwalk Station (future)	N/A	WB	555	756	1,311
Purple Line Trolley – San Ysidro Border Crossing to Carmel Valley Transit Center					
Mission San Diego Station ²	N/A	NB	1,703	7,570	9,273
Purple Line Trolley – Carmel Valley Transit Center to San Ysidro Border Crossing					
Mission San Diego Station ²	N/A	SB	6,926	2,004	8,930
Red Line Trolley – Pacific Beach (Mission Boulevard & Grand Avenue) to Santee					
Mission San Diego Station ²	N/A	EB	2,680	1,104	3,784
Red Line Trolley – Santee to Pacific Beach (Mission Boulevard & Grand Avenue)					
Mission San Diego Station ²	N/A	WB	823	767	1,590

Source: SANDAG (2018); FY2014 MTS Passenger Counting Program (2016); Chen Ryan Associates (2018)

Notes:

¹ Boarding/alighting data not projected at stop. Existing MTS counts utilized.

² The large growth in boardings/alightings at the Mission San Diego Station can be attributed to the anticipated development at the stadium site (specifically, the eastern portion), as well as the projected transfers resulting from implementation of the Purple and Red Line Trolleys.

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
10064	Taylor St & I-8 East (Ramp)	EB	N	88	3	11	14	✓		✓			✓					S	
10100	Camino De La Reina & Camino Del Arroyo	EB	N	6	99	66	165	✓		✓			✓				✓	✓	✓
10182	Camino Del Rio N & Mission City Pkwy	EB	N	18	8	9	17	✓		✓	✓		✓					S	✓
10194	Camino Del Rio S & Scheidler Wy	EB	N	18	2	0	2	✓			✓		✓					S	✓
10210	Camino Del Rio S & 3661	EB	N	18	0	1	1	✓					✓						✓
10433	Hotel Circle S & I-8 West (Ramp)	EB	N	88	4	13	17	✓		✓			✓					S	
10471	Metropolitan Dr & Mission Valley Rd	SB	F	928	165	63	228	✓		✓	✓		✓						✓
10475	Metropolitan Dr & Murray Canyon Rd	NB	F	928	81	188	269	✓		✓			✓					S	✓
10479	Camino De La Reina & Camino De La Siesta	EB	F	6	7	10	17	✓		✓	✓		✓					S	✓
10483	Murray Canyon Rd & Mission Heights Rd	NB	F	928	3	4	7	✓			✓		✓					S	✓
10485	Camino De La Reina & Mission Center Rd	EB	F	6	223	65	288	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
10500	Camino De La Reina & Michaels	EB	F	6	87	49	136	✓		✓	✓		✓				✓		✓
10505	Camino De La Reina & Camino Del Este	EB	N	6	341	97	438	✓			✓		✓					S	✓
10556	Camino Del Rio S & Mission City Pkwy	EB	F	18	0	4	4	✓		✓			✓					S	✓
10588	Rancho Mission Rd & Friars Rd	SB	F	14	100	11	111	✓		✓	✓		✓						✓
10816	Taylor St & I-8 East (Ramp)	WB	N	88	27	2	29	✓		✓	✓		✓					S	✓

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
10818	Hotel Circle N & Hotel Circle Pl	WB	N	88	12	9	21	✓		✓	✓		✓				✓	S	✓
10860	Camino De La Reina & Mission Center Rd	WB	N	6	43	199	242	✓		✓	✓		✓						✓
10879	Camino De La Reina & Camino Del Este	WB	N	6	55	92	147	✓		✓	✓	✓	✓				✓	S	✓
10968	Rancho Mission Rd & Friars Rd	NB	N	14	10	73	83	✓		✓			✓					S	✓
11225	Fashion Valley Rd & Hotel Circle N	NB	F	120, 88	161	127	288	✓		✓	✓		✓					S	✓
11242	Camino De La Reina & Camino De La Siesta	WB	F	6	7	5	12	✓					✓					S	✓
11248	Camino De La Reina & Camino Del Arroyo	WB	F	6	73	106	179	✓		✓			✓					S	
11250	Murray Canyon Rd & Mission Heights Rd	SB	F	928	31	1	32	✓		✓	✓		✓						✓
11276	Camino De La Reina & Qualcomm Wy	WB	F	6	130	188	318	✓		✓			✓					S	✓
11623	Fashion Valley Rd & Hotel Circle N	SB	N	88	0	3	3	✓		✓	✓		✓						✓
11652	Frazee Rd & Friars Rd	SB	N	928	48	87	135	✓		✓	✓		✓					S	✓
11687	Texas St & Camino Del Rio South	SB	N	6	180	21	201	✓		✓	✓		✓					S	✓
11995	Fashion Valley Rd & Friars Rd	SB	F	25, 928, 41	0	197	197	✓		✓			✓					S	✓
12069	Mission Center & Sevan Ct	SB	F	928	4	1	5	✓		✓	✓		✓					S	✓
12400	Fashion Valley Rd & Friars Rd	NB	N	25, 928, 41	54	0	54	✓		✓	✓		✓					S	✓
12778	Frazee Rd & Friars Rd	NB	F	928	247	35	282	✓		✓	✓		✓					S	✓
12813	Texas St & Camino Del Rio S	WB	F	6, 18	15	216	231	✓			✓		✓					S	✓

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
12998	Hotel Circle S & 1605	EB	N	88	5	15	20	✓		✓	✓		✓					S	✓
12999	Hotel Circle S & Mission Valley Resort	EB	N	88	Removed with realignment														
13001	Camino De La Reina & Mission Valley West	WB	N	6	17	22	39	✓		✓	✓	✓	✓				✓		✓
13009	Camino Del Rio S & 3505	EB	N	18	12	9	21	✓					✓						✓
13030	Hotel Circle S & 2201	EB	N	88	28	22	50	✓		✓	✓		✓					S	✓
13032	Hotel Circle S & 1333	EB	N	88	27	18	45	✓		✓	✓		✓					S	✓
13033	Hotel Circle S & 625	EB	N	88	7	10	17	✓		✓			✓					S	✓
13034	Hotel Circle S & Bachman Pl	EB	F	88	5	21	26	✓		✓	✓		✓					✓	✓
13036	Camino De La Reina & Mission Valley West	EB	F	6	24	22	46	✓		✓	✓	✓	✓	✓	✓		✓	S	✓
13037	Camino De La Reina & Westfield Drwy	EB	F	6	185	51	236	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
13040	Camino Del Rio N & 2655	EB	F	18	3	9	12	✓		✓			✓						✓
13043	Camino Del Rio S & Point Loma Nazarene	EB	F	18	0	2	2	✓		✓	✓		✓						✓
13066	Hotel Circle N & 1904	WB	N	88	13	6	19	✓		✓	✓		✓					S	✓
13067	Hotel Circle N & 1550	WB	F	88	8	8	16	✓		✓	✓		✓					S	✓
13079	Camino Del Rio S & 4141	EB	F	18	1	1	2	✓		✓	✓		✓	✓					✓
13095	Hotel Circle N & 2270	WB	F	88	2	3	5	✓		✓	✓		✓					S	✓
13096	Hotel Circle N & 1650	WB	F	88	8	15	23	✓		✓	✓		✓					S	✓

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
13098	Hotel Circle N & 950	WB	N	88	3	4	7	✓		✓	✓		✓					S	✓
13102	Camino De La Reina & Park In The Valley Drwy	WB	N	6	30	161	191	✓		✓	✓	✓	✓	✓	✓			✓	✓
13389	Friars Rd & Avenida De Las Tiendas	WB	F	25, 928, 41	27	106	133	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
13390	Friars Rd & Via De La Moda	EB	F	25, 928, 41	104	17	121	✓		✓	✓	✓	✓	✓	✓			✓	✓
13392	Camino De La Reina & Avenida Del Rio	EB	F	6	43	26	69	✓		✓	✓		✓					S	✓
13393	Camino De La Reina & Avenida Del Rio	WB	N	6	21	40	61	✓		✓			✓					S	✓
13397	Ward Rd & Mission San Diego Trolley	NB	F	14	230	2	232	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
13398	Rancho Mission Rd & San Diego Mission Rd	NB	F	14	38	3	41	✓		✓	✓		✓					S	✓
13404	Rancho Mission Rd & San Diego Mission Rd	SB	F	14	2	27	29	✓		✓			✓					S	✓
13405	Ward Rd & Mission San Diego Trolley	SB	N	14	1	372	373	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
13510	Hotel Circle South & Bachman Pl	WB	N	120	196	176	372	✓					✓					S	
60741	Mission Center Rd & Sevan Ct	NB	F	928	1	2	3	✓					✓						
75046	Fashion Valley Transit Center	WB	-	Green Line	1868	1826	3694		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75047	Fashion Valley Transit Center	EB	-	Green Line	2122	1846	3968		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75048	Hazard Center Station	EB	-	Green Line	1531	1187	2718		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75049	Hazard Center Station	WB	-	Green Line	950	1524	2474		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75050	Mission Valley Center Station	EB	-	Green Line	1611	687	2298		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
75051	Mission Valley Center Station	WB	-	Green Line	866	1232	2098		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75052	Rio Vista Station	WB	-	Green Line	1190	1437	2627		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75053	Rio Vista Station	EB	-	Green Line	1570	1262	2832		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75054	Fenton Parkway Station	WB	-	Green Line	158	731	889		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75055	Fenton Parkway Station	EB	-	Green Line	459	520	979		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75056	Qualcomm Stadium Station	EB	-	Green Line	1033	791	1824		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75057	Qualcomm Stadium Station	WB	-	Green Line	735	964	1699		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75058	Mission San Diego Station	WB	-	Green Line	3782	3855	7637		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75059	Mission San Diego Station	EB	-	Green Line	4182	3927	8109		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
91130	Mission Valley Rd & Mission Center Rd	NB	N	928	75	79	154	✓		✓	✓		✓					S	✓
91133	Murray Canyon Rd & Metropolitan Dr	SB	F	928	17	1	18	✓		✓			✓					S	✓
91312	Mission Valley Rd & Mission Center Rd	SB	F	928	84	64	148	✓		✓	✓		✓						✓
94037	Fashion Valley Transit Center	NB	-	120	476	943	1419	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94038	Fashion Valley Transit Center	SB	-	41	0	918	918	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94040	Fashion Valley Transit Center	NB/ SB	-	928	374	470	844	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94041	Fashion Valley Transit Center	SB	-	120	1093	429	1522	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94042	Fashion Valley Transit Center	SB	-	20	839	355	1194	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
94044	Fashion Valley Transit Center	WB	-	88	36	10	46	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94045	Fashion Valley Transit Center	EB	-	6	485	474	959	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94046	Fashion Valley Transit Center	NB/ SB	-	25, 41	255	283	538	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
94048	Fashion Valley Transit Center	NB	-	20	307	772	1079	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
99260	Camino Del Rio N & 3456	WB	N	18	3	6	9	✓					✓						✓
99261	Mission City Pkwy & Camino Del Rio N	WB	F	18	0	38	38	✓		✓	✓		✓						✓
99262	Camino Del Rio S & 3160	WB	F	18	0	5	5	✓		✓	✓		✓						✓
99263	Camino Del Rio S & 2828	WB	F	18	28	36	64	✓					✓						✓
99379	Hotel Circle N & Camino De La Reina	WB	F	88	0	4	4	✓		✓	✓		✓						
99380	Camino De La Reina & Saks 5th Av	WB	F	6	6	39	45	✓		✓	✓		✓						✓
99449	Camino Del Rio North & Ward Rd	WB	F	18	141	104	245	✓					✓						✓
99864	Camino Del Rio N & Qualcomm Wy	WB	N	18	31	57	88	✓					✓						✓
N/A	Riverwalk Station (future)	EB	-	Green Line	865	558	1423												
N/A	Riverwalk Station (future)	WB	-	Green Line	555	756	1311												
N/A	Mission San Diego Station	NB	-	Purple Line	1703	7570	9273												
N/A	Mission San Diego Station	SB	-	Purple Line	6926	2004	8930												
N/A	Mission San Diego Station	EB	-	Red Line	2680	1104	3784												

Table 5.7 Transit Amenities Recommended Based on Forecast Transit Stop Boardings

Stop ID	Stop Name	Direction of Travel	Far Side / Near Side	Route	Boardings	Alightings	Total	Sign and Pole	Built-in Sign	Expanded Sidewalk	Bench	Shelter	Route Designations	Time Table	Route Map	System Map	Trash Receptacle	Lighting	ADA Compliant
N/A	Mission San Diego Station	WB	-	Red Line	823	767	1590												

Source: SANDAG (2018); FY2014 MTS Passenger Counting Program (2016); Chen Ryan Associates (2018)

Notes:

1. A **red** cell indicates missing amenities required by the Metropolitan Transit Development Board (MTDB) Designing for Transit (1993), based on average daily boardings.
2. A **grey** cell indicates amenities that are not required at a particular stop, based on average daily boardings.
3. A **blue** cell indicates required amenities at an unbuilt, future station.
4. "S" = Street Lighting Only

5.4 Street and Freeway System Assessment and Results

The local street and freeway system is evaluated under Proposed Plan conditions, which assumes implementation of the improvements identified in Chapter 3. The assessment includes projected daily roadway segment level of service, peak hour intersection level of service, arterial analysis, intersection queuing, freeway segment level of service and freeway ramp metering.

5.4.1 Roadway Segment Analysis

The roadway segment analysis was conducted for the Proposed Plan roadway classifications, displayed in Figure 3-11. **Figure 5-6** and **Table 5.8** display the projected ADT volumes and associated roadway LOS under Proposed Plan conditions.

As shown, 121 of the 164 Mobility Element roadway segments are projected to operate at an acceptable LOS D or better under Proposed Plan conditions, with the exception of the following 43 segments (26%):

- Sea World Drive, Mission Bay Parkway to Friars Road (LOS F)
- Friars Road, Avenida De Las Tiendas to Ulric Street/SR-163 SB Ramps (LOS F)
- Friars Road, San Diego Mission Road to I-15 SB Ramps (LOS F)
- Friars Road, I-15 SB Ramps to I-15 NB Ramps (LOS F)
- Friars Road, I-15 NB Ramps to Rancho Mission Road (LOS F)
- Friars Road, Santo Road to Riverdale Street (LOS F)
- Rio San Diego Drive, River Run Drive to Fenton Parkway (LOS E)
- Hotel Circle North, I-8 WB Off-Ramp to Via Las Cumbres (LOS F)
- Hotel Circle North, Via Las Cumbres to I-8 WB On-Ramp (LOS E)
- Camino De La Reina, Avenida Del Rio to Camino De La Siesta (LOS F)
- Camino Del Rio North, Mission City Parkway to 1800' west of Ward Road (LOS F)
- Camino Del Rio North, 1800' west of Ward Road to Ward Road (LOS F)
- Hotel Circle South, I-8 EB Off-Ramp to Via Las Cumbres (LOS E)
- Hotel Circle South, Via Las Cumbres to I-8 EB On-Ramp (LOS F)
- Camino Del Rio South, I-15 SB Off-Ramp to I-15 SB On-Ramp (LOS F)
- Morena Boulevard, Tecolote Road to Morena Boulevard (LOS F)
- Via Las Cumbres, Linda Vista Road to Friars Road (LOS F)
- Avenida Del Rio, Fashion Valley Parking Lot to Camino De La Reina (LOS F)
- Ulric Street, Fashion Hills Boulevard to 600' South of Fashion Hills Boulevard (LOS F)
- Ulric Street, 600' South of Fashion Hills Boulevard to Friars Road (LOS F)
- Camino De La Siesta, Camino De La Reina to Camino Del Rio North (LOS F)
- Metropolitan Drive, Mission Valley Road to Murray Canyon Road (LOS F)
- Mission Center Road, Murray Ridge Road to 1200' West of Murray Ridge Road (LOS F)
- Mission Center Road, 1200' West of Murray Ridge Road to 950' North of Mission Valley Road (LOS F)
- Auto Circle, Camino Del Rio North to I-8 EB Ramps (LOS F)
- Murray Ridge Road, Mission Center Road to I-805 NB Ramps (LOS F)
- Murray Ridge Road, I-805 NB Ramps to I-805 SB Ramps (LOS F)

- Franklin Ridge Road, Via Alta to Civita Boulevard (LOS F)
- Qualcomm Way, Camino Del Rio North to I-8 WB Ramps (LOS F)
- Qualcomm Way, I-8 WB Ramps to I-8 EB Ramps (LOS F)
- Texas Street, 1400' North of Madison Avenue to Madison Avenue (LOS F)
- Texas Street, Madison Avenue to Meade Avenue (LOS F)
- Texas Street, Meade Avenue to El Cajon Boulevard (LOS F)
- Fenton Parkway, New Street I to Camino Del Rio North (LOS E)
- Northside Drive, Fenton Marketplace Driveway to Lowes's Frontage Road (LOS E)
- Rancho Mission Road, Friars Road to San Diego Mission Road (LOS F)
- Rancho Mission Road, San Diego Mission Road to Camino Del Rio North (LOS F)
- Riverdale Street, Friars Road to Vandever Avenue (LOS F)
- Fairmount Avenue, Camino Del Rio N/I-8 WB Off-Ramp to I-8 EB Off-Ramp (LOS F)
- Fairmount Avenue, I-8 EB Off-Ramp to Camino Del Rio South (LOS F)
- Riverwalk Drive, Fashion Valley Road to Avenida Del Rio (LOS F)



Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Phyllis Place	Franklin Ridge Road to I-805 SB Ramps	5-Ln Major Arterial	45,000	32,300	0.718	C
Sea World Drive	Mission Bay Parkway to Friars Road	4-Ln Major Arterial	40,000	41,200	1.030	F
	Friars Road to I-5 SB Ramps	4-Ln Major Arterial	40,000	34,800	0.870	D
Tecolote Road	I-5 SB Ramps and I-5 NB Ramps	4-Ln Major Arterial	40,000	34,800	0.870	D
	I-5 NB Ramps to Morena Boulevard	4-Ln Major Arterial	40,000	31,700	0.793	D
Mission Valley Road	Frazee Road to Metropolitan Drive (clockwise)	2-Ln Collector w/o TWLTL (NFP)	10,000	6,500	0.650	C
	Metropolitan Drive to Mission Center Road (east of loop)	4-Ln Major Arterial	40,000	16,400	0.410	B
	Mission Center Road to Via Alta	4-Ln Major Arterial	40,000	5,000	0.125	A
Civita Boulevard	Via Alta to Qualcomm Way	4-Ln Major Arterial	40,000	4,200	0.105	A
	Qualcomm Way to Franklin Ridge Road	4-Ln Major Arterial	40,000	11,000	0.275	A
Westside Drive	Mission Center Road to Via Alta	2-Ln Collector w/o TWLTL	8,000	5,000	0.625	C
	Sea World Drive to Napa Street	4-Ln Major Arterial	40,000	14,600	0.365	A
	Napa Street to Colusa Street	4-Ln Major Arterial	40,000	18,600	0.465	B
	Colusa Street to Via Las Cumbres	4-Ln Major Arterial	40,000	23,900	0.598	C
	Via Las Cumbres to Fashion Valley Road	4-Ln Major Arterial	40,000	24,600	0.615	C
	Fashion Valley Road to Via De La Moda	5-Ln Major Arterial (3 EB, 2 WB)	45,000	27,200	0.604	C
	Via De La Moda to Fashion Valley Driveway	5-Ln Major Arterial (3 EB, 2 WB)	45,000	26,600	0.591	C
	Fashion Valley Driveway to Avenida De Las Tiendas	6-Ln Major Arterial	50,000	41,100	0.822	D
Friars Road	Avenida De Las Tiendas to Ulric Street/SR-163 SB Ramps	6-Ln Major Arterial	50,000	58,000	1.160	F
	Ulric Street/SR-163 SB Ramps to SR-163 NB Ramps	8-Ln Prime Arterial	80,000	55,600	0.695	C
	SR-163 NB Ramps to Frazee Road	8-Ln Prime Arterial	80,000	45,000	0.563	B
	Frazee Road to Mission Center Road	8-Ln Prime Arterial	80,000	41,500	0.519	B
	Mission Center Road to Qualcomm Way	6-Ln Expressway	80,000	35,300	0.441	B
	Qualcomm Way to River Run Drive	6-Ln Expressway	80,000	38,600	0.483	B

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Friars Road	River Run Drive to Fenton Parkway	6-Ln Major Arterial	50,000	39,900	0.798	C
	Fenton Parkway to Northside Drive	6-Ln Major Arterial	50,000	34,100	0.682	C
	Northside Drive to Mission Village Drive	6-Ln Expressway	80,000	51,300	0.641	C
	San Diego Mission Road to I-15 SB Ramps	6-Ln Expressway	80,000	84,900	1.061	F
	I-15 SB Ramps to I-15 NB Ramps	6-Ln Prime Arterial	60,000	74,100	1.235	F
	I-15 NB Ramps to Rancho Mission Road	7-Ln Prime Arterial ¹	70,000	70,200	1.003	F
	Rancho Mission Road to Santo Road	7-Ln Prime Arterial ¹	70,000	58,600	0.837	D
	Santo Road to Riverdale Street	6-Ln Prime Arterial	60,000	62,200	1.037	F
	Riverdale Street to Mission Gorge Road	6-Ln Prime Arterial	60,000	42,700	0.712	C
Mission Gorge Road	Friars Road to Zion Avenue	6-Ln Prime Arterial	60,000	33,300	0.555	B
Hazard Center Drive	Avenida Del Rio to Hazard Center W. Driveway	2-Ln Collector w/ TWLTL	15,000	12,200	0.813	D
	Hazard Center W. Driveway to Mission Center Road	4-Ln Collector w/ TWLTL	30,000	15,700	0.523	C
Rio San Diego Drive	Gill Village Way to Qualcomm Way	4-Ln Collector w/ TWLTL	30,000	15,500	0.517	C
	Qualcomm Way to River Run Drive	4-Ln Major Arterial	40,000	14,800	0.370	A
	River Run Drive to Fenton Parkway	2-Ln Collector w/ TWLTL	15,000	13,900	0.927	E
San Diego Mission Road	Friars Road EB Ramps to Rancho Mission Road	4-Ln Collector w/ TWLTL	30,000	12,400	0.413	B
	Rancho Mission Road to 950' West of Fairmount Avenue	4-Ln Collector w/ TWLTL	30,000	13,700	0.457	B
	950' West of Fairmount Avenue to Fairmount Avenue	4-Ln Collector w/ TWLTL	30,000	13,700	0.457	B
Taylor Street	Pacific Highway to Morena Boulevard	5-Ln Major Arterial (3 EB, 2 WB)	45,000	18,700	0.416	B
	Morena Boulevard to I-8 EB Ramps	2-Ln Collector w/ TWLTL	15,000	4,200	0.280	A
	I-8 EB Ramps to Hotel Circle South	2-Ln Collector w/o TWLTL (NFP)	10,000	5,200	0.520	B
Hotel Circle North	Hotel Circle South to Fashion Valley Road	2-Ln Collector (one-way)	17,500	8,400	0.480	B
	Fashion Valley Road to I-8 WB Off-Ramp	2-Ln Collector (one-way)	17,500	12,800	0.731	D
	I-8 WB Off-Ramp to Via Las Cumbres	2-Ln Collector (one-way)	17,500	23,900	1.366	F

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Hotel Circle North	Via Las Cumbres to I-8 WB On-Ramp	2-Ln Collector (one-way)	17,500	15,700	0.897	E
	I-8 WB On-Ramp to Hotel Circle South	2-Ln Collector (one-way)	17,500	3,400	0.194	A
Camino De La Reina	Hotel Circle North to Avenida Del Rio	2-Ln Collector w/ TWLTL	15,000	8,800	0.587	C
	Avenida Del Rio to Camino De La Siesta	2-Ln Collector w/o TWLTL (NFP)	10,000	17,000	1.700	F
	Camino De La Siesta to Mission Center Road	4-Ln Major Arterial	40,000	10,800	0.270	A
	Mission Center Road to Camino Del Este	4-Ln Major Arterial	40,000	19,700	0.493	B
	Camino Del Este to Qualcomm Way	4-Ln Major Arterial	40,000	13,300	0.333	A
	Camino De La Siesta to Mission Center Road	2-Ln Collector w/ TWLTL	15,000	12,900	0.860	D
Camino Del Rio North	Mission Center Road to I-8 WB Ramps	4-Ln Major Arterial	40,000	29,500	0.738	C
	I-8 WB Ramps to Camino Del Este	3-Ln Collector w/ TWLTL (1 EB, 2 WB)	22,500	10,900	0.484	C
	Camino Del Este to Qualcomm Way	4-Ln Major Arterial	40,000	21,100	0.528	C
	Qualcomm Way to Mission City Parkway	4-Ln Major Arterial	40,000	15,500	0.388	B
	Mission City Parkway to 1800' West of Ward Rd	2-Ln Collector w/o TWLTL	8,000	8,800	1.100	F
	1800' West of Ward Road to Ward Road	2-Ln Collector w/o TWLTL	8,000	9,700	1.213	F
	Ward Road to 1000' West of Fairmount Avenue	4-Ln Major Arterial	40,000	20,000	0.500	A
	1000' West of Fairmount Avenue to Fairmount Avenue	4-Ln Collector w/ TWLTL	30,000	20,000	0.667	C
Hotel Circle South	Taylor Street to I-8 EB Off-Ramp	2-Ln Collector (one-way)	17,500	3,200	0.183	A
	I-8 EB Off-Ramp to Via Las Cumbres	2-Ln Collector (one-way)	17,500	16,400	0.937	E
	Via Las Cumbres to I-8 EB On-Ramp	2-Ln Collector (one-way)	17,500	30,000	1.714	F
	I-8 EB On-Ramp to Bachman Place	2-Ln Collector (one-way)	17,500	13,500	0.771	D
	Bachman Place to Hotel Circle North/Camino De La Reina	2-Ln Collector (one-way)	17,500	14,300	0.817	D
Camino Del Rio South	Western Terminus to Mission Center Road	2-Ln Collector w/ TWLTL	15,000	7,300	0.487	C
	Mission Center Road to Texas Street	2-Ln Collector w/ TWLTL	15,000	8,700	0.580	C
	Texas Street to Mission City Parkway	2-Ln Collector w/ TWLTL	15,000	11,000	0.733	D

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Camino Del Rio South	Mission City Parkway to I-15 SB Off-Ramp	3-Ln Collector w/ TWLTL (2 EB, 1 WB)	22,500	14,100	0.627	C
	I-15 SB Off-Ramp to I-15 SB On-Ramp	2-Ln Collector w/ TWLTL	15,000	17,000	1.133	F
	I-15 SB On-Ramp to Fairmount Avenue	2-Ln Collector w/ TWLTL	15,000	7,700	0.513	C
Morena Boulevard	Tecolote Road to West Morena Boulevard	2-Ln Collector w/ TWLTL	15,000	16,500	1.100	F
	West Morena Boulevard to Linda Vista Road	4-Ln Major Arterial	40,000	15,800	0.395	B
	Linda Vista Road to I-8 WB Off-Ramp	4-Ln Major Arterial	40,000	28,400	0.710	C
	I-8 WB Off-Ramp to Taylor Street	3-Ln Collector w/ TWLTL (2 NB, 1 SB)	22,500	15,300	0.680	D
Napa Street	Morena Boulevard to Friars Road	4-Ln Major Arterial	40,000	15,400	0.385	B
Colusa Street	Linda Vista Road to Friars Road	2-Ln Collector w/o TWLTL	8,000	2,600	0.325	B
	Linda Vista Road to Friars Road	3-Ln Collector w/o TWLTL (2 NB, 1 SB)	11,000	12,500	1.136	F
Via Las Cumbres	Friars Road to Riverwalk Drive	4-Ln Major Arterial	40,000	14,100	0.353	A
	Riverwalk Drive to Levi-Cushman Street "B"	4-Ln Major Arterial	40,000	19,400	0.485	B
	Levi-Cushman Street "B" to Hotel Circle North	4-Ln Major Arterial	40,000	23,200	0.580	C
	Hotel Circle North to Hotel Circle South	4-Ln Major Arterial	40,000	30,300	0.758	D
	Friars Road to Riverwalk Drive	4-Ln Major Arterial	40,000	7,700	0.193	A
Fashion Valley Road	Riverwalk Drive to Levi-Cushman Street "B"	4-Ln Major Arterial	40,000	17,700	0.443	B
	Levi-Cushman Street "B" to Hotel Circle North	4-Ln Major Arterial	40,000	22,400	0.560	C
	Hotel Circle South to southern community boundary	4-Ln Collector w/ TWLTL	30,000	20,600	0.686	D
Avenida Del Rio	Fashion Valley Parking Lot to Camino De La Reina	4-Ln Collector w/o TWLTL	15,000	18,100	1.207	F
Ulric Street	Fashion Hills Boulevard to 600' South of Fashion Hills Blvd	2-Ln Collector w/ TWLTL	15,000	25,800	1.720	F
	600' South of Fashion Hills Boulevard to Friars Road	3-Ln Collector w/ TWLTL (2 NB, 1 SB)	22,500	27,000	1.200	F
Camino De La Siesta	Camino De La Reina to Camino Del Rio North	2-Ln Collector w/o TWLTL	8,000	9,400	1.175	F
Metropolitan Drive	Mission Valley Road to Murray Canyon Road (clockwise)	2-Ln Collector w/o TWLTL (NFP)	10,000	10,100	1.010	F
	Murray Canyon Road to Frazee Road (clockwise)	2-Ln Collector w/o TWLTL (NFP)	10,000	6,900	0.690	C

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Murray Canyon Road	Metropolitan Drive to Frazee Road	2-Ln Collector w/o TWLTL (NFP)	10,000	5,400	0.540	B
	Metropolitan Drive to Murray Canyon Road	2-Ln Collector w/o TWLTL (NFP)	10,000	6,100	0.610	C
Frazee Road	Murray Canyon Road to Friars Road	4-Ln Major Arterial	40,000	20,300	0.508	B
	Friars Road to Hazard Center Drive	4-Ln Major Arterial	40,000	19,000	0.475	B
Mission Center Road	Murray Ridge Road to 1200' West of Murray Ridge Road	2-Ln Collector w/o TWLTL	8,000	14,700	1.838	F
	1200' W of Murray Ridge Rd to 950' N of Mission Valley Rd	3-Ln Collector w/o TWLTL (2 NB, 1 SB)	11,000	14,700	1.336	F
	950' North of Mission Valley Road to Mission Valley Road	4-Ln Major Arterial	40,000	14,700	0.368	A
	Mission Valley Road to Westside Drive	4-Ln Major Arterial	40,000	20,200	0.505	B
	Westside Drive to Friars Road WB Ramps	5-Ln Major Arterial (3 NB, 2 SB)	45,000	32,900	0.731	C
	Friars Road WB Ramps to Friars Road EB Ramps	4-Ln Major Arterial	40,000	25,500	0.638	C
	Friars Road EB Ramps to Mission Center Court	4-Ln Major Arterial	40,000	22,300	0.558	C
	Mission Center Court to Hazard Center Drive	5-Ln Major Arterial (2 NB, 3 SB)	45,000	26,000	0.578	C
	Hazard Center Drive to Camino De La Reina	5-Ln Major Arterial (2 NB, 3 SB)	45,000	32,000	0.711	C
	Camino De La Reina to Camino Del Rio North	5-Ln Major Arterial (3 NB, 2 SB)	45,000	31,600	0.702	C
Auto Circle	Camino Del Rio North to I-8 EB Ramps	4-Ln Major Arterial	40,000	40,700	1.018	F
	I-8 EB Ramps to Camino Del Rio South	4-Ln Collector w/ TWLTL	30,000	17,800	0.593	C
Via Alta	Franklin Ridge Road to Civita Boulevard	2-Ln Collector w/ TWLTL	15,000	10,700	0.713	D
	Civita Boulevard to Westside Drive	2-Ln Collector w/ TWLTL	15,000	6,300	0.420	B
Murray Ridge Road	Mission Center Road to I-805 NB Ramps	2-Ln Collector w/ TWLTL	15,000	23,800	1.587	F
	I-805 NB Ramps to I-805 SB Ramps	2-Ln Collector w/ TWLTL	15,000	24,000	1.600	F
Russell Park Way	Civita Boulevard to Friars Road	2-Ln Collector w/ TWLTL	15,000	7,300	0.487	C
Camino Del Este	Rio San Diego Drive to Camino De La Reina	4-Ln Collector w/ TWLTL	30,000	14,000	0.467	B
	Camino De La Reina to Camino Del Rio North	4-Ln Collector w/ TWLTL	30,000	18,100	0.603	C
Franklin Ridge Road	Phyllis Place to Via Alta	4-Ln Major Arterial	40,000	31,500	0.788	D

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Franklin Ridge Road	Via Alta to Civita Boulevard	2-Ln Collector w/ TWLTL	15,000	17,100	1.140	F
	Civita Boulevard to Friars Road WB Ramps	4-Ln Major Arterial	40,000	19,700	0.493	B
Qualcomm Way	Friars Road WB Ramps to Friars Road EB Ramps	4-Ln Major Arterial	40,000	30,200	0.755	D
	Friars Road EB Ramps to Rio San Diego Drive	5-Ln Major Arterial (2 NB, 3 SB)	45,000	26,200	0.582	C
	Rio San Diego Drive to Camino Del Rio North	6-Ln Major Arterial	50,000	42,400	0.848	D
	Camino Del Rio North to I-8 WB Ramps	5-Ln Major Arterial (3 NB, 2 SB)	45,000	49,000	1.089	F
	I-8 WB Ramps to I-8 EB Ramps	6-Ln Major Arterial	50,000	53,100	1.062	F
	I-8 EB Ramps to Camino Del Rio South	4-Ln Major Arterial	40,000	32,000	0.800	D
	Camino Del Rio South to 1400' North of Madison Ave	4-Ln Major Arterial	40,000	33,000	0.825	D
Texas Street	1400' North of Madison Ave to Madison Avenue	3-Ln Collector w/ TWLTL (1 NB, 2 SB)	22,500	33,100	1.471	F
	Madison Avenue to Meade Ave	2-Ln Collector w/ TWLTL	15,000	20,300	1.353	F
	Meade Ave to El Cajon Boulevard	2-Ln Collector w/ TWLTL	15,000	15,500	1.033	F
River Run Drive	Friars Road to Rio San Diego Drive	2-Ln Collector w/o TWLTL	8,000	4,100	0.513	C
Fenton Parkway	Portofino Driveway to Friars Road	4-Ln Major Arterial	40,000	4,900	0.123	A
	Friars Road to Rio San Diego Drive	4-Ln Major Arterial	40,000	15,600	0.390	B
	Rio San Diego Drive to Del Rio Apartments Driveway	4-Ln Major Arterial	40,000	9,300	0.233	A
	Del Rio Apartments Driveway to New Street I	4-Ln Major Arterial	40,000	9,300	0.233	A
	New Street I to Camino Del Rio North	4-Ln Collector w/ TWLTL	30,000	13,800	0.460	B
Mission City Parkway	Camino Del Rio North to Camino Del Rio South	2-Ln Collector w/ TWLTL	15,000	10,800	0.720	D
Northside Drive	Portofino Driveway to Friars Road	4-Ln Collector w/ TWLTL	30,000	5,000	0.167	A
	Friars Road to Fenton Marketplace Driveway	4-Ln Collector w/ TWLTL	30,000	24,700	0.823	D
	Fenton Marketplace Driveway to Lowe's Frontage Road	Shopping Center Driveway ²	22,500	19,700	0.876	E
Mission Village Drive	Ronda Avenue to Friars Road WB Ramps	4-Ln Major Arterial	40,000	17,800	0.445	B
	Friars Road WB Ramps to Friars Road EB Ramps	4-Ln Major Arterial	40,000	30,500	0.763	D

