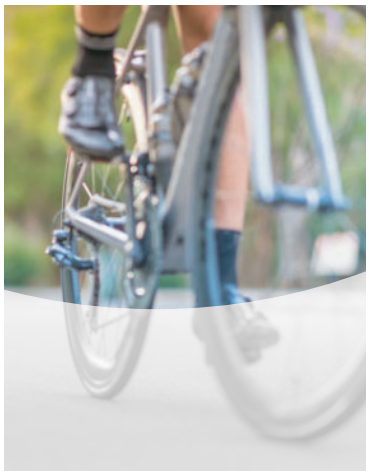
Kearny Mesa Community Plan Update

Final Mobility Technical Report

JULY *2020*



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KEARNY MESA CONNECTED

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1.0 Introduction

1.1 Study Background and Purpose

The Kearny Mesa Community Plan was adopted in 1992, with amendments incorporated as recent as 2018. The current Kearny Mesa Community Plan Update process was initiated in 2016 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 Kearny Mesa Mobility Element. This report is one component of the Kearny Mesa 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 Kearny Mesa. It also strives to improve mobility through a balanced, multimodal transportation network, which supports the updated land use vision for Kearny Mesa and further aligns with the City's General Plan, City of Villages strategy, and Climate Action Plan (CAP). 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 Kearny Mesa Community Planning Area (Kearny Mesa) includes approximately 4,400 acres in the center of the City of San Diego. Kearny Mesa is bounded by State Route 52 (SR-52) to the north and Interstate 805 (I-805) to the west, Interstate 15 (I-15) to the east and properties lying to the south of Aero Drive and along the western edge of I-15 to the south. Figure 1-1 displays the Kearny Mesa Community Planning Area within the San Diego region.

Public transportation is provided by a combination of local, express, and rapid bus routes, many of which provide far-reaching regional access, due in large part to Kearny Mesa's central location within the region. The community is surrounded by Clairemont, Tierrasanta, Serra Mesa, Linda Vista, and MCAS Miramar.

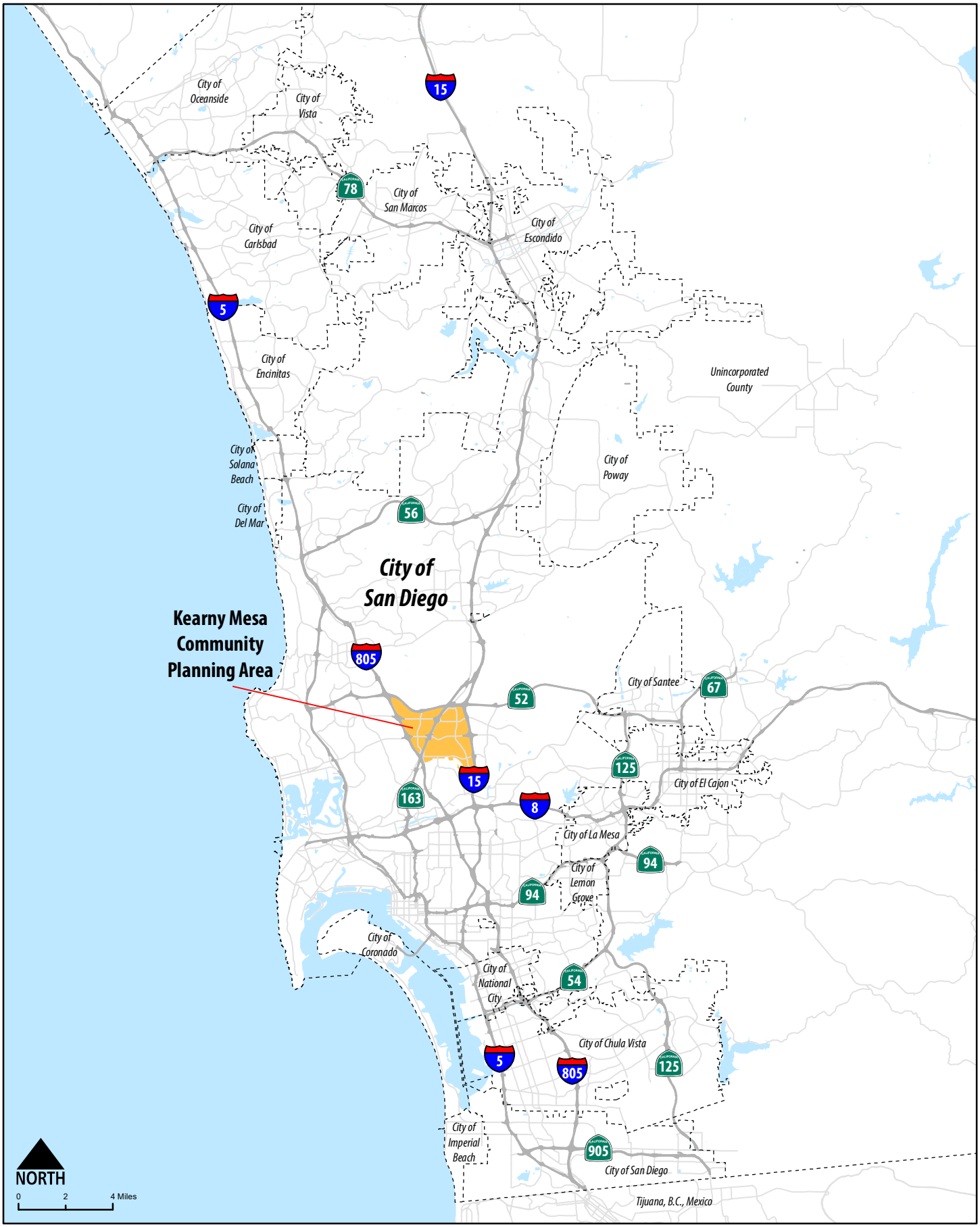

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Figure 1-1
Kearny Mesa within the Region

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 in Kearny Mesa.
- *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 the mobility network in Kearny Mesa. 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 Kearny Mesa.

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[1]	Vehicle Miles Traveled (VMT) Per Capita (Resident or Employee)

Source: Chen Ryan Associates (2019)

Note:
[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.

2.1 Pedestrian

2.1.1 Pedestrian Demand

The Pedestrian Priority Model (PPM) was used to document relative pedestrian demands across Kearny Mesa. 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 stops[1]; or
- Major community arterials as needed to complete the community's primary roadway network.

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 2011 to 2015. This data was geocoded and mapped to display pedestrian-involved collision locations in Kearny Mesa. Additional focus was placed on these locations during the Proposed Plan 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:

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

[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.

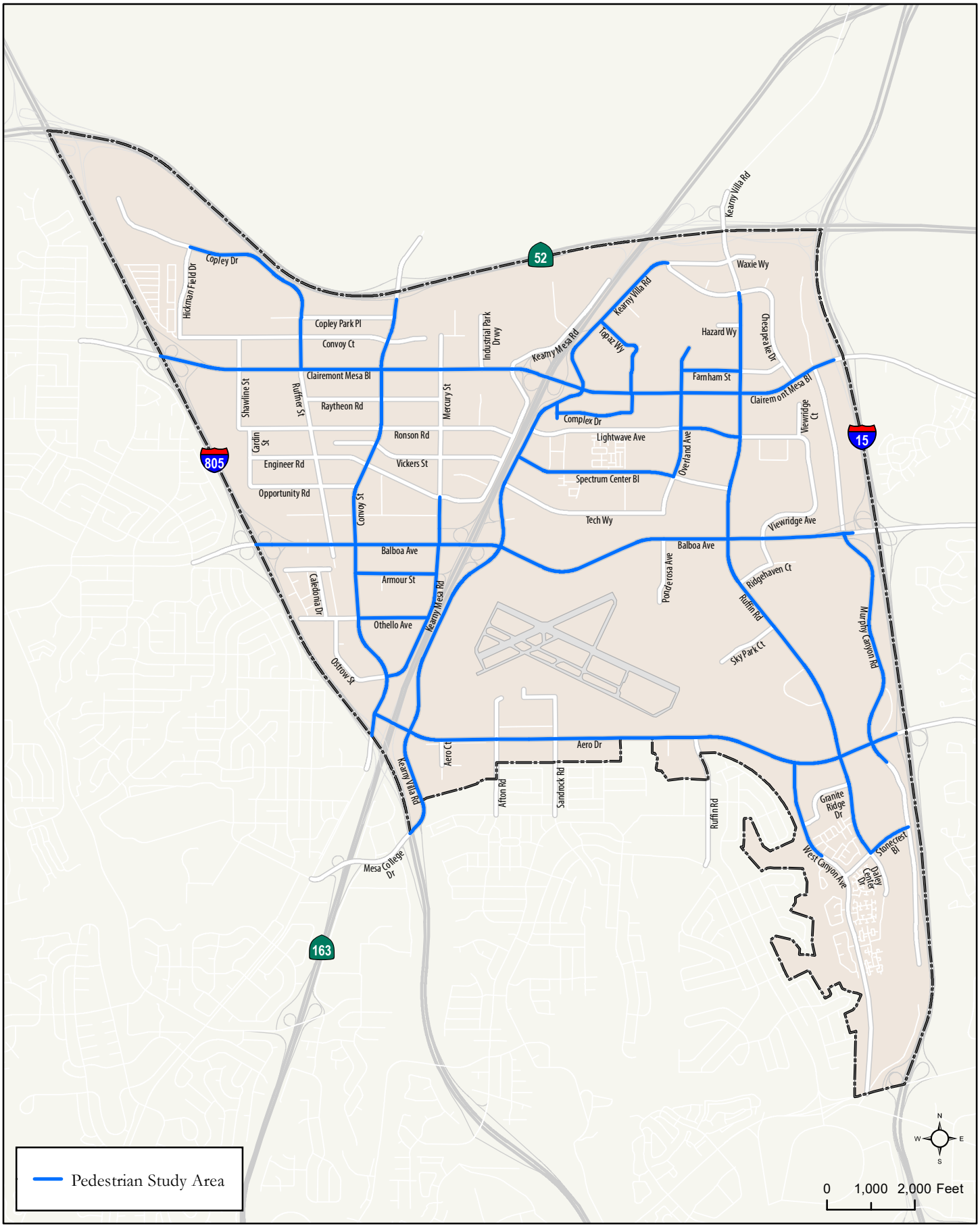

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Figure 2-1
Pedestrian Study Area - Proposed Plan Conditions

Table 2.2 Pedestrian Environment Quality Ranking System

Facility Type	Measure	Description/Feature	Scoring
Segment *between two intersections*	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[1]
	2. Lighting		0 point: below standard/requirement 1 point: meet standard/requirement 2 points: exceed standard/requirement
	3. Clear Pedestrian Zone	5 ft 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	• 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	• 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 tomes 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 tomes 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**

Source: Chen Ryan Associates (2019)

Note:
[1] Vertical buffer consists of vertical landscape/tree buffer per the standard cross-section.

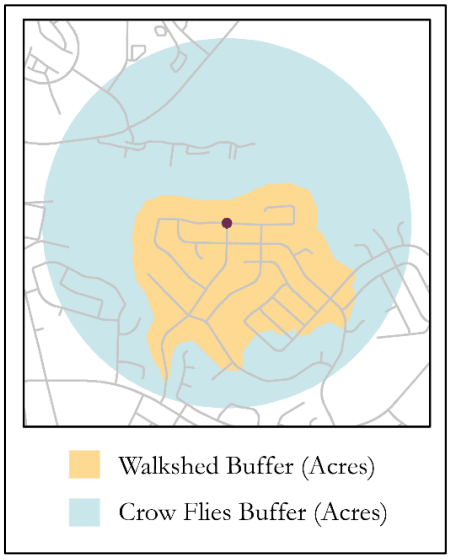
The PEQE analysis results (score and rating) are presented in tabular and mapped formats for each individual pedestrian facility within the Pedestrian Study Area, including Circulation Element roadway segments (both sides of the road), study intersections, and mid-block crossings.

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.

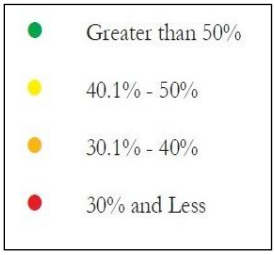
<u>Developing the Pedestrian Network</u>

The San Diego Association of Governments (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 Kearny Mesa, 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.



<u>Travelshed Analysis</u>

The pedestrian travelshed analysis assesses the level of connectivity provided at each study intersection within the Kearny Mesa 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 right[2].

[2] 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.

2.2 Bicycle

2.2.1 Bicycle Demand

The Bicycle Priority Model (BPM) was used to document relative bicycling demands throughout Kearny Mesa. The BPM was developed during the City of San Diego Bicycle Master Plan Update (December 2013) and consists of 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 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 2011-2015. This data was geocoded and mapped to display bicycle-involved collision locations in Kearny Mesa. 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.

Class I and Class IV Separated Facilities

Traditional LTS presumes separated bicycle facilities to be LTS 1, the lowest level of stress, as they are physically separated from vehicular traffic and therefore unaffected by the auto-centric criteria listed in Table 2.3. As explained by the Mineta Institute:

Bikeways that are physically separated from motor traffic have the lowest level of traffic stress between intersections, LTS 1. They include standalone paths as well as those that run alongside a road that may be called cycle tracks, sidepaths, or segregated lanes. Means of physical separation from motor traffic include, but are not limited to, curbs, raised medians, parking lanes, and flexible bollards. This category includes shared-use paths as well as bicycling-only facilities. (While there can be some stress in sharing a path with pedestrians, it is not in the same class as traffic danger; it is more akin to congestion which can force a traveler to go slow, and, unlike traffic danger, is rarely a factor that keeps people from riding a bike.)[3]

Class II Bicycle Lanes

Striped Class II bicycle lanes can cover the entire range of LTS levels, and their evaluation depends upon the largest number of criteria. Table 2.3 shows the criteria for Class II lanes located alongside a parking lane, while Table 2.4 shows the criteria for Class II lanes not located alongside a parking lane. As explained by the Mineta Institute:

[3] "Low Stress Bicycling and Network Connectivity," Mineta Transportation Institute, p. 17

Bike lanes can exhibit the full range of traffic stress. Where they have ample width and are positioned on a road whose traffic is slow and simple (a single lane per direction), they can offer cyclists a low-stress riding environment. However, bike lanes can also present a high- stress environment when positioned on roads with highway speeds or turbulent traffic, or next to high-turnover parking lanes without adequate clearance.[2]

Assigning a segment's LTS level requires identifying the "weakest link" among all criteria:

For any given segment, these criteria aggregate following the weakest link principle: the dimension with the worst level of stress governs. For this reason, traffic stress levels in the tables that follow use notations such as "LTS > 2," which means the factor puts a floor on traffic stress at level 2. For example, if a segment's street width matches the criteria for LTS > 1, its prevailing speed matches LTS > 2, and its bike lane blockage matches LTS > 3, then the segment as a whole has LTS 3.[4]

Table 2.3 LTS Criteria for Segment – Bike Lane with Adjacent Parking Lane

Level of Stress (LTS)	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street width (through lanes per direction)	1	(no effect)	2 or more	(no effect)
Sum of bike lane and parking lane width (includes marked buffer and paved gutter)	15 ft. or more	14 or 14.5 ft [1]	13.5 ft. or less	(no effect)
Speed limit or prevailing speed	25 mph or less	30 mph	35 mph	40 mph or more
Bike lane blockage (typically applies in commercial areas)	Rare	(no effect)	Frequent	(no effect)

Source: Mekuria et al. (2012)

Note:
(no effect) = factor does not trigger an increase to the level of traffic stress.
[1] If speed limit < 25 mph or Class = residential, then any width is acceptable for LTS 2.

Table 2.4 LTS Criteria for Segment – Bike Lane without Adjacent Parking Lane

Criteria	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street width (through lanes per direction)	1	2, if directions are separated by a raised median	More than 2, or 2 without a separating median	(no effect)
Bike lane width (includes marked buffer and paved gutter)	6 ft. or more	5.5 ft. or less	(no effect)	(no effect)
Speed limit or prevailing speed	30 mph or less	(no effect)	35 mph	40 mph or more
Bike lane blockage (typically applies in commercial areas)	Rare	(no effect)	Frequent	(no effect)

Source: Mekuria et al. (2012)

Note:
(no effect) = factor does not trigger an increase to the level of traffic stress.

[4] "Low Stress Bicycling and Network Connectivity," Mineta Transportation Institute, p. 18.

Class III and Other Shared Roadways

Class III and other shared roadways rely on two criteria—street width and speed—as shown in Table 2.5. This evaluation applies both to segments specifically designated as Class III (often marked by signs and sharrows) as well as to all other local roadways that are not marked specifically for bicycles and are therefore implicitly shared. As explained by the Mineta Institute:

Where cyclists share space on the road with motor traffic, level of traffic stress is assumed to be unaffected by signage (e.g., "Bike Route" or "Share the Road" signs), shared-lane markings, or having a wide outside lane. Studies of shared-lane markings have shown that they have a small beneficial effect but nothing comparable to the benefit of designating an exclusive bicycling zone by marking a bike lane.[5]

Table 2.5 LTS Criteria for Class III Shared Roadways

Speed Limit	Street Width		
	2-3 Lanes	4-5 Lanes	6+ Lanes
≤25 mph	LTS 1[a] or 2[a]	LTS 3	LTS 4
30 mph	LTS 2[a] or 3[a]	LTS 4	LTS 4
≥35 mph	LTS 4	LTS 4	LTS 4

Source: Mekuria et al. (2012)

All roadways in Kearny Mesa 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 Ratio

A bicycle travelshed analysis was performed to assess the level of connectivity provided at each intersection within Kearny Mesa. 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 Kearny Mesa 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 Kearny Mesa 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 2.6 presents Bicylcle 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

[5] "Low Stress Bicycling and Network Connectivity," Mineta Transportation Institute, pp. 20-21.

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 Kearny Mesa.

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 Kearny Mesa. 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 2.6 Bicycle Land Use Categories

Generators	Attractors	Not Included as Bicycle Land Uses
• Residential Land Uses[1]	• Retail • Office[2] • Class I Bike Path Access Points • Transit Stations • Parks/Recreational Uses/Beaches • Schools/College/Universities • Neighborhood Civic Uses • Inter-community Access Points[3]	• 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

Source: Chen Ryan Associates (2019)

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 BPM 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, which is presented in the *Mobility Existing Conditions Report* (July 2019) found in Appendix A.

2.3 Transit

While the Kearny Mesa Community Plan Update considers the adopted *San Diego Forward: The Regional Plan* (2015), for planned regional transit routes, it is important to note that the San Diego Association of Governments (SANDAG) is in the process of developing the 2021 Regional Plan. This transformative Plan will bring a bold new vision to the region framing around the 5 Big Moves including Complete Corridors, Transit Leap, Mobility Hubs, Flexible Fleets, and Next OS (Operating System). It is likely that the planned transit will vary from the current regional plan in terms of type (rapid bus, bus rapid transit, light rail, subway, etc.), routes alignment, and station locations, therefore, detailed analysis of transit demand, station quality, and quality connections to transit were only provided under existing conditions. However, transit priority treatment, access to transit, mobility hubs, and transit-oriented developments were focuses as a part of the planning effort.

2.3.1 Transit Demand (Informational – Analyzed for Existing Conditions Only)

Transit demand was evaluated for all existing stations/stops within Kearny Mesa by examining 2017 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 Kearny Mesa. Additional focus was placed on these locations during the network development phase.