Table 5.8 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS
Rancho Mission Road	Friars Road to San Diego Mission Road	2-Ln Collector w/ TWLTL	15,000	15,900	1.060	F
	San Diego Mission Road to Camino Del Rio North	2-Ln Collector w/ TWLTL	15,000	19,000	1.267	F
Santo Road	Northern Terminus to Friars Road	4-Ln Major Arterial	40,000	15,700	0.393	B
Riverdale Street	Zion Road to Friars Road	2-Ln Collector w/o TWLTL	8,000	2,200	0.275	A
	Friars Road to Vandever Avenue	2-Ln Collector w/o TWLTL	8,000	26,600	3.325	F
Mission Gorge Road	Friars Road to Camino Del Rio North	4-Ln Collector w/ TWLTL	30,000	22,500	0.750	D
Fairmount Avenue	Camino Del Rio North/I-8 WB Off-Ramp to I-8 EB Off-Ramp	4-Ln Major Arterial	40,000	52,900	1.323	F
	I-8 EB Off-Ramp to Camino Del Rio South	6-Ln Expressway	80,000	92,800	1.160	F
Riverwalk Drive	West of Via Las Cumbres	2-Ln Collector w/ TWLTL	15,000	2,900	0.193	A
	Via Las Cumbres to Fashion Valley Road	2-Ln Collector w/ TWLTL	15,000	3,000	0.200	A
	Fashion Valley Road to Avenida Del Rio	2-Ln Collector w/o TWLTL	8,000	14,100	1.763	F
Levi-Cushman Street "B"	Via Las Cumbres to Fashion Valley Road	4-Ln Collector w/ TWLTL	30,000	13,300	0.443	B
Goshen St	Linda Vista Rd to Gaines St	2-Ln Collector w/o TWLTL	8,000	4,300	0.538	C
	Gaines St to Friars Rd	2-Ln Collector w/o TWLTL	8,000	3,300	0.413	B
	Friars Rd to South End	2-Ln Collector w/o TWLTL	8,000	2,400	0.300	A
"New Street I"	Mission City Parkway to Eastern End	2-Ln Collector w/ TWLTL	15,000	11,800	0.787	D
Gill Village Way	Friars Rd to Rio San Diego Dr	2-Ln Collector w/ TWLTL	15,000	5,700	0.380	B
Rio Bonito Way	Friars Rd to Rio San Diego Dr	2-Ln Collector w/ TWLTL	15,000	4,000	0.266	A

Source: SANDAG (2018); Chen Ryan Associates (2018)

Notes:

RM = Raised Median

SM = Striped Median

TWLTL = Two-Way Left-Turn Lane

NFP = No Fronting Property

¹ Capacity for a 7-Ln Prime Arterial is calculated assuming that each additional lane above a 6-Ln Arterial adds 5,000 ADT for LOS A, 7,500 ADT for LOS B and 10,000 ADT for LOS C, D, and E

² Shopping Center Driveway was analyzed as a 3-Ln Collector w/ TWLTL

5.4.2 Peak Hour Arterial Analysis

AM and PM peak hour segment level of service analyzes forecasted travel speeds base on anticipated conditions. **Figure 5-7a** and **5-7b** display AM and PM peak hour arterial level of service results, respectively. The results are also presented in **Table 5.9**. The analysis output is provided in **Appendix J**. As shown, the following segments are anticipated to operate at a substandard level of service (LOS E or F) during either the AM or PM peak hour:

- Friars Road, Napa Street to Colusa Street – westbound AM (LOS E); westbound PM (LOS F)
- Friars Road, Colusa St to Via Las Cumbres – eastbound AM (LOS E); eastbound PM (LOS F)
- Friars Road, Fashion Valley Road to Via De La Moda – eastbound AM (LOS F); westbound AM (LOS F); westbound PM (LOS E)
- Friars Road, Avenida De Las Tiendas to Ulric Street/SR-163 SB Ramps – eastbound AM (LOS F); eastbound PM (LOS F)
- Friars Road, Ulric Street/SR-163 SB Ramps to SR-163 NB Ramps – westbound AM (LOS F); westbound PM (LOS F)
- Friars Road, SR-163 NB Ramps to Frazee Road – eastbound AM (LOS F); westbound AM (LOS F); eastbound PM (LOS F); westbound PM (LOS E)
- Friars Road, River Run Drive to Fenton Parkway – eastbound AM (LOS F); westbound AM (LOS F); eastbound PM (LOS F); westbound PM (LOS E)
- Friars Road, Fenton Parkway to Northside Drive – eastbound AM (LOS E); westbound AM (LOS F); eastbound PM (LOS F); westbound PM (LOS E)
- Friars Road, I-15 SB Ramps to I-15 NB Ramps – westbound AM (LOS F); eastbound PM (LOS E); westbound PM (LOS F)
- Friars Road, I-15 NB Ramps to Rancho Mission Road – eastbound AM (LOS E); westbound AM (LOS F); eastbound PM (LOS F); westbound PM (LOS F)
- Friars Road, Rancho Mission Road to Santo Road – eastbound PM (LOS E)
- Friars Road, Santo Road to Riverdale Street – westbound AM (LOS E); eastbound PM (LOS F)
- Friars Road, Riverdale Street to Mission Gorge Road – eastbound AM (LOS F); westbound AM (LOS F); westbound PM (LOS F)
- Mission Center Road, Mission Valley Road/Civita Boulevard to Westside Drive – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
- Mission Center Road, Westside Drive to Friars Road WB Ramps – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
- Mission Center Road, Friars Road WB Ramps to Friars Road EB Ramps – northbound AM (LOS E); northbound PM (LOS E); southbound PM (LOS F)
- Mission Center Road, Friars Road EB Ramps to Mission Center Court – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
- Mission Center Road, Mission Center Court to Hazard Center Drive – southbound AM (LOS E); northbound PM (LOS E); southbound PM (LOS F)
- Mission Center Road, Hazard Center Drive to Camino De La Reina – northbound AM (LOS E); southbound AM (LOS E); northbound PM (LOS E); southbound PM (LOS F)

-
- Mission Center Road, Camino De La Reina to Camino Del Rio North – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
 - Auto Circle, Camino Del Rio North to I-8 EB Ramps – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
 - Auto Circle, I-8 EB Ramps to Camino Del Rio South – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
 - Qualcomm Way, Friars Road WB Ramps to Friars Road EB Ramps – northbound AM (LOS F); southbound AM (LOS E); northbound PM (LOS F); southbound PM (LOS E)
 - Qualcomm Way, Friars Road EB Ramps to Rio San Diego Drive – northbound AM (LOS E); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
 - Qualcomm Way, Rio San Diego Drive to Camino De La Reina – northbound AM (LOS E); southbound AM (LOS E); northbound PM (LOS F); southbound PM (LOS E)
 - Qualcomm Way, Camino De La Reina to I-8 WB Ramps – northbound AM (LOS F); northbound PM (LOS E)
 - Qualcomm Way, I-8 WB Ramps to I-8 EB Ramps – northbound AM (LOS F); northbound PM (LOS E)
 - Qualcomm Way, I-8 EB Ramps to Camino Del Rio South – northbound AM (LOS E); southbound AM (LOS F); southbound PM (LOS F)
 - Texas Street, Camino Del Rio South to Madison Avenue – northbound AM (LOS F)
 - Fashion Valley Road, Friars Road to Riverwalk Drive – northbound PM (LOS F)
 - Fashion Valley Road, Riverwalk Drive to Levi Cushman Street “B” – northbound AM (LOS E); northbound PM (LOS E)
 - Fashion Valley Road, Levi Cushman Street “B” to Hotel Circle N – southbound PM (LOS E)

During the existing conditions analysis, field travel speeds were collected using the floating car method to verify actual peak hour traffic operations along segments found to have arterial operations at LOS D, E, or F. As documented in the Existing Conditions Report, the floating car analysis generally noted an improvement of one or more LOS grades over the calculated arterial LOS. This finding indicates the intersection operations may be more indicative of the actual roadway segment conditions, when compared to arterial analysis results.

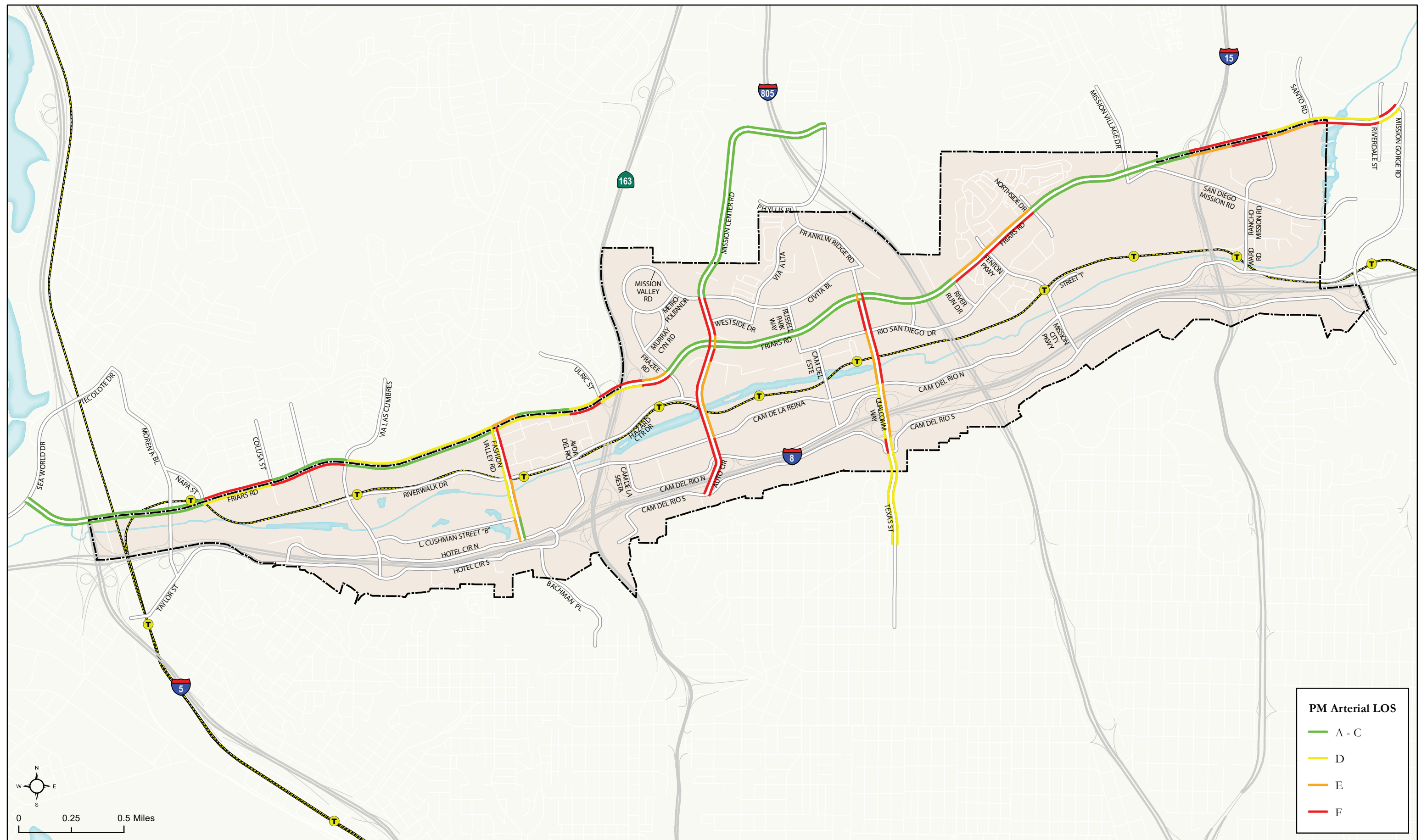


Table 5.9 Peak Hour Roadway Arterial Analysis – Proposed Plan Conditions

Roadway	Segment	AM Peak Hour				PM Peak Hour			
		EB/NB		WB/SB		EB/NB		WB/SB	
		Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)	LOS
Friars Road	Sea World Drive to Napa Street	40.3	B	32.3	C	28.0	C	28.8	C
	Napa Street to Colusa Street	27.6	C	19.2	E	21.1	D	14.9	F
	Colusa Street to Via Las Cumbres	16.8	E	22.9	D	11.5	F	27.5	C
	Via Las Cumbres to Fashion Valley Road	33.4	C	22.4	D	29.7	C	25.2	D
	Fashion Valley Road to Via De La Moda	15.4	F	12.6	F	22.3	D	17.0	E
	Via De La Moda to Fashion Valley Driveway	26.8	D	23.3	D	23.1	D	30.4	C
	Fashion Valley Driveway to Avenida De Las Tiendas	26.8	D	23.3	D	23.1	D	30.4	C
	Avenida De Las Tiendas to Ulric Street	13.5	F	21.0	D	7.0	F	22.1	D
	Ulric Street/SR-163 SB Ramps to SR-163 NB Ramps	26.5	D	13.5	F	26.7	D	12.8	F
	SR-163 NB Ramps to Frazee Road	14.2	F	13.5	F	9.1	F	17.0	E
	Frazee Road to Mission Center Road	41.0	B	33.5	C	33.1	C	35.2	B
	Mission Center Road to Qualcomm Way	41.0	B	33.5	C	33.1	C	35.2	B
	Qualcomm Way to River Run Drive	41.0	B	33.5	C	33.1	C	35.2	B
	River Run Drive to Fenton Parkway	13.8	F	11.9	F	11.7	F	18.6	E
	Fenton Parkway to Northside Drive	18.5	E	13.6	F	12.6	F	18.0	E
	Northside Drive to Mission Village Drive	30.6	C	32.7	C	29.5	C	37.0	B
	Mission Village Drive to I-15 SB Ramps	30.6	C	32.7	C	29.5	C	37.0	B
	I-15 SB Ramps to I-15 NB Ramps	34.1	C	15.9	F	20.5	E	9.2	F
	I-15 NB Ramps to Rancho Mission Road	17.7	E	4.7	F	8.1	F	10.1	F
	Rancho Mission Road to Santo Road	29.4	C	30.2	C	20.2	E	26.4	D
Mission Center Road	Santo Road to Riverdale Street	23.3	D	20.5	E	10.6	F	21.7	D
	Riverdale Street to Mission Gorge Road	11.6	F	9.7	F	23.4	D	8.0	F
	North of Mission Valley Road/Civita Boulevard	38.0	A	28.9	B	36.7	A	32.0	B
	Civita Boulevard to Westside Drive	10.9	F	8.7	F	8.2	F	6.7	F
	Westside Drive to Friars Road WB Ramps	7.0	F	9.4	F	6.7	F	7.0	F
	Friars Road WB Ramps to Friars Road EB Ramps	16.7	E	19.2	D	13.6	E	10.6	F
	Friars Road EB Ramps to Mission Center Court	12.2	F	7.6	F	5.0	F	6.8	F
	Mission Center Court to Hazard Center Drive	18.0	D	14.1	E	14.5	E	9.4	F
	Hazard Center Drive to Camino De La Reina	15.8	E	13.3	E	15.1	E	10.2	F
	Camino De La Reina to Camino Del Rio North	8.4	F	10.9	F	5.9	F	6.8	F
	Camino Del Rio North to I-8 EB Ramps	10.3	F	9.4	F	9.8	F	8.2	F
	I-8 EB Ramps to Camino Del Rio South	4.2	F	8.3	F	2.8	F	9.8	F

Table 5.9 Peak Hour Roadway Arterial Analysis – Proposed Plan Conditions

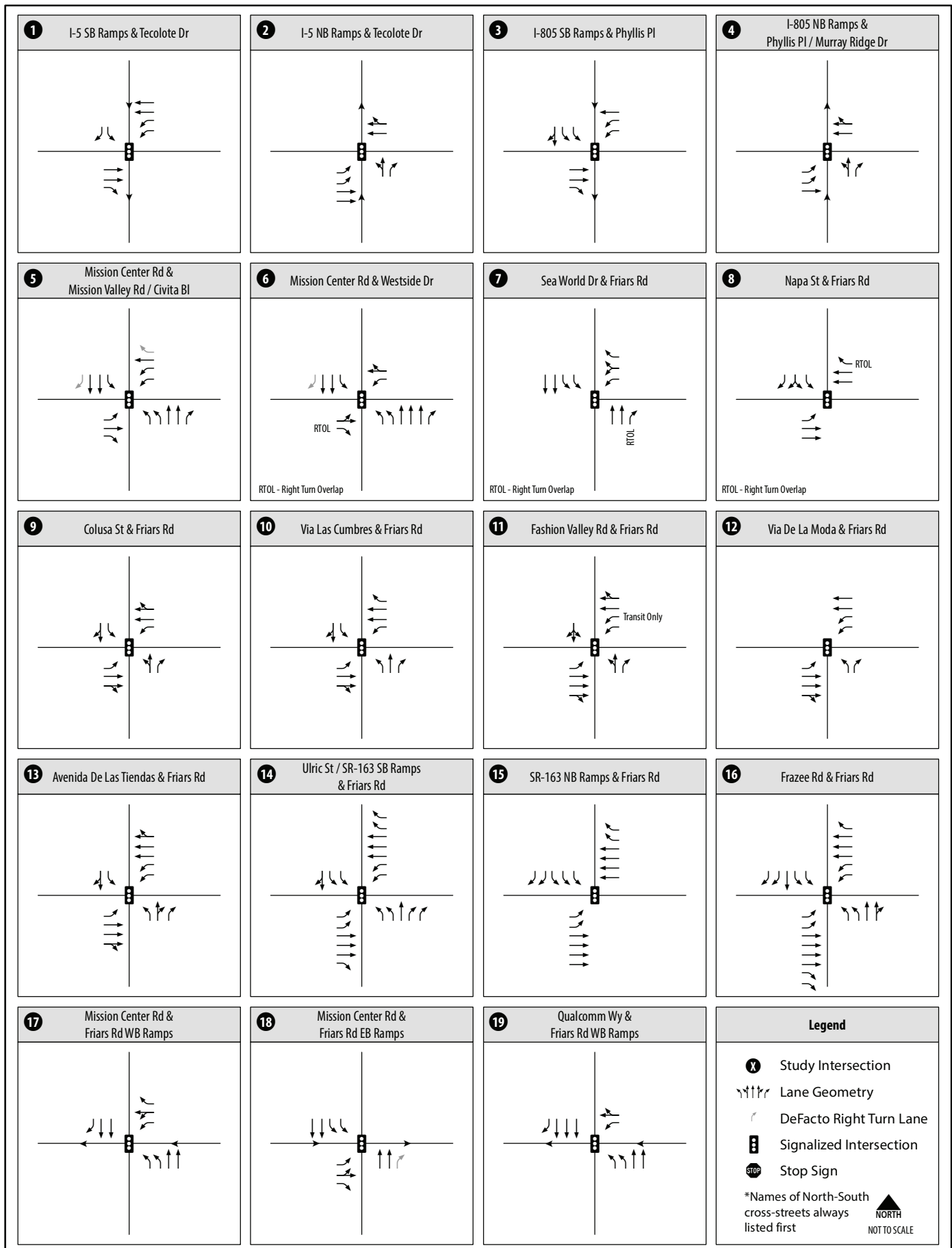
Roadway	Segment	AM Peak Hour				PM Peak Hour			
		EB/NB		WB/SB		EB/NB		WB/SB	
		Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)	LOS
Qualcomm Way	Friars Road WB Ramps to Friars Road EB Ramps	11.3	F	15.3	E	9.3	F	13.6	E
	Friars Road EB Ramps to Rio San Diego Drive	15.8	E	12.1	F	8.5	F	9.9	F
	Rio San Diego Drive to Camino De La Reina	14.2	E	16.7	E	10.7	F	14.6	E
	Camino De La Reina to I-8 WB Ramps	11.6	F	31.0	B	13.3	E	21.8	D
	I-8 WB Ramps to I-8 EB Ramps	11.6	F	31.0	B	13.3	E	21.8	D
	I-8 EB Ramps to Camino Del Rio South	13.8	E	11.1	F	19.0	D	7.0	F
Texas Street	Camino Del Rio South to Madison Ave	7.4	F	22.7	C	17.2	D	18.6	D
Fashion Valley Road	Friars Road to Riverwalk Drive	14.4	D	18.7	C	8.7	F	17.0	D
	Riverwalk Drive to Levi Cushman Street “B”	11.5	E	14.8	D	11.2	E	15.2	D
	Levi Cushman Street “B” to Hotel Circle North	21.4	C	19.2	C	19.3	C	12.3	E