2.3.3 Transit Quality

Station Quality – Presence of Amenities (Informational – Analyzed for Existing Conditions Only)

The San Diego Metropolitan Transit System (MTS) designates minimum amenity standards for transit station/stops based on daily passenger boardings per the *MTS Designing for Transit* manual (2018). Each existing transit station/stop in Kearny Mesa was evaluated for the presence of the standard amenities that should be provided at a transit station/stop, as outlined in the manual.

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 (using the *HCM 2000* methodology) 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 in Chapter 5.

2.3.4 Quality Connections to Transit (Informational – Analyzed for Existing Conditions Only)

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:

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

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

2.4 Vehicular System

The primary mobility study area encompasses the Kearny Mesa Community Planning Area and one segment and intersection beyond, where not separated by freeways and natural barriers, in order to capture potential contribution to transportation operational needs in the communities adjacent to Kearny Mesa.

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

SMART Corridors: The Kearny Mesa Community Plan Update incorporates Sustainable Mobility for Adaptable and Reliable Transportation, "SMART Corridors", to further SANDAG's 5 Big Moves strategy[6]. A SMART Corridor is a six-lane major arterial roadway that provides access to or between at least two freeways, whereby mobility improvements are planned for transit and other congestion reducing mobility forms through the repurposing of roadway space. This repurposing creates facilities with general purpose lanes plus flexible lanes, that may be used by a combination of non-single occupancy vehicles, connected/autonomous vehicles, or other emerging mobility concepts. SMART corridors would increase safety, capacity, and efficiency; provide dedicated space for efficient transit and other pooled services; manage demand in real-time; and maximize use of existing roadways. The lane configuration and type of use is contingent upon time of need.

Under the Proposed Plan of the Kearny Mesa Community Plan Update, SMART corridors, although a six-lane cross-section, were analyzed as four-lane roadways, whereby two lanes were omitted from a capacity analysis. Since these are flexible lanes designated to serve a combination of non-single occupancy vehicles and connected/autonomous vehicles, a 25% reduction of forecast roadway volumes was applied, following discussion with City of San Diego staff and based upon research *(Mosquet et al, Revolution in the Driver's Seat: The Road to Autonomous Vehicles, 2015); (Boston Consulting Group, Future Autonomous Electric Vehicles, 2017),* that anticipates autonomous vehicle traffic may likely account for 25% of vehicle trips by the year 2030.

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

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

[6] The 2021 Regional Plan will synchronize the 5 Big Moves to deliver a fully integrated, world class transportation system for the San Diego region. The 5 Big Moves include Complete Corridors, Transit Leap, Mobility Hubs, Flexible Fleets, and the Next OS. Complete Corridors are the backbone of a complete transportation system that leverages technology, pricing, and connectivity to repurpose how both highways and local roads are used. Transit Leap includes a complete network of high-capacity, high-speed, and high-frequency transit services that incorporates new transit modes and improves existing services. Mobility Hubs are places of connectivity where a variety of travel options converge to deliver a seamless travel experience. Flexible Fleets include on-demand, shared, electric vehicles that connect to transit and travel between Mobility Hubs along the network of Compete Corridors. And lastly, Next OS is the "brain" of the transportation system that will make all of the strategies work together.

- 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) were evaluated.

Freeway Ramps: All freeway on-ramps with metering that provide primary freeway outbound access for the community (approximately 27 on-ramps) were evaluated.

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 Proposed Plan land uses and planned transportation networks.

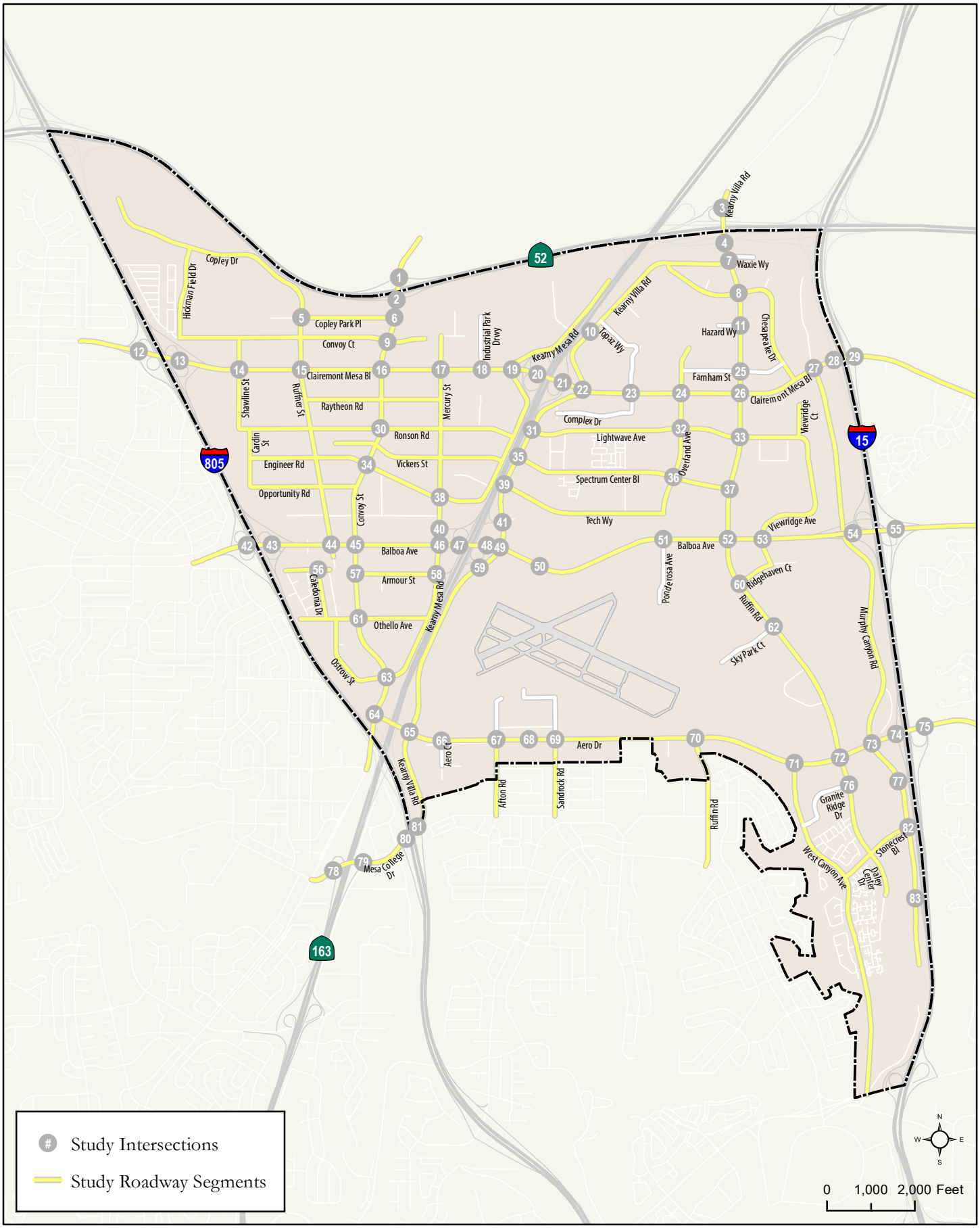
2.4.2 Vehicular Safety (Informational – Analyzed for Existing Conditions Only)

Historic vehicular collision data was obtained from the City of San Diego for the period from 2011 to 2015. This data was geocoded and mapped to display vehicular collision locations in Kearny Mesa. Additional focus was placed on these locations during the Proposed Plan network development phase.

2.4.3 Vehicular System Operations

Analysis of the vehicular system – roadway segments, intersections and freeway segments – 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 2.7 describes generalized definitions of vehicular LOS A through F.



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CHEN RYAN

Figure 2-2
Kearny Mesa Project Study Area and Key Study Intersections

Table 2.7 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 2.8 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 2.8 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
Prime Arterial	4	17,500	24,500	35,000	40,000	45,000
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 (2019)

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 2.9 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, 2019). 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 2.9 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 Balboa Avenue, Clairemont Mesa Boulevard, Convoy Street, Ruffin Road, and Aero Drive, which are roadways with existing and future planned transit routes.

Peak Hour Intersection Level of Service Standards and Thresholds

This section presents the methodologies used to perform weekday 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*: Vehicle classification count data was collected along major corridors, including:
  - Clairemont Mesa Boulevard - 3% to 17% heavy vehicle factor in both directions during AM, PM, and Midday peak hours;
  - Balboa Avenue - 2% to 10% heavy vehicle factor in both directions during AM, PM, and Midday peak hours;
  - Aero Drive - 4% to 8% heavy vehicle factor in both directions during AM, PM, and Midday peak hours;
  - Convoy Street - 5% to 17% heavy vehicle factor in both directions during AM, PM, and Midday peak hours;

- Kearny Villa Road - 3% to 21% heavy vehicle factor in both directions during AM, PM, and Midday peak hours; and
- Ruffin Road - 3% to 13% heavy vehicle factor in both directions during AM, PM, and Midday peak hours.

Specific heavy vehicle factors were applied to their corresponding intersections within the above corridors. Appendix B includes the heavy vehicle percentage along segments where vehicle classification data was collected. A 2% heavy vehicle factor was applied for all other study area intersections. 2 % is the standard, default heavy vehicle factor provided in HCM and Synchro 10.0 software.

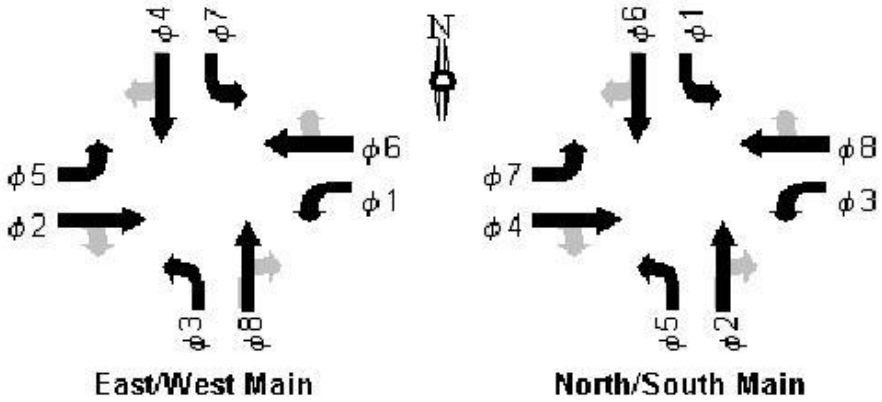
- *Peak Hour Factor*: 0.95 or obtained from existing peak hour counts, whichever is greater.
- *Signal Timing*: Obtained from existing signal timing plans (as of July 2016), included as Appendix C. Cycle length was optimized for the horizon year 2050.

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 2.10. The computerized analysis of intersection operations was performed utilizing the *Synchro 10.0 (HCM 2010 methodology)* traffic analysis software (by Trafficware, 2019).

The HCM 2010 analysis methodology requires strict adherence to standard dual ring 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 figure on the bottom of the previous page):

4. Ruffin Road / Kearny Villa Road & SR-52 EB Ramps (conflicting phasing overlap issue)
13. I-805 NB Off-Ramp & Clairemont Mesa Blvd (non-standard NEMA phase assignation)
21. SR-163 NB Ramps & Clairemont Mesa (conflicting phasing overlap issue)
42. I-805 SB Ramps & Balboa Avenue (non-standard NEMA phase assignation)
43. I-805 NB Ramp & Balboa Avenue (non-standard NEMA phase assignation)
54. Balboa Avenue & I-15 SB Off-Ramp (conflicting phasing overlap issue)
74. I-15 SB Ramps & Aero Drive (conflicting phasing overlap issue)
81. I-805 NB Off-Ramp & Kearny Villa Road (conflicting phasing overlap issue)

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

Table 2.10 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)

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 10.0 software supports this methodology and was utilized to produce LOS results. The LOS for a two-way stop controlled (TWSC) or a side-street stop controlled (SSSC) intersection is determined by the computed or measured control delay and is defined for each minor movement, and the worst movement is reported. The LOS for an all-way stop controlled (AWSC) intersection is determined

by the computed or measured average control delay of all movements, and intersection-level LOS is reported. Table 2.11 summarizes the level of service criteria for unsignalized intersections. Consistent with City policy, LOS D was used in this study as the minimum acceptable LOS for peak hour intersection operations. Queuing analysis was also conducted at all the study area off-ramps, congested and/or closely spaced intersections, and each metered freeway on-ramp during peak hours.

Table 2.11 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

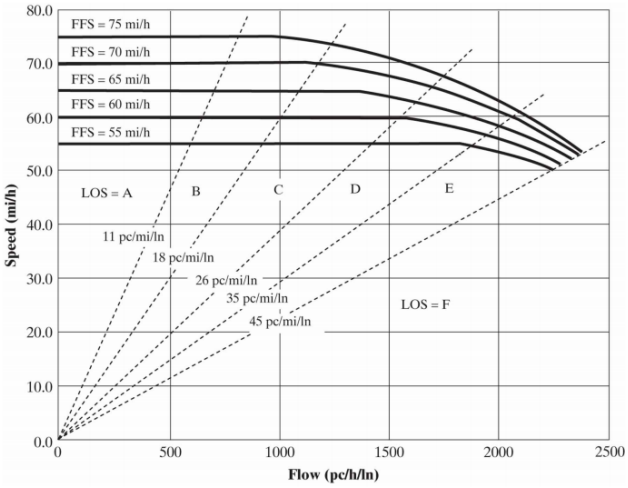
Freeway LOS analysis is based upon procedures developed by Highway Capacity Manual 2010. The procedure for calculating freeway LOS involves estimating the vehicle speed (mi/h) and density/flow (pc/mi/ln).

HCS 2010 software, developed by McTrans, was used to calculate both the vehicle speed and density/flow along the study area freeway segments. The HCS 2010 software required the following inputs to complete the speed and density/flow calculations:

- AADT – Caltrans Traffic Census 2015 AADT Volumes Report
- K (peak hour percentage) – Caltrans Traffic Census 2015 AADT Volumes Report
- D (directional split) – Caltrans Traffic Census 2015 AADT Volumes Report
- $AADT_{adj}$ – Calculated using AADT and D values provided by Caltrans using the following equation:
  - $AADT_{adj} = (\frac{D}{1-D})AADT$
  - represents the direction in the opposite direction of the Peak Direction
- PHF – Assumed to be a typical value of 0.95
- P_T (% Trucks and Busses) – Caltrans Traffic Census 2015 AADT Truck Volumes Report
- P_R (% RVs) – Assumed to be 0, HCM 2010 recommends grouping RV volumes with Trucks in Buses as the value is assumed less than a 5:1 ratio
- General Terrain – Assumed to be less than 2% grade and therefore Level Terrain (HCM 2010 11-16,17)
- f_p – Driver population factor assumed one as traffic is largely commuter traffic
- E_T – Value of 1.5 as terrain is Level (HCM 2010 11-15)

- E_R – Value of 1.2 as terrain is Level (HCM 2010 11-15)
- Lane Width – Assumed 12' maximum value by Google Earth survey
- Rt-Side Lat. Clearance – Assumed 6' maximum value by Google Earth survey
- Total Ramp Density, TRD – Found in the Caltrans Traffic Census 2015 AADT Ramp Volumes Report
    - Density calculated by total number of on/off ramps in single direction within segment length plus 3 miles in both directions, divided by the total length
- Base free-flow Speed, BFFS – Assumed 75.4 mph (HCM 2010 11-11)

Using the calculated freeway speed and density/flow, the LOS is determined using the chart to the right:



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 uses 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)*.

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. The City of San Diego is currently developing their VMT guidelines that is in compliance with the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA.

3.0 Kearny Mesa Proposed Plan

This section identifies Kearny Mesa's mobility issues and needs as determined through the existing conditions analysis. The Proposed Plan mobility improvement development process, other considerations, 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 Kearny Mesa were identified in the Kearny Mesa Community Plan Update's *Mobility Existing Conditions Report* (July 2019), included as Appendix A. 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 *Mobility Existing Conditions Report*, against the mobility issues and needs identified in several other on-going or recent planning efforts, including:

- Clairemont Mesa Community Plan (Currently Undergoing Update);
- San Diego Forward: The Regional Plan (October 2015);
- City of San Diego Bicycle Master Plan (December 2013);
- Linda Vista Community Plan (Last Amended August 2019);
- Serra Mesa Community Plan (Last Amended October 2017);
- Tierrasanta Community Plan (Last Amended May 2013);
- City of San Diego Pedestrian Master Plan – Phase 4 (December 2013); and
- New Century Center Master Plan and Final Environmental Impact Report (August 2002)

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 *Mobility 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 *Mobility Existing Conditions Report* and the associated Proposed Plan improvements.

3.1.3 Design Considerations and Mobility Strategies

Since the Kearny Mesa Community Plan Update (CPU) is a high-level, programmatic planning document, specific details associated with Proposed Plan land uses and public infrastructure will be identified more so at the project-level. During the project-level development, design, and implementation process other considerations to enhance improvements and to address mobility

needs could be considered. This subsection provides descriptions of these other considerations and strategies.

Systemic Safety

Safety and protecting all users (pedestrians, bicyclists, older, younger, disabled, etc.) of the transportation system is of utmost importance. The City of San Diego continues to campaign its Vision Zero initiative of helping communities reach their goals of eliminating traffic fatalities and severe injuries by improving streets and sidewalks, so people can walk, bike and drive safely. More recently, the City is taking a more proactive approach to addressing safety and reaching Vision Zero goals with the citywide Systemic Safety Analysis Reporting Program (SSARP). The SSARP gives new perspective and tools to forecast future crash events through a focused examination of data and common physical traits (i.e., control type, traffic volumes, number of lanes) to understand where crashes are occurring. Once hotspots are identified, a program of countermeasures to reduce crashes at these locations can be established rather than waiting for events to occur and reacting. This systemic safety approach highlights the important role that the planning, design, and operation of infrastructure can play, and increases the attention of infrastructure owners and operators, like the City, to reinforce the application and practice of the safe systems framework.

The results of the SSARP will be used by City engineers and planners to preventively integrate effective projects that address potential safety issues, as well as reduce human error and accommodate human injury tolerance in roadway and multimodal facilities. From a long-range, community planning-level perspective, the Kearny Mesa Community Plan Update includes a policy framework that supports this continued advancement of safe systems techniques especially as the Proposed Plan is built out. Particularly, Kearny Mesa's street design and roadway operations should work towards implementing systemic safety actions and countermeasures, which could include, but are not limited to, the following:

- A robust and accessible network of safe, convenient, and comfortable bicycle and pedestrian facilities and amenities
- Roundabouts throughout the community, where feasible and appropriate
- Traffic calming measures that reduce speeding and traffic diversion
- Roadway features that eliminate crash prone conflicts
- Protected intersections, such as those identified in Section 3.3.2

Goods Movement

Kearny Mesa is home to companies that ship San Diego-based products to various North American shipping ports, rail stations, and in some cases via airfreight to customers across the globe. Most of these goods or freight are transported by trucks using the adjacent state and interstate highways with access provided by the community's regional arterials and surface streets. For some of the largest products transported on City roadways, the trip starts in the industrial areas along Ruffin Road on trucks equipped to handle heavy cargo. The City's arterials and major streets are

also accessed by trucks that serve the local retail and commercial uses with products to help support their business needs.

Optimizing goods movement to support the needs of existing and expanding business and industry will continue to be important, while minimizing potential conflicts to general mobility and protecting neighborhood quality of life. The Community Plan Update provides supporting policies to accommodate efficient freight movement and to alleviate the impacts of truck traffic, deliveries, and staging especially in Kearny Mesa's proposed urban villages and employment hub, known as the Ruffin Technology Cluster. Considerations, such as curb/corner radii, loading/unloading areas, and vertical/horizontal clearances, help trucks traverse along roadways and intersections, as well as allows for them to coexist with proposed multimodal facilities that will be implemented. Specific design concepts and operational features that facilitate the movement of goods via trucks will be identified at the project-level of infrastructure improvements and development.