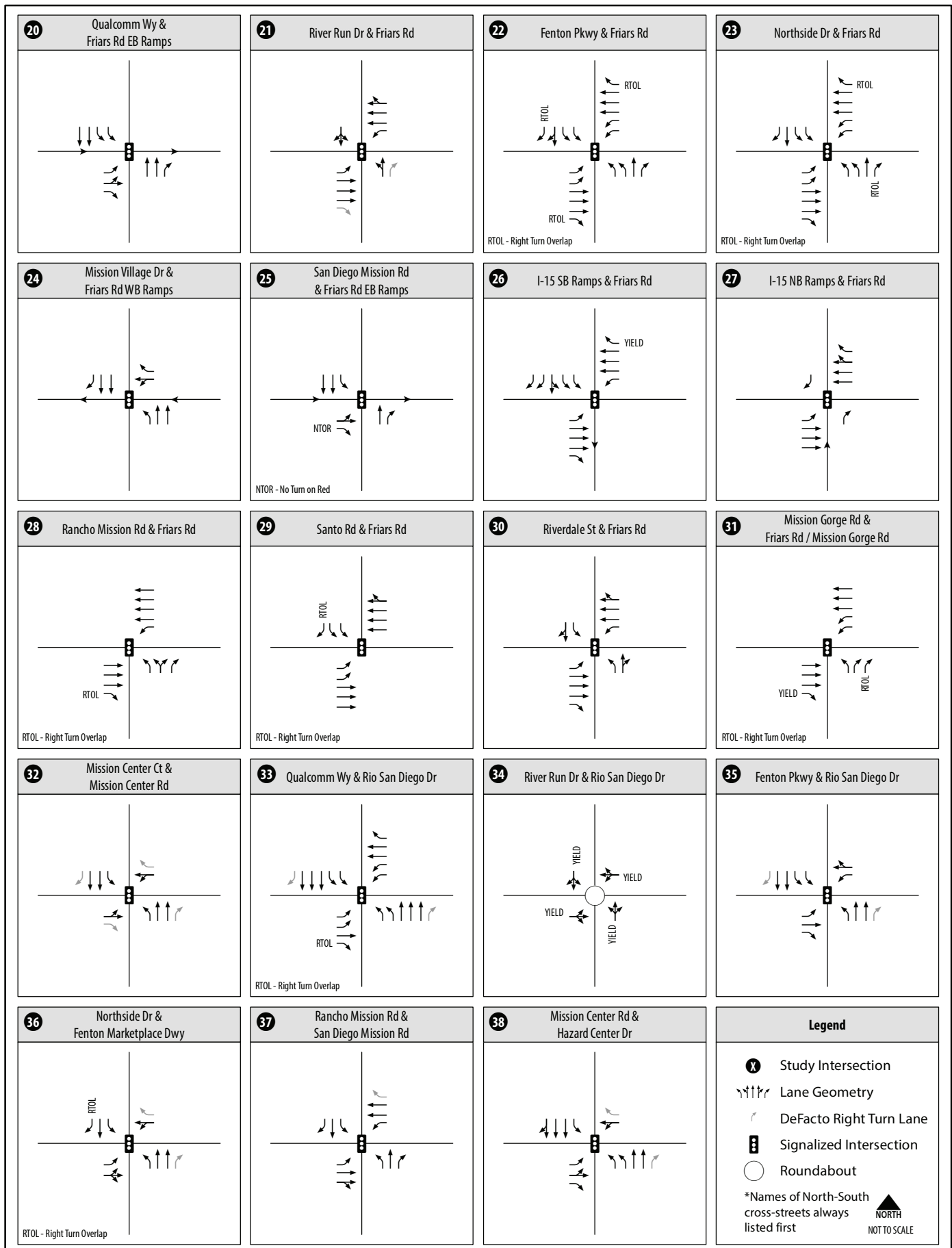
Note: **Bold** letter indicates substandard LOS E or F.

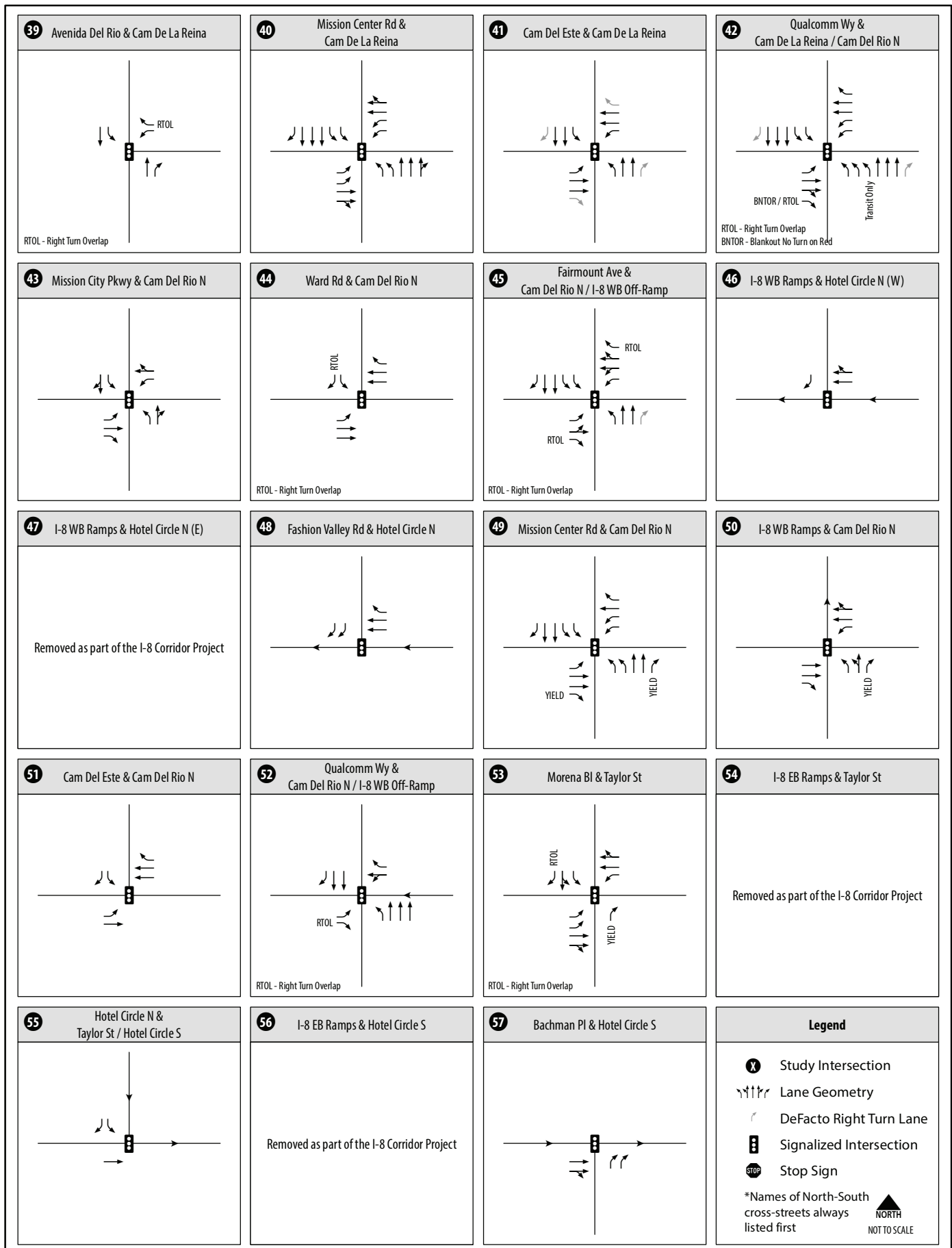
5.4.3 Intersection Geometry and LOS Analysis

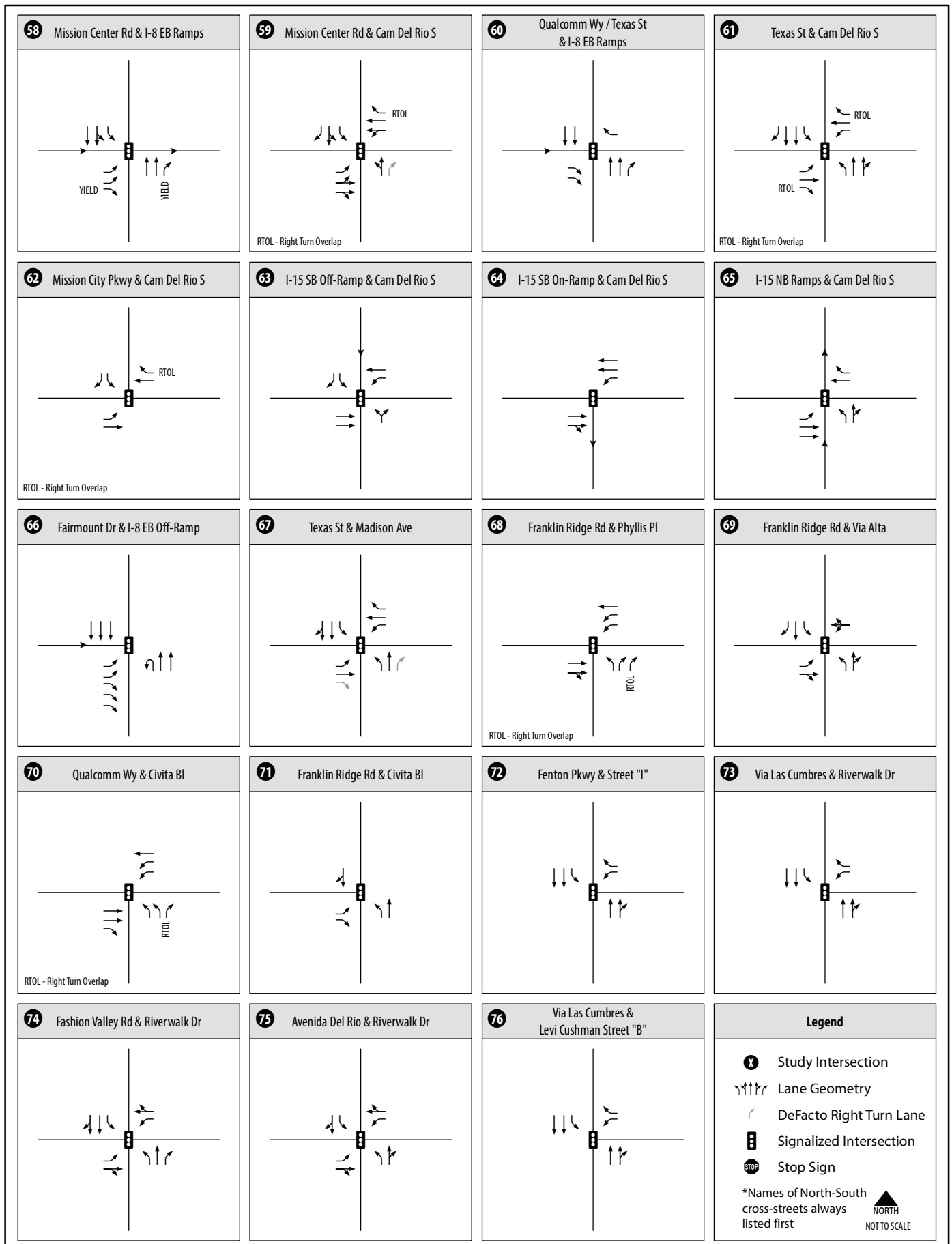
Proposed Plan intersection geometrics are presented in **Figure 5-8**, while forecast AM and PM peak hour turning movements are displayed in **Figure 5-9**, and midday turning movements in **Figure 5-10**.

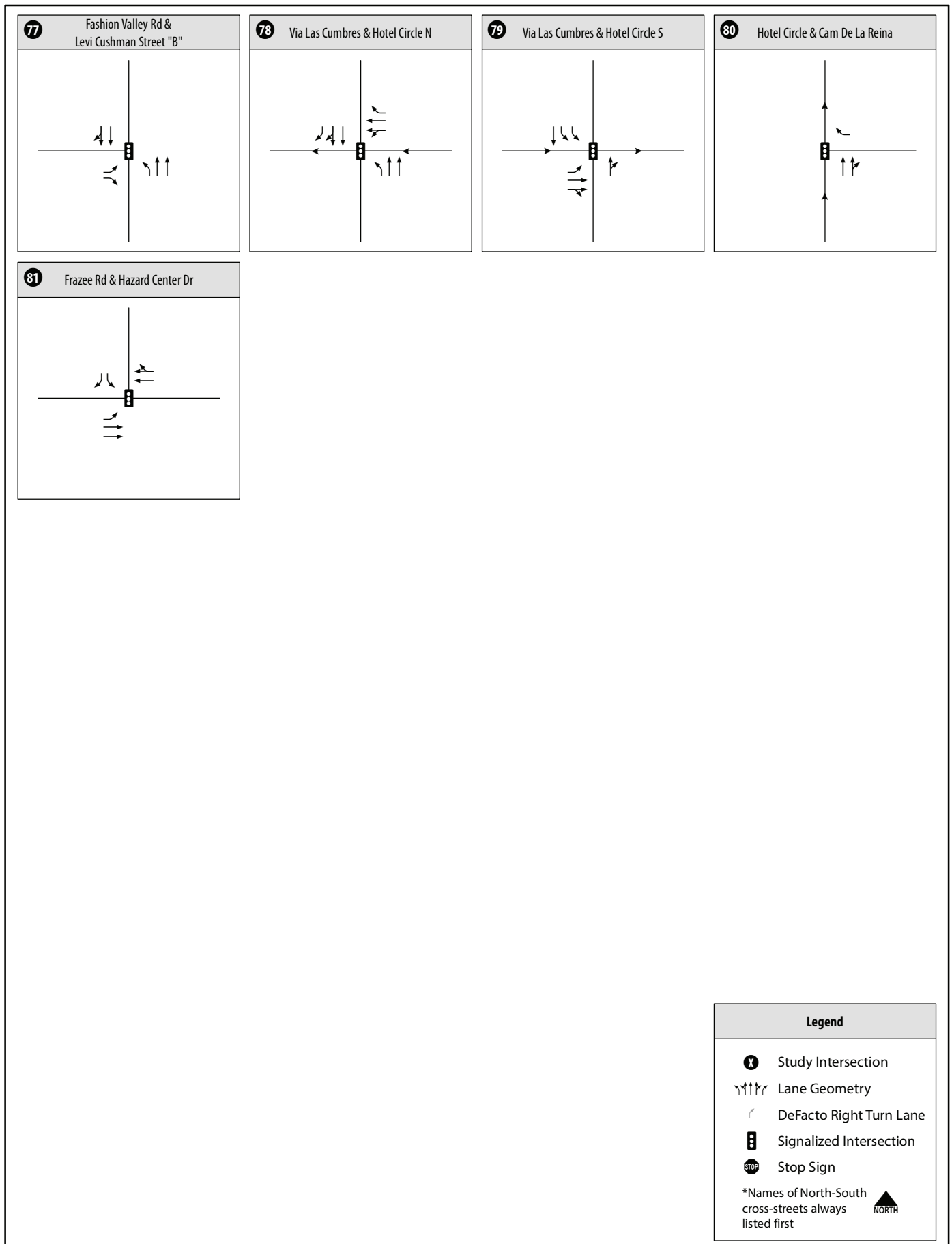
Figure 5-11 presents AM and PM peak hour intersection LOS analysis results, while midday results are displayed in **Figure 5-12**. AM and PM peak hour and midday LOS analysis results are also provided in **Table 5.10**. Signal timing was assumed to be optimized under Proposed Plan conditions. Intersection LOS calculation worksheets are provided in **Appendix K**.