Transportation System Management Strategies and Techniques

Intelligent Transportation Systems (ITS) tools and Transportation Demand Management (TDM) programs help address the mobility needs of Kearny Mesa by maximizing efficiency of services while increasing person throughput, reducing congestion and parking demand, and providing quality information to the commuting public.

The deployment of connected and autonomous vehicles is edging closer to reality. Emerging technologies intended to integrate future mobility concepts and improve traffic management and operations are known as Intelligent Transportation Systems, or ITS. The technologies employed vary widely and continue to evolve and shift how users experience the transportation system. ITS also have potential to make the transportation system more efficient by reducing travel times and safer by reducing collisions. A potential integration of these innovations in Kearny Mesa could include implementation of adaptive signals, advanced analytics, and high-speed communication networks to allow future connected vehicles, smartphones, and SMART corridors to communicate and share real-time data. Overall, the Proposed Plan's public infrastructure will embrace ITS and emerging mobility concepts and CPU policies will align with citywide related polices and allow for the flexibility in installing these future technologies that maximize their utility and benefits and promote smart deployment.

Commute trips to work make up a majority of trips on streets and freeways, and therefore, play a role in reducing vehicle miles traveled (VMT). Throughout San Diego, employers offer transportation demand management (TDM) strategies and incentive programs to employees using alternative ways to get to work. This includes subsidizing transit costs, organizing carpool and rideshare programs, providing secure storage areas for bicycles, and offering alternative work schedules. Through policies in the Kearny Mesa Community Plan Update, employers will continue to be encouraged to participate in and inform employees about TDM programs.

3.2 Pedestrian Environment

3.2.1 Identified Pedestrian Needs

The pedestrian environment affects everyone in Kearny Mesa as every trip either begins or ends with walking – 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 Kearny Mesa include locations with high pedestrian collisions or crashes (2 or more in the 5-year study period of 2011-2015), sidewalk connectivity issues, high existing pedestrian activity (30 or greater during peak periods), and high pedestrian priority (greater than or equal to 1 standard deviation above the community mean per the City of San Diego's 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 portion of Kearny Mesa west of SR-163 exhibits the greatest concentration of pedestrian collisions within the community. In particular, the intersection of Convoy Street and Clairemont Mesa Boulevard had three reported pedestrian collisions during the five-year study period (2011-2015), one of which was a fatality. Additionally, there are six intersections where two pedestrian collisions were reported during the study period, including:

- Mercury Street and Clairemont Mesa Boulevard;
- Convoy Street and Raytheon Road;
- Mercury Street and Daggett Street;
- Mercury Street and Balboa Avenue;
- Pepsi Drive and Armour Street; and
- Kearny Villa Road and Aero Drive.

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 on one or both sides of the street.

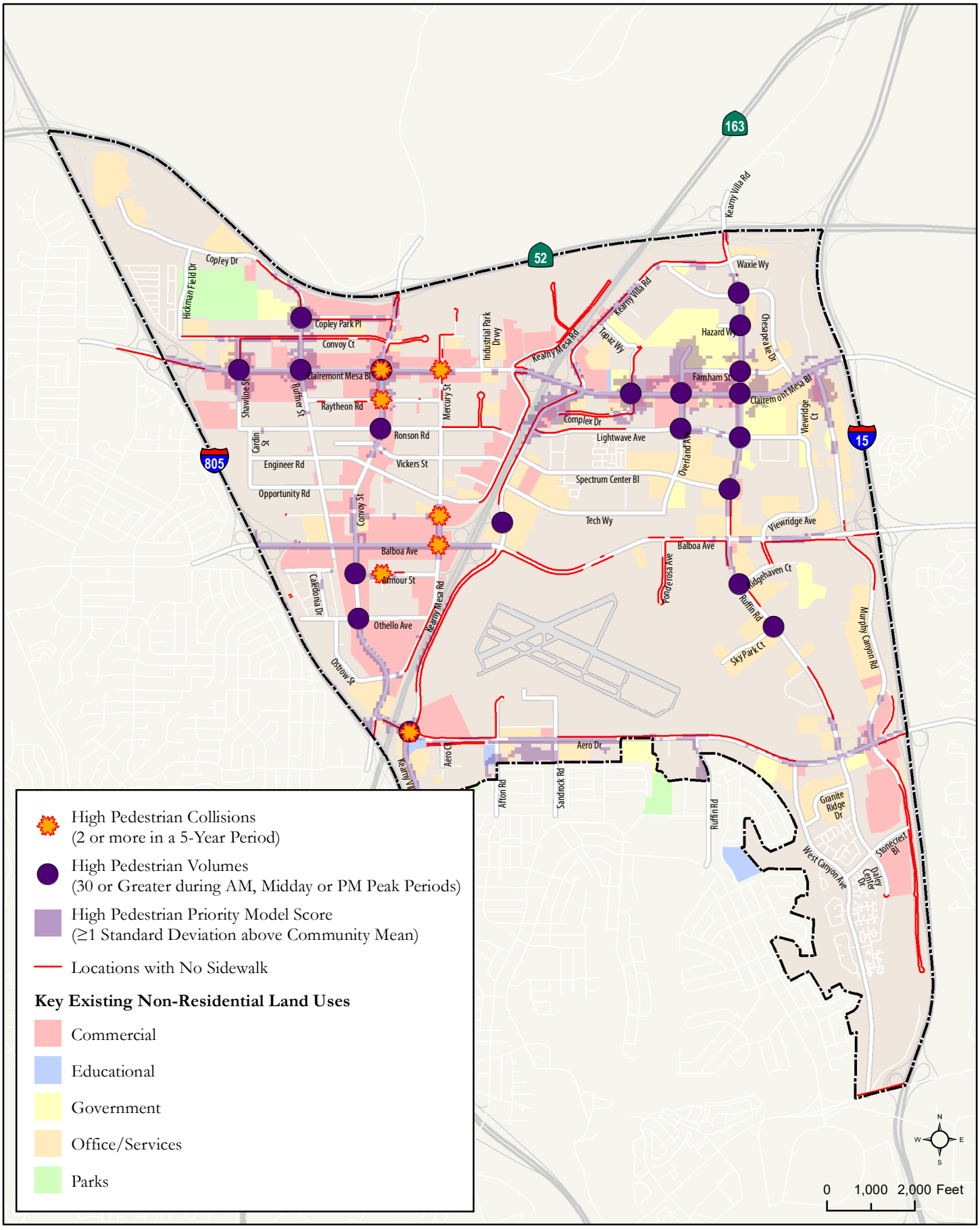


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Figure 3-1
Pedestrian Needs

Missing sidewalks are common along Convoy Court, Kearny Mesa Road, Kearny Villa Road, Balboa Avenue, Aero Drive, Murphy Canyon Road, as well as many smaller, business-serving roadways throughout the community. Sidewalks are also notable missing from roadways near the Kearny Mesa Transit Center, such as Complex Drive and Topaz Way. 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 twenty high pedestrian volume locations (defined as thirty or more pedestrians during weekday AM or PM Peak Periods, or Midday Peak Periods, where counted) in Kearny Mesa, including:

5. Ruffner Street/Copley Drive & Convoy Terrace/Copley Park Place
8. Ruffin Road & Chesapeake Drive
10. Kearny Villa Road & SR-163 NB Off-Ramp
11. Ruffin Road & Hazard Way
14. Shawline Street & Clairemont Mesa Boulevard
15. Ruffner Street & Clairemont Mesa Boulevard
16. Convoy Street & Clairemont Mesa Boulevard
23. Complex Street & Clairemont Mesa Boulevard
24. Overland Avenue & Clairemont Mesa Boulevard
25. Ruffin Road & Farnham Street
26. Ruffin Road & Clairemont Mesa Boulevard
30. Convoy Street & Ronson Road
32. Overland Avenue & Lightwave Avenue
33. Ruffin Road & Lightwave Avenue/Ruffin Court
37. Ruffin Road & Spectrum Center Boulevard
57. Convoy Street & Armour Street
60. Ruffin Road & Ridgehaven Court
61. Convoy Street & Othello Avenue
62. Ruffin Road & Sky Park Court
65. Kearny Villa Road & Aero Drive

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 or crashes, 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 at these locations.

Relatively higher need or priority is identified along major community thoroughfares, such as Clairemont Mesa Boulevard, as well as segments of Balboa Avenue, Aero Drive, Convoy Street, and Ruffin Road. Additionally, a secondary priority area is shown to exist in conjunction with the

Kearny Mesa Transit Center, located near the intersection of Topaz Way/Complex Drive and Clairemont Mesa Boulevard, owing to the number of pedestrian generators and attractors associated with transit centers.

3.2.2 Pedestrian Improvements

Pedestrian improvements were identified based upon supporting land uses, proximity to transit, and a roadway's purpose in terms of how it services the greater network. These considerations drove an identification of several pedestrian route types, such as District, Corridor, and Connector routes, as well as pathways and paseos. Each route type includes supporting improvements that are best suited to their unique characteristics, detailed in the sections that follow.

Pedestrian Route Types

Pedestrian route types are used to categorize pedestrian facilities along roadways based on adjacent uses and characteristics of the walking environment. The City of San Diego Pedestrian Master Plan (City 2006) defines route types, each suggesting a level of treatments or features that best supports the specific area's walking environment. Connector, Corridor, and District route types are particularly suitable within the context of Kearny Mesa.

Connector route types run along roadways with lower pedestrian activity levels, thus requiring more basic treatments such as landscaped buffers between the sidewalk and roadway, and mandatory features like standard sidewalk widths, ADA-compliant curb ramps, and marked crosswalks at signalized intersections with advance stop bars. Connectors also offer key circulation connections that feed more prominent Corridor and District roadways.