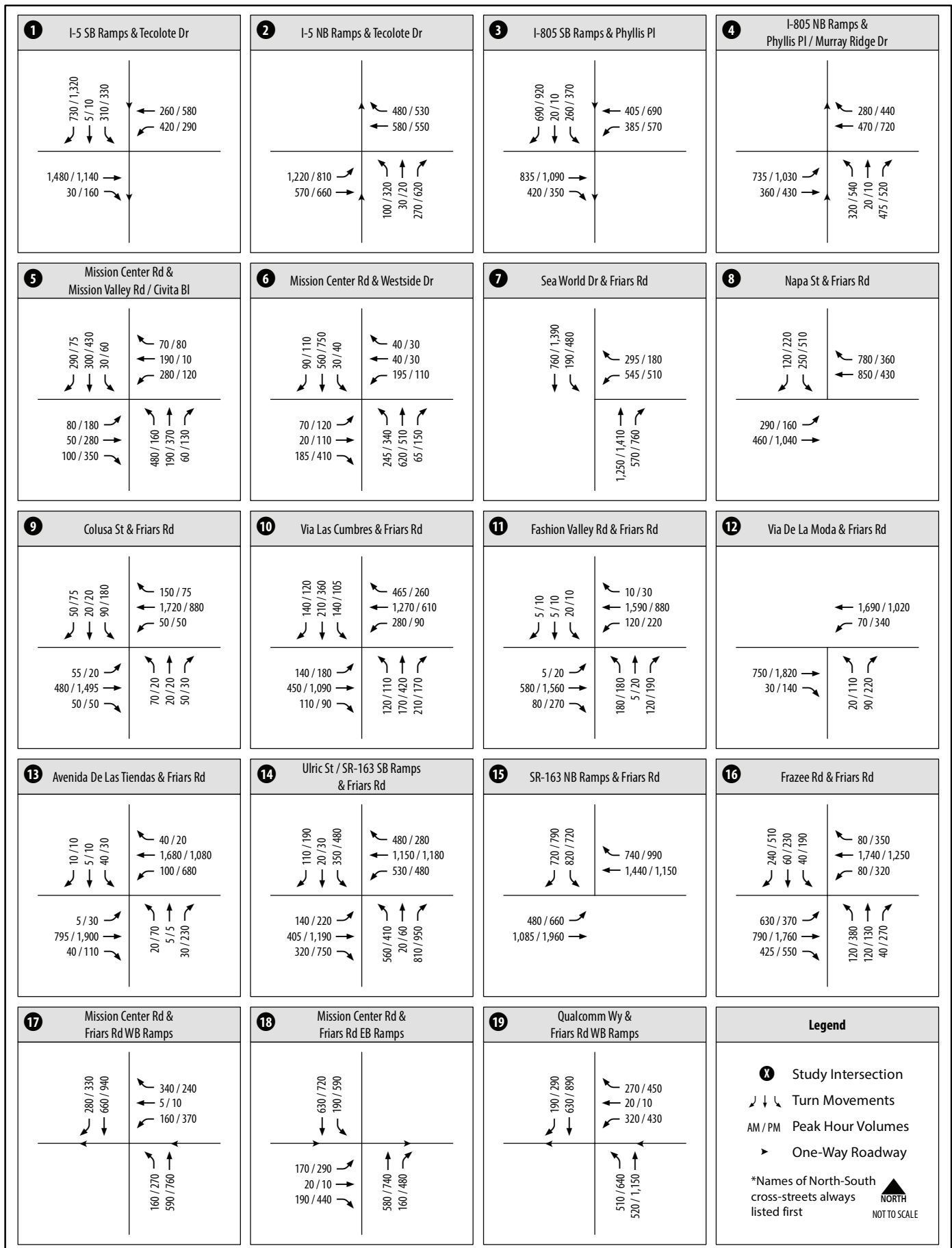


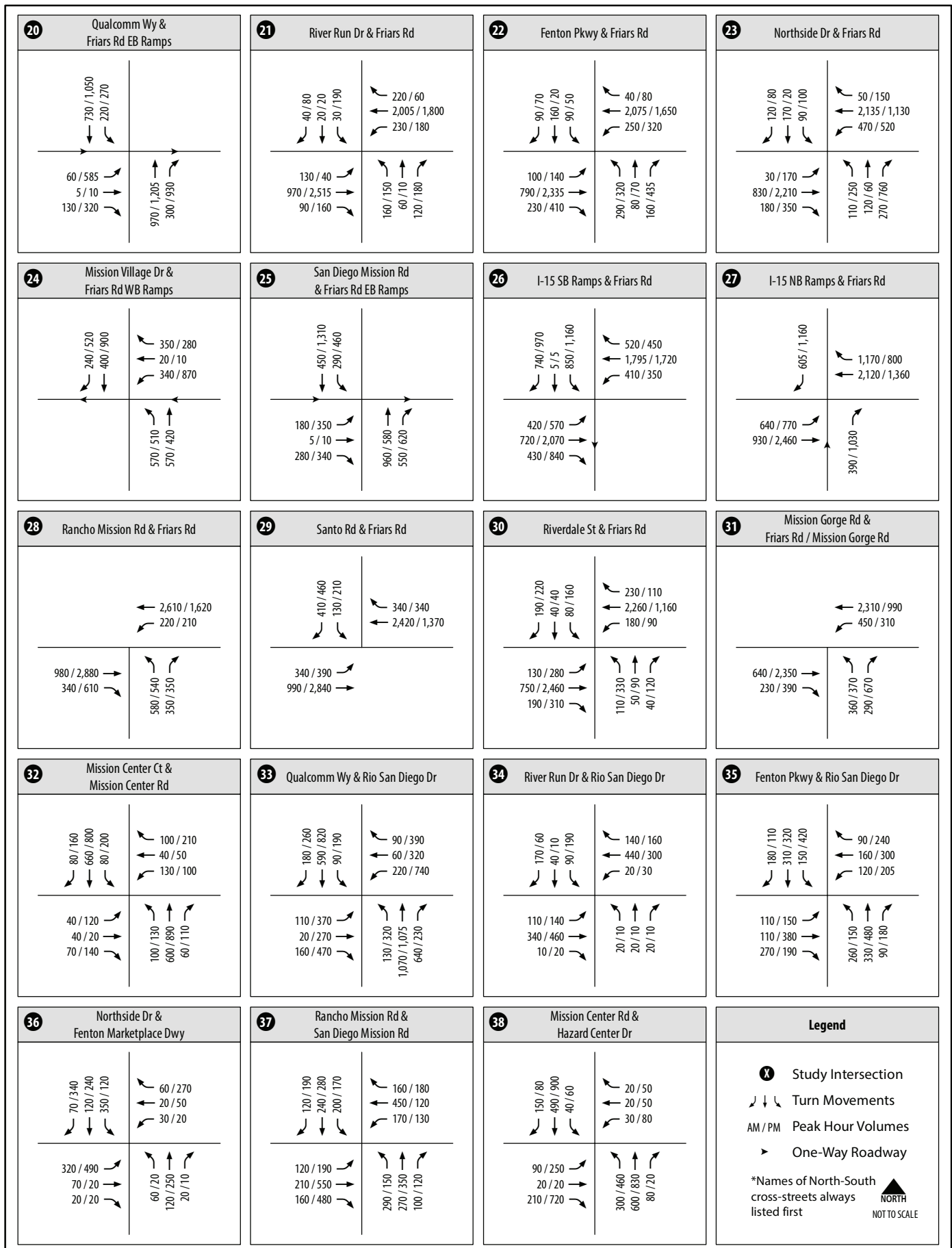


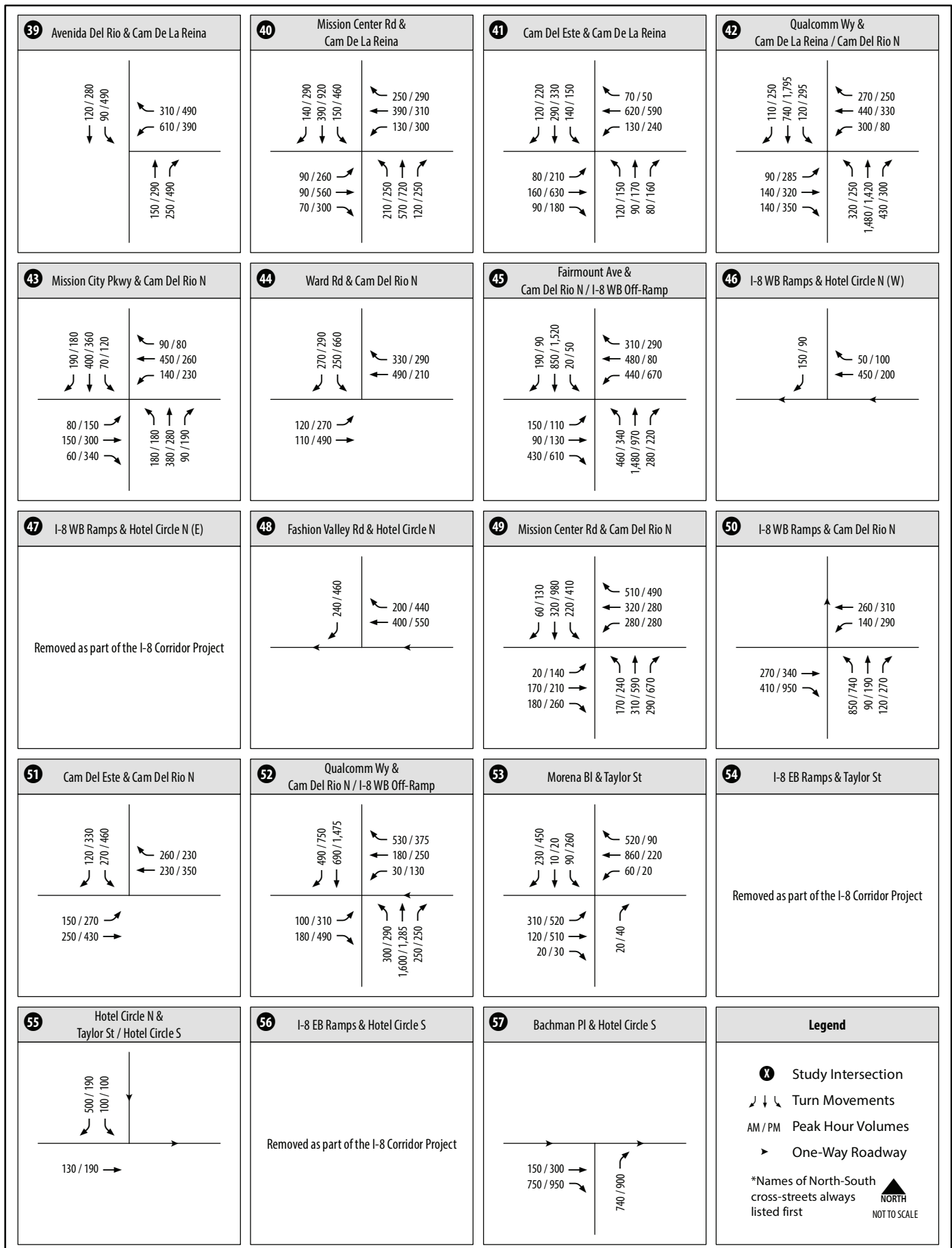


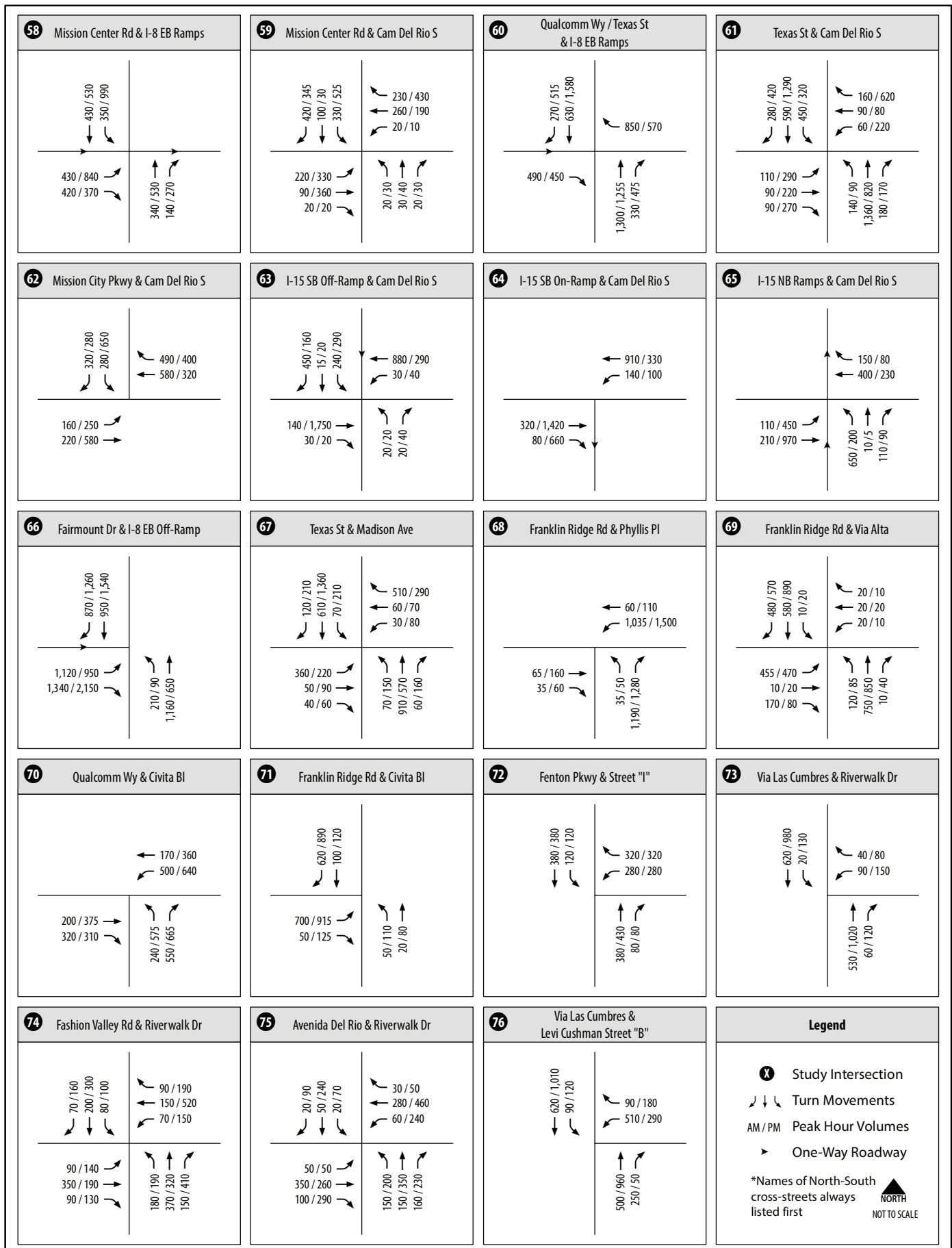


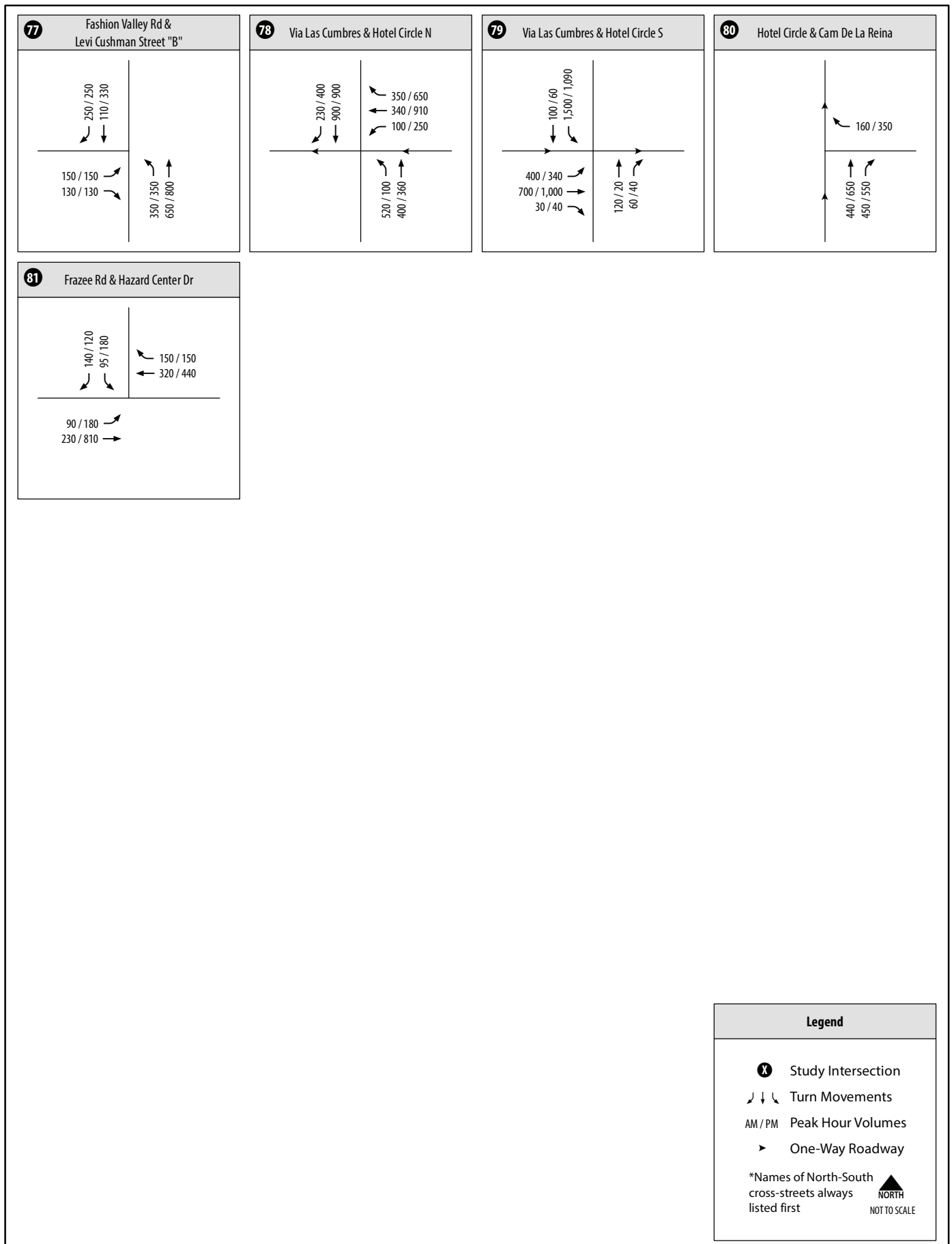


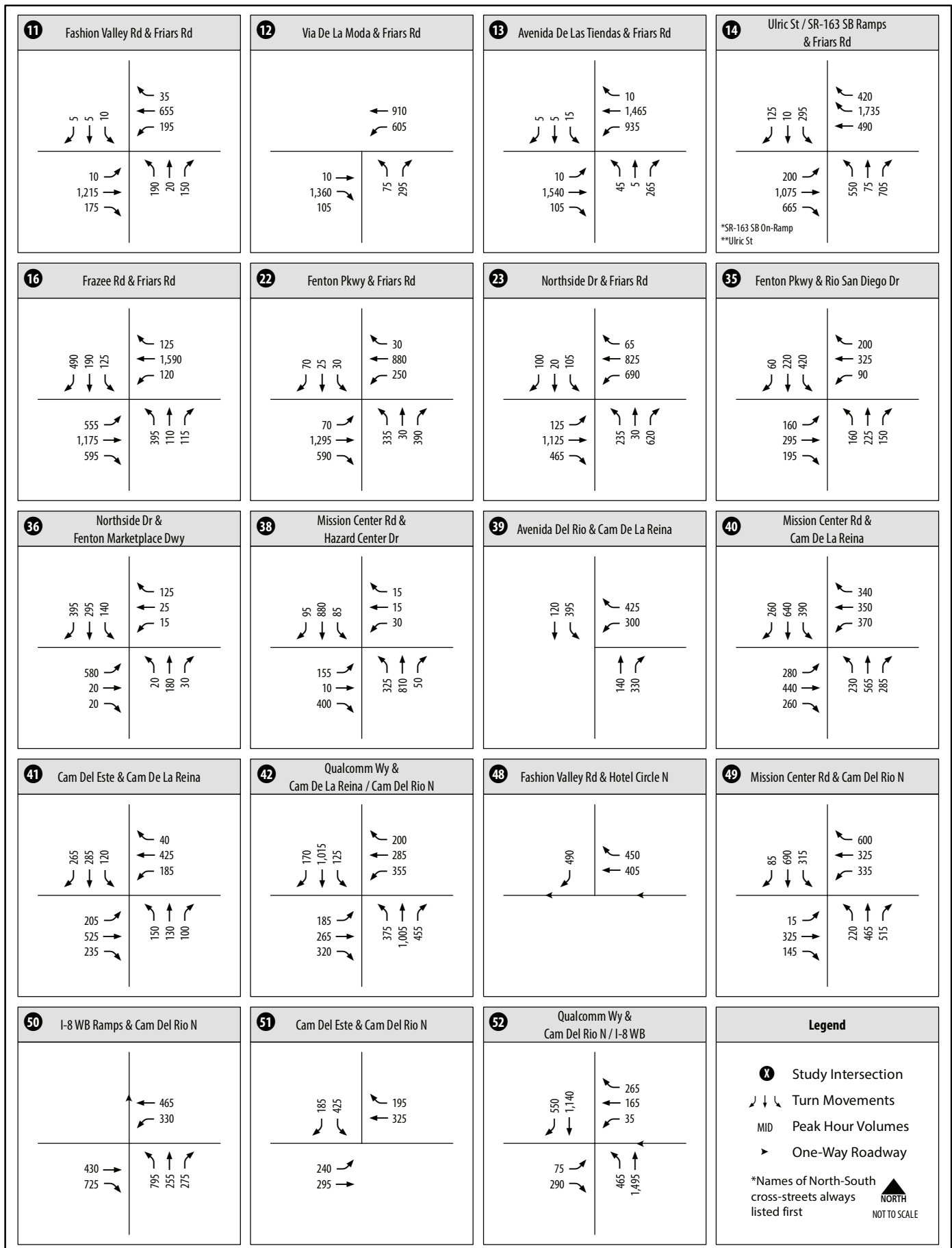




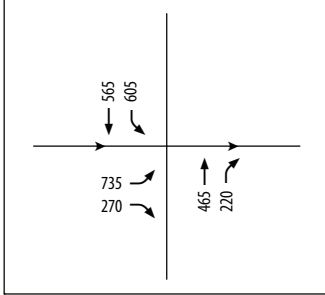




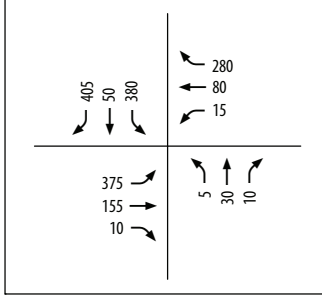




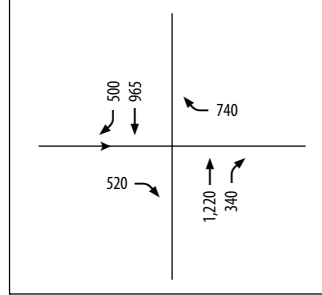
58 Mission Center Rd & I-8 EB Ramps



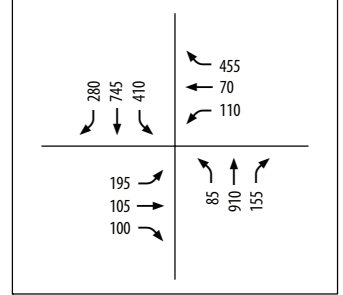
59 Mission Center Rd & Cam Del Rio S



60 Qualcomm Wy / Texas St & I-8 EB Ramps



61 Texas St & Cam Del Rio S

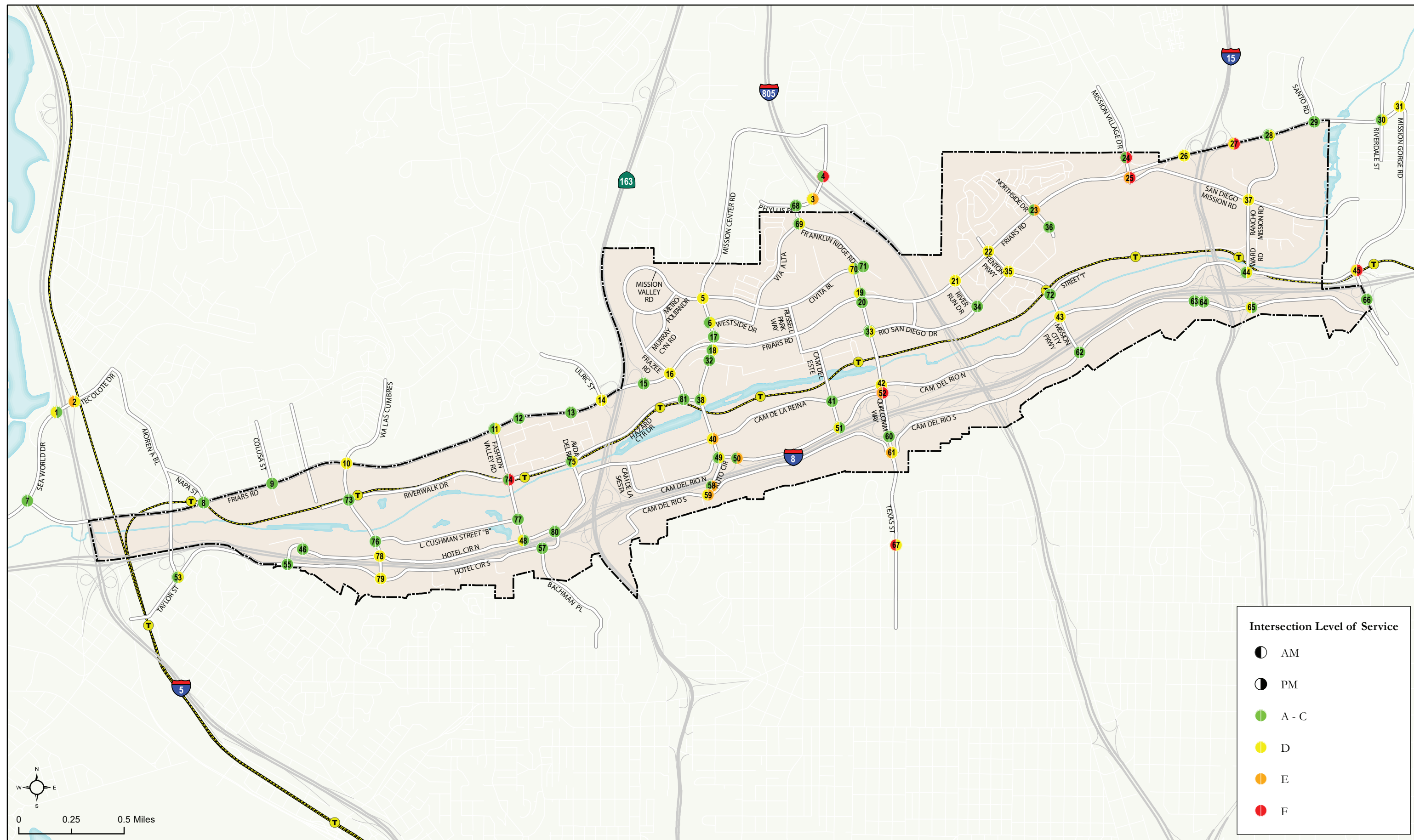


Legend

- Study Intersection
- Turn Movements
- Peak Hour Volumes
- One-Way Roadway

*Names of North-South cross-streets always listed first





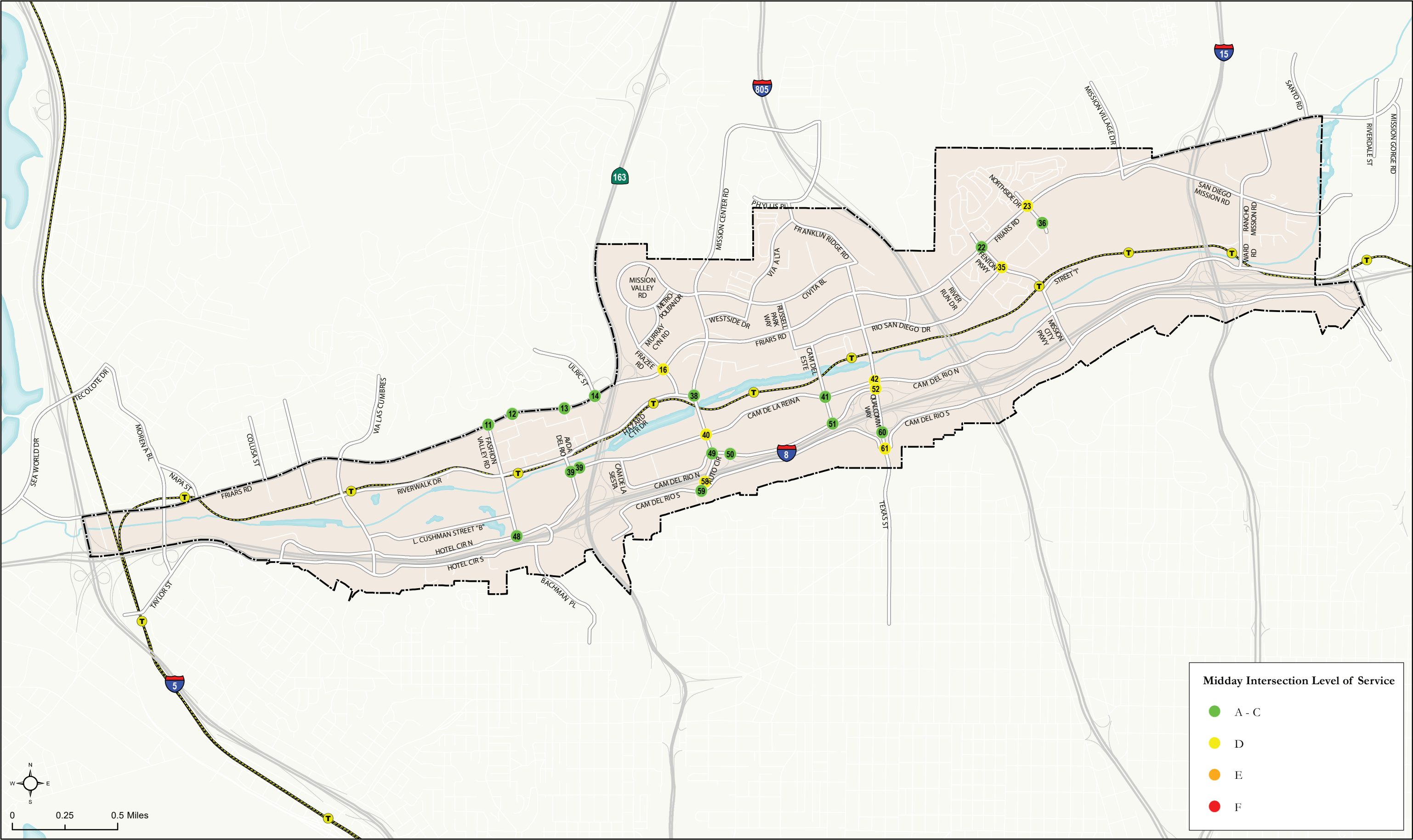


Figure 5-12
MIDDAY Intersection Level of Service - Proposed Plan Conditions

Table 5.10 Peak Hour Intersection LOS and Delay Results – Proposed Plan Conditions

Intersection	Control	AM Peak		PM Peak		Midday Peak	
		Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS
1: I-5 SB Ramps / Sea World Drive	Signal	36.1	D	33.9	C	-	-
2: I-5 NB Ramps / Sea World Drive/Tecolote Road	Signal	59.6	E	46.0	D	-	-
3: I-805 SB Ramps / Phyllis Place	Signal	48.0	D	69.5	E	-	-
4: I-805 NB Ramps / Phyllis Place	Signal	28.7	C	84.4	F	-	-
5: Mission Center Road / Mission Valley Road/Civita Boulevard	Signal	53.2	D	45.1	D	-	-
6: Mission Center Road / Westside Drive	Signal	26.9	C	54.3	D	-	-
7: Sea World Drive / Friars Road	Signal	17.9	B	23.7	C	-	-
8: Napa Street / Friars Road	Signal	26.1	C	20.1	C	-	-
9: Colusa Street / Friars Road	Signal	32.3	C	21.2	C	-	-
10: Via Las Cumbres / Friars Road	Signal	54.6	D	52.6	D	-	-
11: Fashion Valley Road / Friars Road	Signal	16.0	B	50.6	D	25.3	C
12: Via De La Moda / Friars Road	Signal	5.0	A	15.9	B	33.2	C
13: Avenida De Las Tiendas / Friars Road	Signal	19.6	B	19.7	B	31.2	C
14: Ulric Street/SR-163 SB Ramps / Friars Road	Signal	43.8	D	52.0	D	34.2	C
15: SR-163 NB Ramps / Friars Road	Signal	27.1	C	17.2	B	-	-
16: Frazee Road / Friars Road	Signal	46.3	D	40.5	D	39.5	D
17: Mission Center Road / Friars Road WB Ramps	Signal	20.3	C	33.1	C	-	-
18: Mission Center Road / Friars Road EB Ramps	Signal	22.7	C	53.8	D	-	-
19: Qualcomm Way / Friars Road WB Ramps	Signal	46.3	D	31.5	C	-	-
20: Qualcomm Way / Friars Road EB Ramps	Signal	10.1	B	34.2	C	-	-
21: River Run Drive / Friars Road	Signal	46.6	D	47.5	D	-	-
22: Fenton Parkway / Friars Road	Signal	44.4	D	54.3	D	34.1	C
23: Northside Drive / Friars Road	Signal	31.5	C	56.4	E	44.1	D

Table 5.10 Peak Hour Intersection LOS and Delay Results – Proposed Plan Conditions

Intersection	Control	AM Peak		PM Peak		Midday Peak	
		Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS
24: Mission Village Drive / Friars Road WB Ramps	Signal	29.5	C	135.6	F	-	-
25: Mission Village Drive / Friars Road EB Ramps	Signal	70.6	E	90.2	F	-	-
26: I-15 SB Ramps / Friars Road	Signal	48.2	D	43.4	D	-	-
27: I-15 NB Ramps / Friars Road	Signal	49.9	D	88.3	F	-	-
28: Rancho Mission Road / Friars Road	Signal	24.6	C	38.8	D	-	-