Corridor route types are present along roadways that support business and shopping districts with moderate pedestrian activity levels and consist of features of those identified under Connector route types with the addition of more enhanced treatments such as above minimum sidewalk widths (>5 feet), visual and audible pedestrian signal heads, lead pedestrian intervals, high visibility crosswalks, pedestrian lighting, and trees to shade walkways.

District route types support high pedestrian activity levels in mixed-use, urban areas and major community thoroughfares, consisting of features designed to support higher volumes of pedestrians in an environment where heavier vehicular traffic is also likely. Districts are intended to include improvements that provide premium comfort and priority for pedestrians. District features consist of those identified under Connector and Corridor route types with the addition of wider walkway widths for forming promenades/paseos/linear parks, decorative crosswalks and/or pavement materials, street furnishings, bulb outs/curb extensions, and median refuges and/or pedestrian actuated controls at crossings.

Figure 3-2 displays the Proposed Plan's District, Corridor, and Connector pedestrian route types. Although the figure illustrates the primary route types, the community is also comprised of neighborhood walkways in residential areas, as well as ancillary pedestrian facilities such as the existing active transportation bridge near the western terminus of Othello Avenue.

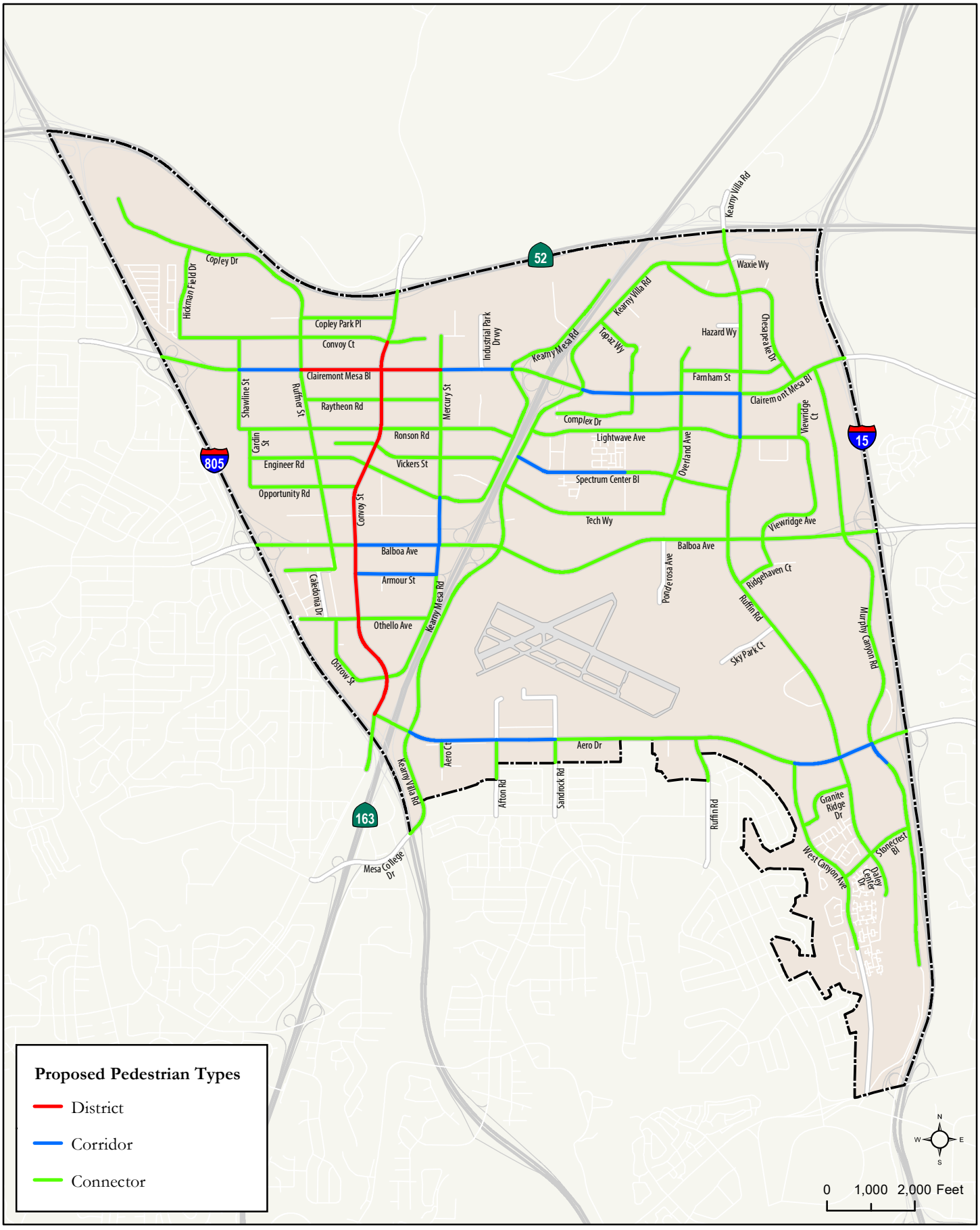

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Figure 3-2
Pedestrian Route Types - Proposed Plan Conditions

Intersections

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

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

For unsignalized intersections, features such as ADA-compliant curb ramps, advanced stop bar placement, and high visibility continental crosswalks are to be included along the intersection leg with the traffic control (i.e., stop sign).

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

Districts and Corridors Pedestrian Enhancements

Corridors and Districts include additional operational and physical treatments beyond the basic pedestrian amenities to support the heavier pedestrian activity levels that traverse along such roadways. As previously defined, the more enhanced and premium pedestrian improvements that can be implemented along the Proposed Plan's Corridors and Districts include, but are not limited to, walkways greater than 5 feet, pedestrian actuated traffic control devices and signals, early pedestrian start at crossing signals (i.e., LPIs), bulb-outs, and pedestrian furnishings and lighting, where appropriate. Listed below are the Proposed Plan's identified Corridors and Districts, where enhanced and/or premium pedestrian treatments will be implemented to strengthen the community's pedestrian network.

Corridor route types will be present along the following roadways under the Proposed Plan:

- Clairemont Mesa Boulevard, from Shawline Street to Ruffner Street;
- Clairemont Mesa Boulevard, from Mercury Street to Kearny Mesa Road;
- Clairemont Mesa Boulevard, from Kearny Villa Road to Ruffin Road;
- Spectrum Center Boulevard, from Kearny Villa Road to Paramount Drive;
- Balboa Avenue, from Convoy Street to Mercury Street;
- Armour Street, from Convoy Street to Kearny Mesa Road;
- Aero Drive, from Kearny Villa Road to Sandrock Road;
- Aero Drive, from West Canyon Avenue to Murphy Canyon Road;
- Kearny Villa Road, from Clairemont Mesa Boulevard to Lightwave Avenue/Ruffin Court;
- Mercury Street, from Engineer Road to Armour Street; and
- Murphy Canyon Road, from Aero Drive to Wal-Mart Driveway.

Districts route types will be present along the following roadways under the Proposed Plan:

- Clairemont Mesa Boulevard, from Ruffner Street to Mercury Street; and
- Convoy Street, from Convoy Court to Aero Drive.

Figure 3-3 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.

Bulb-outs/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 (LPIs) are recommended to improve pedestrian safety and efficiency at signalized intersection locations along District and Corridor pedestrian route types and at signalized intersections with high existing pedestrian volume locations (defined as thirty or more pedestrians during AM and PM peak periods). Additionally, locations where lead bicycle intervals are recommended can also accommodate LPIs without any additional modification to the signal timing. LPIs are recommended at the following intersections and legs where pedestrian crossings are permitted:

9. Convoy Street & Convoy Court (north, south, west, east legs)
14. Shawline Street & Clairemont Mesa Boulevard (north, south, east legs)
15. Ruffner Street & Clairemont Mesa Boulevard (north, south, west, east legs)
16. Convoy Street & Clairemont Mesa Boulevard (north, south, west, east legs)
17. Mercury Street & Clairemont Mesa Boulevard (north, south, west, east legs)
19. Kearny Mesa Road & Clairemont Mesa Boulevard (north, south, west legs)
22. Kearny Villa Road & Clairemont Mesa Boulevard (north, south, east legs)
23. Complex Drive & Clairemont Mesa Boulevard (north, south, west, east legs)
24. Overland Avenue & Clairemont Mesa Boulevard (north, south, west, east legs)
30. Convoy Street & Ronson Road (north, south, west, east legs)
33. Ruffin Road & Lightwave Avenue/Ruffin Court (north, south, west, east legs)
34. Convoy Street & Engineer Road (north, south, west, east legs)
38. Mercury Street & Engineer Road (north, south, west, east legs)
44. Ruffner Street & Balboa Avenue (north, south, west, east legs)
45. Convoy Street & Balboa Avenue (north, south, west, east legs)
46. Mercury Street & Balboa Avenue (north, south, west, east legs)
57. Convoy Street & Armour Street (north, south, west, east legs)
58. Mercury Street & Armour Street (north, south, west, east legs)
61. Convoy Street & Othello Avenue (north, south, west, east legs)
63. Convoy Street & Ostrow St/Kearny Mesa Road (north, south, west, east legs)
66. Aero Court & Aero Drive (north, south, east legs)
67. Afton Road/Glenn H. Curtiss Road & Aero Drive (south, east legs)
68. Broadstone Driveway & Aero Drive (south, east legs)
69. Sandrock Road/John J. Montgomery Drive & Aero Drive (north, south, west, east legs)
71. West Canyon Avenue & Aero Drive (south, east legs)
73. Murphy Canyon Road & Aero Drive (north, south, west legs)

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. Note that certain segments may have parcel-specific sidewalks in place, but those segments listed below currently lack fully connective sidewalks.

- Convoy Street, from SR-52 eastbound ramps to Copley Park Place (east side and portions of west side);
- Convoy Street, from Copley Park Place to approximately 150 feet south of Copley Park Place (east side);
- Convoy Street, from Aero Drive to southern community boundary (east side);
- Shawline Street, from Convoy Court to Clairemont Mesa Boulevard (east side);
- Raytheon Road, from approximately 240 feet east of Ruffner Street to 380 feet east of Ruffner Street (south side);
- Raytheon Road, from approximately 510 feet west of Convoy Street to 280 feet west of Convoy Street (south side);
- Clairemont Mesa Boulevard, from I-805 SB Ramps to I-805 NB Ramps (south side);
- Clairemont Mesa Boulevard, from Kearny Mesa Road to SR-163 SB Ramps (both sides);
- Ronson Road, from Mercury Street to approximately 300 feet west of Kearny Mesa Road (north side);
- Kearny Villa Road, from northern community boundary to Waxie Way (both sides);
- Kearny Villa Road, from Waxie Way to Topaz Way (west side);
- Kearny Villa Road, from Topaz Way to Clairemont Mesa Boulevard (west side);
- Kearny Villa Road, from Clairemont Mesa Boulevard to Lightwave Avenue (west side);
- Kearny Villa Road, from Lightwave Avenue to Century Park Court (west side);
- Kearny Villa Road, from Balboa Avenue to Aero Drive (both sides);
- Armour Street, approximately 790 feet east of Convoy Street to 1,040 feet east of Convoy Street;
- Kearny Mesa Road, from northern end to Clairemont Mesa Boulevard (both sides);
- Kearny Mesa Road, from Clairemont Mesa Boulevard to Engineer Road (east side);
- Kearny Mesa Road, from Othello Avenue to approximately 370 feet east of Convoy Street (east side);
- Mercury Street, from Mercury Court to Clairemont Mesa Boulevard (west side);
- Mercury Street, from approximately 375 feet north of Clairemont Mesa Boulevard to approximately 220 north of Clairemont Mesa Boulevard (east side);
- Mercury Street, from Clairemont Mesa Boulevard to Raytheon Road (east side);
- Lightwave Avenue, from Kearny Villa Road to Paramount Drive (north side);
- Ponderosa Avenue, from Balboa Avenue to southern end (both sides);
- Viewridge Avenue, from Balboa Avenue to Ridgehaven Court (both sides);
- Complex Drive, from Topaz Way to Clairemont Mesa Boulevard (east side);
- Complex Drive, from Clairemont Mesa Boulevard to Kearny Villa Way (both sides);
- Balboa Avenue, from Kearny Villa Road to Ruffin Road (both sides);
- Balboa Avenue, from Viewridge Avenue to I-15 Southbound off-ramps (south side);

- Aero Drive, from Convoy Street to Kearny Villa Road (south side);
- Aero Drive, from Kearny Villa Road to Afton Road/Glenn H. Curtiss Road (both sides);
- Aero Drive, from Sandrock Road to West Canyon Avenue (north side);
- Aero Drive, from Murphy Canyon Road to eastern community boundary (south side);
- Ruffin Road, from Spectrum Center Boulevard to Balboa Avenue (east side);
- Ruffin Road, from Balboa Avenue to approximately 530 feet south of Balboa Avenue (west side);
- Ruffin Road, from approximately 170 feet south of Ridgehaven Court to 610 feet south of Ridgehaven Court (east side);
- Ruffin Road, from Calle Fortunada (north) to approximately 830 feet north of Aero Drive (east side);
- Murphy Canyon Road, from approximately 250 feet north of Balboa Avenue overcrossing to 1,480 feet south of Balboa Avenue overcrossing (east side);
- Murphy Canyon Road, from Aero Drive to south end (both sides); and
- Daley Center Drive, south end of cul-de-sac.

In addition to closing gaps in the sidewalk network, seeking additional right-of-way for wider, non-contiguous sidewalks and parkway area will also occur at the project-level to help upgrade the community's pedestrian network.

Urban Pathways

A re-envisioned Kearny Mesa will include urban pathways that support the vision for a vibrant employment and residential community. Urban pathways are designed as wide, urban sidewalks for pedestrian mobility and connections within the village areas.

The environments surrounding the urban pathways will vary. Urban pathways serve as linkages, enhance the pedestrian environment, incorporate urban greening improvements, and provide a sense of place within villages. Paseos may also be implemented to provide direct routes through large parcels, adjacent to buildings, through parking lots or along parcel peripheries – all away from high speed, high volume roadways (i.e., absent from vehicular traffic altogether).

The Proposed Plan includes the following four urban pathways to connect the mixed-use, urban villages to key destinations and transit services:

- Airport Loop
- Opportunity Trail
- Park Link
- Aero Promenade

One signature urban pathway that will provide connections between the planned mobility networks and serve as an active transportation feature for Kearny Mesa is the Airport Loop around the Montgomery-Gibbs Executive Airport. A combination of pedestrianways, bicycle facilities, and multi-use paths will make up a five-mile loop along Balboa Avenue, Ruffin Road, Aero Drive, and

Kearny Villa Road. The active transportation facility types comprising the loop will vary due to physical constraints (i.e., lack of publicly available right-of-way) but could include the following:

- Balboa Avenue – One-way cycle tracks plus a pedestrianway on the south side
- Ruffin Road – One-way cycle tracks and sidewalks
- Aero Drive – Multi-use path on the north side and one-way cycle track on the south side
- Kearny Villa Road – Multi-use path on the east side and one-way cycle track on the west side

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 Kearny Mesa. Needs are identified by locations with a high number of bicycle collisions or crashes (two or more in the five-year analysis period of 2011-2015), high-stress roadways for cyclists (LTS 4), lack of existing bicycle facilities, and cycling demand shown to be Medium-High (10.9 points) or above, per the Bicycle Priority Model analysis conducted for the *Mobility Existing Conditions Report*. Figure 3-4 depicts bicycle needs.

Bicycle Safety

The intersections of Terry Bennett Driveway/Gerald Griffin Driveway & Balboa Avenue, John J. Montgomery Drive/Sandrock Road and Aero Drive, Murphy Canyon Road & Aero Drive, as well as the I-805 NB off-ramp and Clairemont Mesa Boulevard are considered areas of high bicycle collisions with two or more bicycle-involved collisions reported during the five-year analysis period (2011 – 2015). The intersection of the I-805 NB off-ramp and Balboa Avenue also reported a bicycle fatality during the five-year study period.

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 (LTS 4) along most roadways in Kearny Mesa, 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.

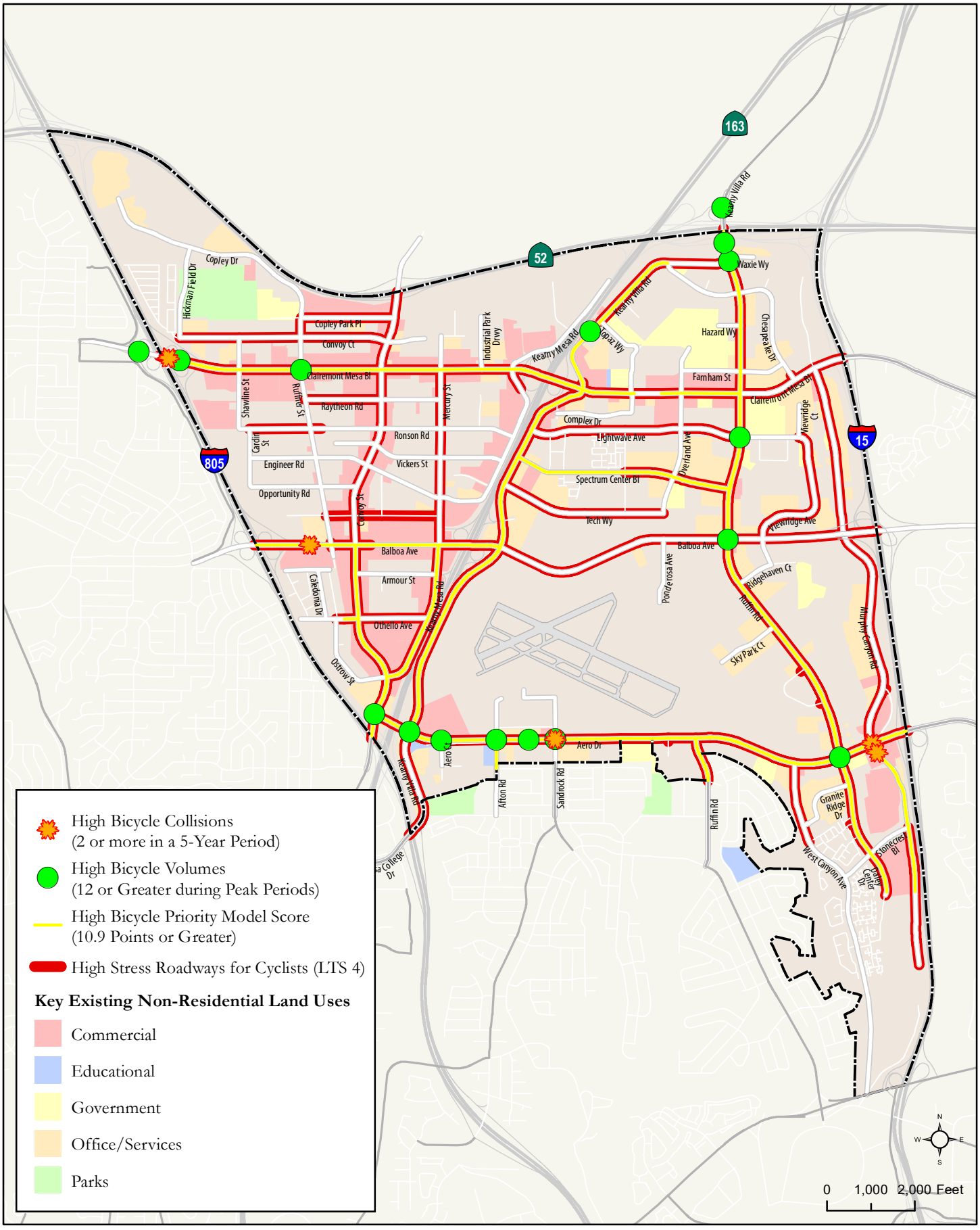

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Figure 3-4
Bicycle Needs

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. Kearny Mesa exhibits relatively high demand along large circulation element roadways in both the north-south and east-west direction, suggesting cross-community and inter-community travel potential. These bicycle travel demand estimates are generally supported by higher observed bicycle volumes.