29: Santo Road / Friars Road	Signal	23.3	C	26.2	C	-	-
30: Riverdale Street / Friars Road	Signal	31.4	C	50.4	D	-	-
31: Mission Gorge Road / Friars Road	Signal	42.2	D	37.1	D	-	-
32: Mission Center Road / Mission Center Court	Signal	29.5	C	33.9	C	-	-
33: Qualcomm Way / Rio San Diego Drive	Signal	33.8	C	54.0	D	-	-
34: River Run Drive / Rio San Diego Drive	Roundabout	12.5	B	13.5	B	-	-
35: Fenton Parkway / Rio San Diego Drive	Signal	36.4	D	49.2	D	41.8	D
36: Northside Drive / Rio San Diego Drive	Signal	27.5	C	24.1	C	21.7	C
37: Rancho Mission Road / San Diego Mission Road	Signal	39.6	D	53.3	D	-	-
38: Mission Center Road / Hazard Center Drive	Signal	21.5	C	41.7	D	34.2	C
39: Avenida Del Rio / Camino De La Reina	Signal	14.8	B	29.4	C	19.5	B
40: Mission Center Road / Camino De La Reina	Signal	38.4	D	79.3	E	53.2	D
41: Camino Del Este / Camino De La Reina	Signal	22.2	C	29.5	C	27.5	C
42: Qualcomm Way / Camino De La Reina	Signal	50.6	D	54.2	D	46.6	D
43: Mission City Parkway / Camino Del Rio North	Signal	51.9	D	50.8	D	-	-
44: Ward Road / Camino Del Rio North	Signal	19.2	B	44.6	D	-	-
45: Fairmount Avenue / Camino Del Rio North/I-8 WB Off-Ramp	Signal	51.8	D	85.2	F	-	-
46: I-8 WB Ramps / Hotel Circle North (W)	Signal	1.3	A	3.7	A	-	-

Table 5.10 Peak Hour Intersection LOS and Delay Results – Proposed Plan Conditions

Intersection	Control	AM Peak		PM Peak		Midday Peak	
		Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS
47: I-8 WB Ramps/Handlery Driveway / Hotel Circle North (E)		<i>Intersection removed</i>					
48: Fashion Valley Road / Hotel Circle North	Signal	35.1	D	27.0	C	20.8	C
49: Mission Center Road / Camino Del Rio North	Signal	33.7	C	51.6	D	29.9	C
50: I-8 WB Ramps/Mission Valley Mall Driveway / Camino Del Rio North	Signal	20.0	B	55.9	E	33.6	C
51: Camino Del Este / Camino Del Rio North	Signal	38.7	D	34.1	C	29.6	C
52: Qualcomm Way / Camino Del Rio N/I-8 WB Ramps	Signal	58.5	E	93.9	F	45.2	D
53: Morena Boulevard / Taylor Street	Signal	34.5	C	53.0	D	-	-
54: I-8 EB Ramps / Taylor Street		<i>Intersection removed</i>					
55: Hotel Circle North / Taylor Street/Hotel Circle South	AWSC	2.2	A	2.0	A	-	-
56: I-8 EB Ramps / Hotel Circle South		<i>Intersection removed</i>					
57: Bachman Place / Hotel Circle South	Signal	6.7	A	8.7	A	-	-
58: Mission Center Road / I-8 EB Ramps	Signal	34.4	C	66.8	E	54.4	D
59: Mission Center Road / Camino Del Rio South	Signal	35.3	D	74.7	E	34.9	C
60: Qualcomm Way/Texas Street / I-8 EB Ramps	Signal	7.5	A	7.8	A	7.1	A
61: Texas Street / Camino Del Rio South	Signal	68.2	E	51.1	D	53.1	D
62: Mission City Parkway / Camino Del Rio South	Signal	16.8	B	29.6	C	-	-
63: I-15 SB Off-Ramp / Camino Del Rio South	Signal	4.9	A	8.1	A	-	-
64: I-15 SB On-Ramp / Camino Del Rio South	Signal	3.1	A	4.4	A	-	-
65: I-15 NB Ramps / Camino Del Rio South	Signal	51.2	D	38.8	D	-	-
66: Mission Gorge Road/Fairmount Avenue / I-8 EB Off-Ramp	Signal	27.2	C	28.1	C	-	-
67: Texas Street / Madison Avenue	Signal	95.2	F	50.2	D	-	-
68: Franklin Ridge Road & Phyllis Place	Signal	11.5	B	16.3	B	-	-
69: Franklin Ridge Road & Via Alta	Signal	32.5	C	52.0	D	-	-

Table 5.10 Peak Hour Intersection LOS and Delay Results – Proposed Plan Conditions

Intersection	Control	AM Peak		PM Peak		Midday Peak	
		Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS	Avg. Delay (sec.)	LOS
70: Qualcomm Way & Civita Boulevard	Signal	42.3	D	33.3	C	-	-
71: Franklin Ridge Road & Civita Boulevard	Signal	15.7	B	34.8	C	-	-
72: Fenton Parkway & Street "I"	Signal	11.0	B	11.2	B	-	-
73: Via Las Cumbres & Riverwalk Drive	Signal	9.2	A	16.6	B	-	-
74: Fashion Valley Road & Riverwalk Drive	Signal	34.3	C	95.0	F	-	-
75: Avenida Del Rio & Hazard Center Drive & Fashion Valley Mall	Signal	21.8	C	52.5	D	-	-
76: Via Las Cumbres & Levi Cushman Street "B"	Signal	16.3	B	5.9	A	-	-
77: Fashion Valley Road & Levi Cushman Street "B"	Signal	23.3	C	24.5	C	-	-
78: Via Las Cumbres & Hotel Circle North	Signal	44.0	D	46.9	D	-	-
79: Via Las Cumbres & Hotel Circle South	Signal	49.9	D	49.4	D	-	-
80: Hotel Circle South & Camino De La Reina	Signal	3.3	A	3.4	A	-	-
81: Hazard Center Drive & Frazee Road	Signal	8.5	A	15.2	B	-	-

A total of 155 intersection analysis results are provided, consisting of 66 intersections analyzed during the AM and PM peak hours, and 23 during the mid-day peak hour. The following 15 unique intersections (17 peak hour periods) were found to operate at a substandard LOS E or F during the AM or PM peak hour under Proposed Plan conditions:

- 2: I-5 NB Ramps / Sea World Drive/Tecolote Road – AM (LOS E)
- 3: I-805 SB Ramps / Phyllis Place – PM (LOS E)
- 4: I-805 NB Ramps / Phyllis Place – PM (LOS F)
- 23: Northside Drive / Friars Road – PM (LOS E)
- 24: Mission Village Drive / Friars Road WB Ramps – PM (LOS F)
- 25: Mission Village Drive / Friars Road EB Ramps – AM (LOS E); PM (LOS F)
- 27: I-15 NB Ramps / Friars Road – PM (LOS F)
- 40: Mission Center Road / Camino De La Reina – PM (LOS E)
- 45: Fairmount Avenue / Camino Del Rio North/I-8 WB Off-Ramp – PM (LOS F)
- 52: Qualcomm Way / Camino Del Rio North / I-8 WB Ramps – AM (LOS E); PM (LOS F)
- 58: Mission Center Road / I-8 EB Ramps – PM (LOS E)
- 59: Mission Center Road / Camino Del Rio South – PM (LOS E)
- 61: Texas Street / Camino Del Rio South – AM (LOS E)
- 67: Texas Street / Madison Avenue – AM (LOS F)
- 74: Fashion Valley Road / Riverwalk Drive – PM (LOS F)

5.4.4 Intersection Queuing Analysis

A Proposed Plan queuing analysis was performed for each study intersection to assess potential overflow issues at exclusive turn-lanes and closely spaced intersections (all ramp intersections and intersections within a proximity of 500' or less from another intersection). The limitations in turn-lane storage capacity could result in turning vehicles overflowing into adjacent lanes, while excessive queuing (queue length exceeding the distance to the upstream intersection) at closely spaced intersections could negatively affect upstream intersection operations.

Table 5.11 identifies the intersection control, pocket length, 95% queue length and excess queue (if applicable) for each movement at the study intersections. Intersection queuing reports are provided in **Appendix K**, following the intersection LOS calculation worksheets.

As shown, 102 movements at 40 intersections are forecast to operate with potential queuing issued during either the AM or PM peak hour under Proposed Plan conditions.

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
1	I-5 SB Ramps / Sea World Drive	Signalized	SBL	145	331 / 318	186 / 173
			EBT	925	588 / 456	0 / 0
			WBL	120	210 / 151	90 / 31
			WBT	425	38 / 127	0 / 0
2	I-5 NB Ramps / Sea World Drive/Tecolote Road	Signalized	NBT	65	186 / 346	121 / 281
			NBR	65	85 / 640	20 / 575
			EBL	220	596 / 464	376 / 244
			EBT	430	53 / 167	0 / 0
3	I-805 SB Ramps / Phyllis Place	Signalized	WBT	1160	400 / 551	0 / 0
			SBT	120	586 / 1154	466 / 1034
			SBR	120	0 / 0	0 / 0
			EBT	1300	382 / 693	0 / 0
			EBR	250	110 / 201	0 / 0
			WBL	250	224 / 456	0 / 206
4	I-805 NB Ramps / Phyllis Place	Signalized	WBT	550	281 / 765	0 / 215
			NBT	190	296 / 805	106 / 615
			NBR	190	166 / 302	0 / 112
			EBL	200	508 / 748	308 / 548
5	Mission Center Road / Mission Valley Road/Civita Boulevard	Signalized	EBT	550	233 / 291	0 / 0
			WBT	255	307 / 842	52 / 587
			NBL	220	337 / 113	117 / 0
			NBT	545	103 / 216	0 / 0
			NBR	155	21 / 118	0 / 0
			SBL	195	65 / 95	0 / 0
			SBT	485	185 / 201	0 / 0
			SBR	485	85 / 0	0 / 0
			EBL	155	129 / 218	0 / 63
			EBT	620	64 / 297	0 / 0
			EBR	115	30 / 92	0 / 0
			WBL	270	178 / 78	0 / 0
6	Mission Center Road / Westside Drive	Signalized	WBT	1275	184 / 23	0 / 0
			WBR	1275	6 / 4	0 / 0
			NBL	100	141 / 239	41 / 139
			NBT	320	174 / 172	0 / 0

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
6	Mission Center Road / Westside Drive	Signalized	NBR	200	3 / 55	0 / 0
			SBL	130	59 / 77	0 / 0
			SBT	555	279 / 503	0 / 0
			SBR	555	5 / 64	0 / 0
			EBT	70	125 / 264	55 / 194
			EBR	70	49 / 119	0 / 49
			WBL	120	223 / 138	103 / 18
			WBT	950	78 / 61	0 / 0
11	Fashion Valley Road / Friars Road	Signalized	NBT	175	166 / 189	0 / 14
			NBR	175	74 / 252	0 / 77
			SBT	50	30 / 45	0 / 0
			EBL	150	14 / 50	0 / 0
			EBT	3755	164 / 684	0 / 0
			WBL	180	88 / 426	0 / 246
			WBT	560	828 / 186	268 / 0
			EBL	115	0 / 0	0 / 0
12	Via De La Moda / Friars Road	Signalized	NBL	150	24 / 154	0 / 4
			NBR	150	15 / 74	0 / 0
			EBT	560	180 / 412	0 / 0
			WBL	290	33 / 229	0 / 0
			WBT	1230	674 / 53	0 / 0
			EBL	145	13 / 54	0 / 0
			EBT	1230	193 / 135	0 / 0
			WBL	405	46 / 425	0 / 20
13	Avenida De Las Tiendas / Friars Road	Signalized	WBT	715	368 / 200	0 / 0
			NBL	215	24 / 113	0 / 0
			NBTR	215	18 / 65	0 / 0
			EBL	220	112 / 168	0 / 0
			EBT	700	171 / 479	0 / 0
			EBR	330	27 / 196	0 / 0
			WBL	440	331 / 381	0 / 0
			WBT	1015	417 / 410	0 / 0
14	Ulric Street/SR-163 SB Ramps / Friars Road	Signalized	WBR	200	25 / 21	0 / 0
			NBL	400	342 / 203	0 / 0

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
14	Ulric Street/SR-163 SB Ramps / Friars Road	Signalized	NBT	400	17 / 77	0 / 0
			NBR	185	307 / 533	122 / 348
			SBL	440	221 / 247	0 / 0
			SBR	200	78 / 95	0 / 0
15	SR-163 NB Ramps / Friars Road	Signalized	EBL	485	184 / 292	0 / 0
			WBR	175	39 / 250	0 / 75
			SBL	715	191 / 151	0 / 0
16	Frazee Road / Friars Road	Signalized	EBL	410	541 / 264	131 / 0
			EBT	560	181 / 551	0 / 0
			EBR	260	36 / 107	0 / 0
			WBL	295	71 / 235	0 / 0
			WBR	185	0 / 154	0 / 0
			NBL	200	98 / 245	0 / 45
			SBL	75	43 / 148	0 / 73
			SBT	230	84 / 294	0 / 64
			SBR	230	35 / 128	0 / 0
			WBL	305	115 / 241	0 / 0
17	Mission Center Road / Friars Road WB Ramps	Signalized	WBR	170	185 / 130	15 / 0
			NBL	60	95 / 169	35 / 109
			NBT	220	93 / 217	0 / 0
			SBT	290	246 / 443	0 / 153
			SBR	82.5	48 / 61	0 / 0
			NBT/NBR	180	124 / 280	0 / 100
18	Mission Center Road / Friars Road EB Ramps	Signalized	SBL	95	141 / 310	46 / 215
			SBT	235	121 / 224	0 / 0
			EBL	235	152 / 173	0 / 0
			EBT	235	152 / 171	0 / 0
			EBR	120	74 / 430	0 / 310
19	Qualcomm Way / Friars Road WB Ramps	Signalized	WBL	320	395 / 493	75 / 173
			WBTR	540	93 / 568	0 / 28
			NBL	200	227 / 360	27 / 160
			NBT	200	192 / 321	0 / 121
20	Qualcomm Way / Friars Road EB Ramps	Signalized	EBLT	315	109 / 974	0 / 679
			EBR	320	60 / 308	0 / 13

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
20	Qualcomm Way / Friars Road EB Ramps	Signalized	NBT	665	185 / 666	0 / 16
			NBR	160	27 / 834	0 / 574
			SBL	50	143 / 237	0 / 77
			SBT	200	321 / 211	161 / 51
25	Mission Village Drive / Friars Road EB Ramps	Signalized	EBLT	115	215 / 552	100 / 437
			EBR	115	398 / 549	283 / 434
			SBL	115	372 / 496	257 / 381
			SBT	330	224 / 822	0 / 492
26	I-15 SB Ramps / Friars Road	Signalized	EBL	410	593 / 775	183 / 365
			EBR	165	91 / 473	0 / 308
			WBL	345	154 / 529	0 / 184
			SBLT	330	564 / 835	234 / 505
27	I-15 NB Ramps / Friars Road	Signalized	SBR	330	273 / 323	0 / 0
			EBL	505	880 / 1281	375 / 776
			EBT	1055	1 / 535	0 / 0
			WBT	790	1136 / 589	346 / 0
28	Rancho Mission Road & Friars Road	Signalized	WBR	235	1267 / 806	1032 / 571
			EBT	790	280 / 1194	0 / 404
			EBR	295	69 / 185	0 / 0
			WBL	155	201 / 385	46 / 230
29	Santo Road / Friars Road	Signalized	WBT	1075	105 / 188	0 / 0
			NBL	145	311 / 339	166 / 194
			NBR	375	84 / 271	0 / 0
			EBL	260	222 / 187	0 / 0
30	Riverdale Street / Friars Road	Signalized	EBT	1075	84 / 884	0 / 0
			WBT	1630	777 / 343	0 / 0
			SBL	100	68 / 78	0 / 0
			SBR	100	371 / 287	271 / 187
			WBL	100	230 / 146	130 / 46
			SBL	105	103 / 183	0 / 78
			NBL	100	174 / 533	74 / 433
			EBR	165	45 / 76	0 / 0
			EBL	90	242 / 349	152 / 259

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
31	Mission Gorge Road / Friars Road	Signalized	NBL	135	372 / 534	237 / 399
			WBL	180	228 / 156	48 / 0
32	Mission Center Road / Mission Center Court	Signalized	SBL	110	138 / 228	28 / 118
			SBT	175	334 / 381	159 / 206
			NBL	105	153 / 167	48 / 62
39	Avenida Del Rio / Camino De La Reina	Signalized	SBL	370	131 / 448	0 / 78
			SBT	370	81 / 95	0 / 0
			NBL	120	97 / 162	0 / 42
41	Camino Del Este / Camino De La Reina	Signalized	WBL	255	165 / 248	0 / 0
			EBL	120	119 / 224	0 / 104
			SBL	100	108 / 155	8 / 55
43	Mission City Parkway / Camino Del Rio North	Signalized	WBL	65	201 / 329	136 / 264
			NBL	70	318 / 273	248 / 203
			WBL/WBT	80	465 / 209	385 / 129
			WBR/WBT	85	465 / 209	380 / 124
45	Fairmount Avenue / Camino Del Rio North/I-8 WB Off-Ramp	Signalized	SBL	70	26 / 49	0 / 0
			SBR	140	119 / 39	0 / 0
			NBL	130	697 / 570	567 / 440
			EBL	100	307 / 249	207 / 149
46	I-8 WB Ramps / Hotel Circle North (W)		<i>Intersection Removed</i>			
47	I-8 WB Ramps/Handlery Driveway / Hotel Circle North (E)		<i>Intersection Removed</i>			
51	Camino Del Este / Camino Del Rio North	Signalized	WBR	60	35 / 43	0 / 0
			EBL	200	192 / 295	0 / 95
			SBL	610	167 / 416	0 / 0
			SBR	610	34 / 59	0 / 0
54	I-8 EB Ramps / Taylor Street		<i>Intersection Removed</i>			
55	Hotel Circle North / Taylor Street/Hotel Circle South	Yield	SBR	30	41 / 27	11 / 0
56	I-8 EB Ramps / Hotel Circle S		<i>Intersection Removed</i>			
58	Auto Circle / I-8 EB Ramps	Signalized	EBL	245	163 / 473	0 / 228
			SBL	315	252 / 1380	0 / 1065
60	Qualcomm Way / I-8 EB Ramps	Signalized	EBR	130	68 / 272	0 / 142

Table 5.11 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / PM 95% Queue Length (ft)	AM / PM Excess Queue (ft)
61	Texas Street / Camino Del Rio South	Signalized	NBL	95	267 / 201	172 / 106
			SBL	300	955 / 546	655 / 246
			SBR	65	104 / 285	39 / 220
			EBL	90	214 / 467	124 / 377
			WBL	240	126 / 297	0 / 57
			WBT	240	176 / 117	0 / 0
			WBR	235	142 / 612	0 / 377
62	Mission City Parkway / Camino Del Rio South	Signalized	WBR	230	74 / 86	0 / 0
			SBL	70	206 / 598	136 / 528
			EBL	150	134 / 277	0 / 127
63	I-15 SB Off-Ramp / Camino Del Rio South	Signalized	WBL	50	40 / 66	0 / 16
			SBL	910	186 / 354	0 / 0
			SBR	155	358 / 55	203 / 0
64	I-15 SB On-Ramp / Camino Del Rio South	Signalized	WBL	345	65 / 118	0 / 0
65	I-15 NB Ramps / Camino Del Rio South	Signalized	NBL	1270	752 / 257	0 / 0
			EBL	90	193 / 451	103 / 361
			WBR	90	61 / 0	0 / 0
66	Mission Gorge Road/Fairmount Avenue / I-8 EB Off-Ramp	Signalized	NBU	270	180 / 139	0 / 0
			SBT	740	252 / 300	0 / 0
			EBL	50	331 / 405	281 / 355
70	Qualcomm Way / Civita Boulevard	Signalized	WBL	195	299 / 258	104 / 63
			WBT	195	166 / 200	0 / 5
			NBL	260	48 / 260	0 / 0
			NBR	95	252 / 344	157 / 249
			EBR	205	100 / 80	0 / 0
71	Franklin Ridge Road / Civita Boulevard	Signalized	EBL	195	536 / 789	341 / 594
			EBR	195	17 / 24	0 / 0
75	Avenida Del Rio / Hazard Center Drive / Fashion Valley Mall	Signalized	NBL	360	126 / 274	0 / 0
			NBT	360	177 / 724	0 / 364

5.4.5 Freeway Segment Analysis

The freeway analysis includes the freeway improvements identified in Chapter 3, derived from the Revenue Constrained scenario of SANDAG's *San Diego Forward: The Regional Plan* (2015), the currently adopted regional transportation plan, and are anticipated to be implemented 2050. Forecast freeway volumes were obtained through the modeling process described in Chapter 4. **Table 5.12a** and **5.12b** present the Proposed Plan freeway segment LOS results for study segments during the AM and PM peak periods, respectively. HCS freeway segment analysis worksheets are provided in **Appendix L**.

As shown, all mainline freeway segments are projected to operate at LOS D or better under Proposed Plan conditions, with the exception of the following:

- EB I-8, I-5 Interchange to Morena Boulevard (AM – LOS E; PM – LOS F)
- EB I-8, Morena Boulevard to Taylor Street (AM – LOS E; PM – LOS F)
- EB I-8, Taylor Street to Hotel Circle (PM – LOS F)
- WB I-8, Taylor Street to Hotel Circle (AM – LOS E)
- EB I-8, Hotel Circle to SR-163 Interchange (PM – LOS F)
- EB I-8, SR-163 Interchange to Mission Center Road (PM – LOS E)
- EB I-8, Mission Center Road to Qualcomm Way / Texas Street (AM – LOS E; PM – LOS F)
- WB I-8, Mission Center Road to Qualcomm Way / Texas Street (AM – LOS F)
- EB I-8, Qualcomm Way / Texas Street to I-805 Interchange (PM – LOS E)
- EB I-8, I-805 Interchange to I-15 Interchange (PM – LOS F)
- WB I-8, I-805 Interchange to I-15 Interchange (AM – LOS E)
- EB I-8, I-15 Interchange to Fairmount Avenue (PM – LOS F)
- NB I-5, SeaWorld Drive / Tecolote Road to I-8 Interchange (AM – LOS E)
- NB I-5, I-8 Interchange to Old Town Avenue (AM & PM – LOS F)
- NB SR-163, Genesee Avenue to Friars Road (AM – LOS E)
- SB SR-163, Genesee Avenue to Friars Road (PM – LOS F)
- NB SR-163, Friars Road to I-8 Interchange (AM & PM – LOS F)
- NB SR-163, I-8 Interchange to 6th Avenue (AM & PM – LOS F)
- NB SR-163, 6th Avenue to Washington Street (AM & PM – LOS E)
- SB SR-163, 6th Avenue to Washington Street (AM & PM – LOS F)
- NB I-805, Mesa College Drive / Kearny Villa Road to Murray Ridge Road / Phyllis Place (AM – LOS F)
- SB I-805, Mesa College Drive / Kearny Villa Road to Murray Ridge Road / Phyllis Place (PM – LOS F)
- NB I-805, Murray Ridge Road / Phyllis Place to I-8 Interchange (AM – LOS F)
- SB I-805, Murray Ridge Road / Phyllis Place to I-8 Interchange (PM – LOS F)
- NB I-805, I-8 Interchange to Adams Avenue (AM – LOS F)
- SB I-805, I-8 Interchange to Adams Avenue (PM – LOS F)
- NB I-805, Adams Avenue to El Cajon Boulevard (AM – LOS F)
- SB I-805, Adams Avenue to El Cajon Boulevard (PM – LOS F)
- NB I-15, Aero Drive to Friars Road (AM – LOS F; PM – LOS E)

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- SB I-15, Aero Drive to Friars Road (PM – LOS F)
 - NB I-15, Friars Road to I-8 (AM & PM – LOS E)
 - SB I-15, Friars Road to I-8 (AM – LOS F; PM – LOS E)
 - NB I-15, I-8 to Adams Avenue (AM – LOS E; PM – LOS F)
NB I-15, Adams Avenue to El Cajon Boulevard (AM & PM – LOS E)

Table 5.12a AM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-8	Sunset Cliffs to Sports Arena Boulevard	EB	2M	7.8%	55.6%	1.0%	74,000	2,644	69.5	20.1	C
		WB	2M	7.2%	55.6%	1.0%		2,894	68.7	22.3	C
	Sports Arena Boulevard to I-5 Interchange	EB	3M+1A	7.7%	54.8%	1.2%	115,000	4,196	39.1	21.4	C
		WB	3M+1A	7.1%	55.8%	1.2%		4,444	68.4	22.9	C
	I-5 Interchange to Morena Boulevard	EB	3M	7.8%	57.0%	2.8%	178,000	6,141	58.7	37.3	E
		WB	4M	6.8%	68.3%	2.8%		7,114	64.3	29.5	D
	Morena Boulevard to Taylor Street	EB	4M+1A	7.8%	57.0%	2.8%	231,000	7,965	60	35.4	E
		WB	5M	6.8%	68.3%	2.8%		9,228	63.1	31.3	D
	Taylor Street to Hotel Circle	EB	4M	7.8%	57.0%	2.8%	205,000	7,078	64.5	29.3	D
		WB	4M+1A	6.8%	68.3%	2.8%		8,199	58.6	37.4	E
	Hotel Circle to SR-163 Interchange	EB	4M+2A	7.8%	57.0%	2.8%	222,000	7,654	64.2	25.5	C
		WB	5M	6.8%	68.3%	2.8%		8,866	61.5	30.8	D
	SR-163 Interchange to Mission Center Road	EB	4M	7.8%	57.0%	3.2%	192,000	6,617	66.3	26.7	D
		WB	3M+2A	6.8%	68.3%	3.2%		7,665	59.1	34.7	D
	Mission Center Road to Qualcomm Way / Texas Street	EB	4M+1A	7.8%	57.0%	3.2%	249,000	8,568	53.8	42.6	E
		WB	4M+1A	6.8%	68.3%	3.2%		9,926	42.8	61.9	F
	Qualcomm Way / Texas Street to I-805 Interchange	EB	4M+1A	7.8%	57.0%	3.2%	177,000	6,082	64.3	25.3	C
		WB	4M+1A	6.8%	57.0%	3.2%		7,046	61.7	30.5	D
	I-805 Interchange to I-15 Interchange	EB	4M+2A	7.8%	57.0%	3.0%	258,000	8,871	64.4	29.4	D
		WB	4M+2A	6.8%	68.3%	3.0%		10,276	58.5	37.5	E
	I-15 Interchange to Fairmount Ave	EB	4M	7.7%	59.2%	3.5%	228,000	7,411	62.8	31.7	D
		WB	4M+2A	7.4%	68.0%	3.5%		9,424	62.1	32.6	D

Table 5.12a AM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-5	SeaWorld Drive / Tecolote Road to I-8 Interchange	NB	5M+1A	7.6%	54.0%	3.4%	243,000	10,478	57.5	39	E
		SB	4M+2A	7.1%	59.5%	3.4%		7,810	67.4	24.7	C
	I-8 Interchange to Old Town Avenue	NB	4M+1A	7.6%	54.0%	4.1%	245,000	10,564	39	72.8	F
		SB	5M	7.1%	59.5%	4.1%		7,874	67.2	25.2	C
SR-163	Genesee Avenue to Friars Road	NB	5M	8.8%	57.0%	3.7%	213,000	10,924	54.8	42.8	E
		SB	4M	8.4%	51.6%	3.7%		7,316	63.2	31.1	D
	Friars Road to I-8 Interchange	NB	3M	7.9%	50.9%	3.7%	180,000	7,098	49.2	51.7	F
		SB	4M+2A	7.8%	54.9%	3.7%		7,359	68.3	23.1	C
	I-8 Interchange to 6th Avenue	NB	3M+1A	7.9%	50.9%	3.0%	192,000	7,554	44.2	60.8	F
		SB	3M+2A	7.8%	54.9%	3.0%		7,830	60.8	34.4	D
	6th Avenue to Washington Street	NB	3M	7.9%	50.9%	3.0%	159,000	6,277	57.6	38.8	E
		SB	2M+1A	7.8%	54.9%	3.0%		6,507	9.9	350.8	F
I-805	Mesa College Drive / Kearny Villa Road to Murray Ridge Road / Phyllis Place	NB	5M	7.6%	69.9%	6.5%	266,000	14,917	21.3	152.9	F
		SB	5M	8.1%	64.5%	6.5%		6,411	69.5	20.1	C
	Murray Ridge Road / Phyllis Place to I-8 Interchange	NB	5M	5.9%	74.6%	6.5%	257,000	11,575	49.7	50.7	F
		SB	4M+2A	8.4%	62.7%	6.5%		5,255	70.0	16.4	B
	I-8 Interchange to Adams Avenue	NB	4M+1A	5.9%	74.6%	6.5%	254,000	11,418	27.7	112.3	F
		SB	6M	8.4%	74.6%	6.5%		5,184	70.0	13.4	B
	Adams Avenue to El Cajon Boulevard	NB	4M	5.9%	74.6%	6.5%	225,000	10,128	41.8	66	F
		SB	5M+1A	8.4%	62.7%	6.5%		4,598	70.0	14.3	B
I-15	Aero Drive to Friars Road	NB	4M+1A+2ML	7.7%	60.5%	5.0%	258,000	12,374	17.0	196.6	F
		SB	5M+1A+2ML	7.5%	60.8%	5.0%		8,086	66.6	26.2	D

Table 5.12a AM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-15	Friars Road to I-8	NB	4M+2A+2ML	8.2%	51.5%	2.2%	273,000	10,520	57.5	38.9	E
		SB	3M+3A+2ML	8.2%	48.5%	2.2%		11,157	51.6	46	F
	I-8 to Adams Avenue	NB	3M+2A	8.2%	51.5%	2.2%	228,000	8,786	55.1	42.4	E
		SB	5M	8.2%	48.5%	2.2%		9,318	62.9	31.5	D
	Adams Avenue to El Cajon Boulevard	NB	4M+1A	8.2%	51.5%	2.2%	218,000	8,374	57.8	38.5	E
		SB	5M+1A	8.2%	48.5%	2.2%		8,881	64.5	29.3	D

Source: SANDAG (2018); Chen Ryan Associates (2018)

Notes:

Bold letter indicates LOS E or F

¹ M = Mainline; A = Auxiliary Lane

² Directional Split

³ Peak Hour Percentage

⁴ Heavy Vehicle Factor

Table 5.12b PM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-8	Sunset Cliffs to Sports Arena Boulevard	EB	2M	7.8%	55.6%	1.0%	74,000	3,307	66.5	26.3	D
		WB	2M	7.2%	55.6%	1.0%		2,314	70.0	17.5	C
	Sports Arena Boulevard to I-5 Interchange	EB	3M+1A	7.7%	54.8%	1.2%	115,000	5,079	65.9	27.2	D
		WB	3M+1A	7.1%	55.8%	1.2%		3,671	69.9	18.5	C
	I-5 Interchange to Morena Boulevard	EB	3M	7.8%	57.0%	2.8%	178,000	8,130	36.7	78.9	F
		WB	4M	6.8%	68.3%	2.8%		5,373	69.4	20.7	C
	Morena Boulevard to Taylor Street	EB	4M+1A	7.8%	57.0%	2.8%	231,000	10,546	39.7	71	F
		WB	5M	6.8%	68.3%	2.8%		6,970	69.0	21.6	C
	Taylor Street to Hotel Circle	EB	4M	7.8%	57.0%	2.8%	205,000	9,371	50.3	49.8	F
		WB	4M+1A	6.8%	68.3%	2.8%		6,193	67.6	24.5	C
	Hotel Circle to SR-163 Interchange	EB	4M+2A	7.8%	57.0%	2.8%	222,000	10,133	56.7	38.2	E
		WB	5M	6.8%	68.3%	2.8%		6,697	65.0	22	C
	SR-163 Interchange to Mission Center Road	EB	4M	7.8%	57.0%	3.2%	192,000	8,760	54.9	42.6	E
		WB	3M+2A	6.8%	68.3%	3.2%		5,789	64.7	23.9	C
	Mission Center Road to Qualcomm Way / Texas Street	EB	4M+1A	7.8%	57.0%	3.2%	249,000	11,344	27.3	110.9	F
		WB	4M+1A	6.8%	68.3%	3.2%		7,497	59.9	33.4	D
	Qualcomm Way / Texas Street to I-805 Interchange	EB	4M+1A	7.8%	57.0%	3.2%	177,000	8,053	57.0	37.7	E
		WB	4M+1A	6.8%	57.0%	3.2%		5,322	65.0	21.9	C
	I-805 Interchange to I-15 Interchange	EB	4M+2A	7.8%	57.0%	3.0%	258,000	11,744	50.1	50.1	F
		WB	4M+2A	6.8%	68.3%	3.0%		7,762	67.6	24.6	C
	I-15 Interchange to Fairmount Ave	EB	4M	7.7%	59.2%	3.5%	228,000	10,771	36.8	78.5	F
		WB	4M+2A	7.4%	68.0%	3.5%		6,484	69.6	20	C

Table 5.12b PM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-5	SeaWorld Drive / Tecolote Road to I-8 Interchange	NB	5M+1A	7.6%	54.0%	3.4%	243,000	8,926	64.2	29.7	D
		SB	4M+2A	7.1%	59.5%	3.4%		9,169	63.3	30.9	D
	I-8 Interchange to Old Town Avenue	NB	4M+1A	7.6%	54.0%	4.1%	245,000	8,999	52.8	45.7	F
		SB	5M	7.1%	59.5%	4.1%		9,243	62.9	31.6	D
SR-163	Genesee Avenue to Friars Road	NB	5M	8.8%	57.0%	3.7%	213,000	8,231	66.3	26.7	D
		SB	4M	8.4%	51.6%	3.7%		9,710	47.1	55.4	F
	Friars Road to I-8 Interchange	NB	3M	7.9%	50.9%	3.7%	180,000	7,359	46.1	57.1	F
		SB	4M+2A	7.8%	54.9%	3.7%		7,098	68.8	22.2	C
	I-8 Interchange to 6th Avenue	NB	3M+1A	7.9%	50.9%	3.0%	192,000	7,830	40.7	68.5	F
		SB	3M+2A	7.8%	54.9%	3.0%		7,554	62.2	32.4	D
	6th Avenue to Washington Street	NB	3M	7.9%	50.9%	3.0%	159,000	6,507	55.5	41.7	E
		SB	2M+1A	7.8%	54.9%	3.0%		6,277	16.2	206.6	F
I-805	Mesa College Drive / Kearny Villa Road to Murray Ridge Road / Phyllis Place	NB	5M	7.6%	69.9%	6.5%	266,000	6,411	69.5	20.1	C
		SB	5M	8.1%	64.5%	6.5%		14,917	21.3	152.9	F
	Murray Ridge Road / Phyllis Place to I-8 Interchange	NB	5M	5.9%	74.6%	6.5%	257,000	3,941	70	12.3	B
		SB	4M+2A	8.4%	62.7%	6.5%		15,433	15.7	213.8	F
	I-8 Interchange to Adams Avenue	NB	4M+1A	5.9%	74.6%	6.5%	254,000	3,888	70	15.1	B
		SB	6M	8.4%	74.6%	6.5%		15,224	41.6	66.4	F
	Adams Avenue to El Cajon Boulevard	NB	4M	5.9%	74.6%	6.5%	225,000	3,448	70	13.4	B
		SB	5M+1A	8.4%	62.7%	6.5%		13,504	34.8	84.5	F
I-15	Aero Drive to Friars Road	NB	4M+1A+2ML	7.7%	60.5%	5.0%	258,000	8,086	58.8	37.1	E
		SB	5M+1A+2ML	7.5%	60.8%	5.0%		12,374	44.9	59.4	F

Table 5.12b PM Freeway Segment Level of Service Results – Proposed Plan Conditions

Freeway	Segment	Dir	Lanes ¹	D ²	K ³	HVF ⁴	ADT	Peak Hr Volume	Speed	Density	LOS
I-15	Friars Road to I-8	NB	4M+2A+2ML	8.2%	51.5%	2.2%	273,000	11,157	54.1	43.9	E
		SB	3M+3A+2ML	8.2%	48.5%	2.2%		10,520	55.1	40.6	E
	I-8 to Adams Avenue	NB	3M+2A	8.2%	51.5%	2.2%	228,000	9,318	51.1	48.5	F
		SB	5M	8.2%	48.5%	2.2%		8,786	64.8	28.8	D
	Adams Avenue to El Cajon Boulevard	NB	4M+1A	8.2%	51.5%	2.2%	218,000	8,881	54.4	43.4	E
		SB	5M+1A	8.2%	48.5%	2.2%		8,374	66.1	27.0	D

Source: SANDAG (2018); Chen Ryan Associates (2018)

Notes:

Bold letter indicates LOS E or F

¹ M = Mainline; A = Auxiliary Lane

² Directional Split

³ Peak Hour Percentage

⁴ Heavy Vehicle Factor

5.4.6 Freeway Ramp Metering Analysis

Table 5.13 presents the Proposed Plan freeway ramp metering analysis results. Existing ramp meter flow rates were assumed under Proposed Plan conditions. Appendix M includes Caltrans' ramp meter rates.

Table 5.13 Freeway Ramp Metering Analysis – Proposed Plan Conditions

Ramp	Peak Hour	Total Demand ¹ (veh/hr)	SOV Demand ² (veh/hr)	SOV Demand per lane (veh/hr)	Meter Rate ³ (veh/hr)	Future Excess Demand ⁴ (veh/hr)	Future Delay ⁵ (min)	Future Queue ⁶ (ft)
I-5 NB On-Ramp @ Sea World Drive	AM	1730	1,730	865	965	0	0	0
	PM	1360	1,360	680	972	0	0	0
I-5 SB On-Ramp @ Sea World Drive	AM	455	455	455	444	11	1.49	325
	PM	460	460	460	444	16	2.16	475
I-805 NB On-Ramp @ Murray Ridge Road	AM	1035	1,035	1035	851	184	12.97	5,325
	PM	1480	1,480	1480	N/A ⁷	0	0	0
I-805 SB On-Ramp @ Phyllis Place	AM	825	776	776	N/A ⁷	0	0	0
	PM	930	735	735	691	44	3.82	1,275
I-15 NB On-Ramp @ Friars Road	AM	1810	1,539	769	558	211	22.69	6,125
	PM	1570	1,397	699	529	170	19.28	4,925
I-15 SB On-Ramp @ Friars Road (EB approach)	AM	845	845	845	N/A ⁷	0	0	0
	PM	1190	1,190	1190	996	194	11.69	5,625
I-8 EB On-Ramp @ Texas Street (NB approach)	AM	490	490	490	N/A ⁷	0	0	0
	PM	450	450	450	810	0	0	0
I-8 EB On-Ramp @ Texas Street (SB approach)	AM	850	850	850	N/A ⁷	0	0	0
	PM	570	479	479	444	35	4.73	1,025
I-8 EB On-Ramp @ Fairmount Avenue (NB approach)	AM	725	725	725	N/A ⁷	0	0	0
	PM	725	725	725	744.5	0	0	0
I-8 EB On-Ramp @ Fairmount Avenue (SB approach)	AM	270	270	270	N/A ⁷	0	0	0
	PM	825	825	825	745	80	6.44	2,325

Notes:

SOV = Single Occupancy Vehicle

HOV = High Occupancy Vehicle

¹ Total Demand is the peak hour demand for both SOV and HOV lanes expected to use the on-ramp.

² SOV Demand = (Total Demand) – (HOV Demand).

³ Meter Rate is the peak hour capacity expected to be processed through the ramp meter per lane. This value was obtained from Caltrans. The average between the “high” and “low” meter rate was used.

⁴ Excess Demand = (Demand) – (Meter Rate) or zero, whichever is greater.

⁵ Delay = (Excess Demand / Meter Rate) X 60 min/hr.

⁶ Queue = (Excess Demand) X 29 ft/veh. SOV volumes were used in the calculation of Queue. A zero represents no excess queue. It is important to note the on-ramp queues could also occur as a result of freeway congestions as the lack of freeway capacity could limit the number of vehicles that can merge onto the freeway.

⁷ Ramp not metered.

As shown in the table, excess demand is anticipated at the following metered ramps:

- I-5 SB On-Ramp @ Sea World Drive (AM & PM)
- I-805 NB On-Ramp @ Murray Ridge Road (AM)
- I-805 SB On-Ramp @ Phyllis Place (PM)
- I-15 NB On-Ramp @ Friars Road (AM & PM)
- I-15 SB On-Ramp @ Friars Road – EB Approach (PM)
- I-8 EB On-Ramp @ Texas Street – SB Approach (PM)
- I-8 EB On-Ramp @ Fairmount Avenue – SB Approach (PM)