The following sixteen intersections were identified as high bicycle volume locations (defined as 12 or more cyclists observed during weekday AM and PM peak periods):

3. Kearny Villa Road & SR-52 WB Ramps
4. Ruffin Road/Kearny Villa Road & SR-52 EB Ramps
7. Ruffin Road & Kearny Villa Road/Waxie Way
12. I-805 SB Off-Ramp & Clairemont Mesa Boulevard
13. I-805 NB Off-Ramp & Clairemont Mesa Boulevard
15. Ruffner Street & Clairemont Mesa Boulevard
33. Ruffin Road & Lightwave Avenue/Ruffin Court
52. Ruffin Road & Balboa Avenue
59. Kearny Villa Road & SR-163 NB Off-Ramps
64. Convoy Street & Aero Drive
65. Kearny Villa Road & Aero Drive
66. Aero Court & Aero Drive
67. Afton Road/Glenn H. Curtiss Drive & Aero Drive
68. Broadstone Driveway & Aero Drive
69. Sandrock Road/John J. Montgomery Drive & Aero Drive
72. Daley Center Drive/Ruffin Road & Aero Drive

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, SANDAG's Regional Bike Plan, as well as synthesizing outreach efforts associated with the Kearny Mesa and Clairemont Mesa community plan updates. Efforts included coordination between City departments, improvements furthering implementation of the goals and policies of the City and region, forwarding the City's Climate Action Plan goals, as well as advancing State Complete Streets aims. The Proposed Plan bicycle facilities are listed in this subsection and displayed in Figure 3-5. 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).

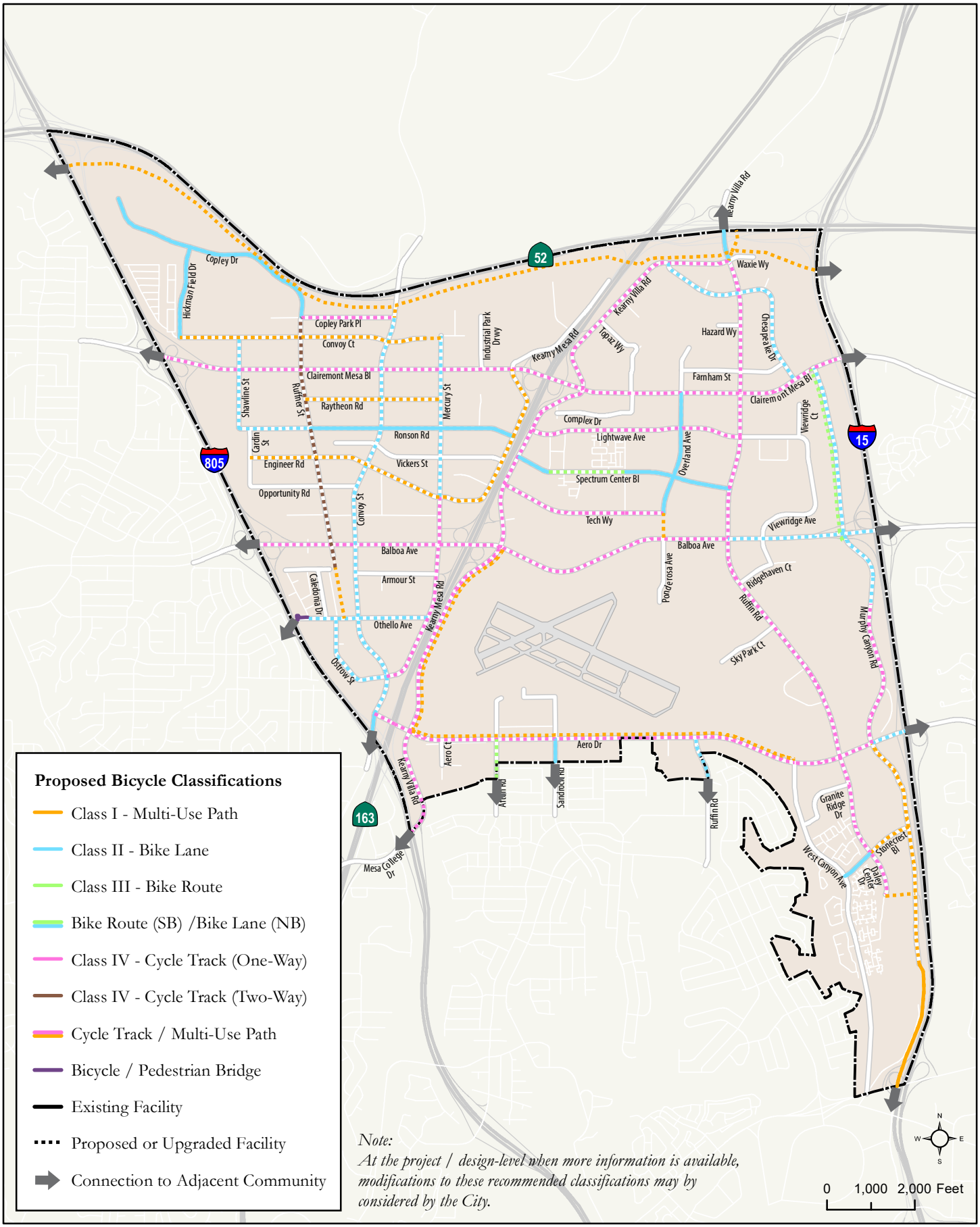

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Figure 3-5
Bicycle Network - Proposed Plan Conditions

Bicycle facilities could be implemented through the following mechanisms, as appropriate: repurposing existing public right-of-way (ROW), coordinating with abutting property owners, having an Irrevocable Offer of Dedication (IOD) for the City to obtain the right-of-way to implement the proposed bicycle facility, or having developers implement the bicycle facility based on the supplemental development regulations and incentives outlined in the Community Plan Implementation Overlay Zone (CPIOZ). The potential mechanism(s) that could be used to implement each proposed bicycle facility have been identified in Appendix N. At the project-level when more information is available, modifications to these recommended classifications may be considered by the City.

Class I Multi-Use Path

- SR-52 Bikeway (San Clemente Canyon)
- Convoy Court, from Hickman Field Drive to Mercury Street
- Raytheon Road, from Ruffner Street to Mercury Street
- Engineer Road, from Cardin Street to Kearny Mesa Road
- Kearny Mesa Road, from Engineer Road to Clairemont Mesa Boulevard
- New connecter, from Ruffner Street terminus to Othello Avenue
- Stonecrest Boulevard, from Daley Center Drive to Murphy Canyon Road
- Ponderosa Avenue, from Balboa Avenue to Tech Way
- New connector, from southern terminus of Daley Center Drive to Murphy Canyon Road
- Murphy Canyon Road, from Aero Drive to existing Class I multi-use path

Class II Bike Lanes

- Chesapeake Drive, from Kearny Villa Road to Clairemont Mesa Boulevard
- Ronson Road, from Shawline Street to Ruffner Street
- Balboa Avenue, from Ruffin Road to eastern community boundary
- Othello Avenue, from western terminus to eastern terminus
- Aero Drive, from Murphy Canyon Road to eastern community boundary
- Shawline Street, from Ronson Road to Convoy Court
- Ostrow Street, from Othello Avenue to Convoy Street
- Convoy Street, from Copley Park Place to Aero Drive
- Mercury Street, from Convoy Court to Engineer Road
- Ruffin Road, from Aero Drive to southern community boundary
- Murphy Canyon Road, from Balboa Avenue to approximately 1,500 feet south of Balboa Avenue

Class II Bike Lane (NB) and Class III Bike Route (SB)

- Murphy Canyon Road, from Clairemont Mesa Boulevard to Balboa Avenue

Class III Bike Routes

- Spectrum Center Boulevard, from Sunroad Centrum Lane to Paramount Drive
- Afton Road, from Aero Drive to southern community boundary.

Class IV Cycle Track (One -Way Cycle Tracks provided in both directions)

- Copley Park Place, from Ruffner Street to Convoy Street
- Clairemont Mesa Boulevard, from western community boundary to I-15 SB ramps
- Lightwave Avenue, from Kearny Villa Road to Ruffin Road
- Tech Way, from Kearny Villa Road to Overland Avenue
- Balboa Avenue, from western community boundary to Ruffin Road
- Aero Drive, from West Canyon Avenue to Murphy Canyon Road
- Aero Drive, from Convoy Street to Kearny Villa Road
- Kearny Mesa Road, from Engineer Road to Convoy Street
- Kearny Villa Road, from Ruffin Road to Balboa Avenue
- Kearny Villa Road, from Aero Drive to southern community boundary
- Ruffin Road, from Kearny Villa Road to Aero Drive
- Daley Center Drive, from Aero Drive to southern terminus of roadway
- Murphy Canyon Road, from approximately 1,500 feet south of Balboa Avenue to Aero Drive

Class IV Cycle Track (Two -Way)

- Ruffner Street (east side), from Copley Park Place to approximately 200 feet south of Balboa Avenue

Class I Multi Use Path and Class IV Cycle Tracks (One-Way)

- Kearny Villa Road (Class I on east side, Class IV on west side), from Balboa Avenue to Aero Drive
- Aero Drive (Class I on north side, Class IV on south side), from Kearny Villa Road to West Canyon Avenue

Bicycle Signal Phasing

Bicycle signal phasing are recommended to improve cyclists' safety and efficiency at signalized intersection locations along Class IV Cycle Track facilities. Bicycle signal phasing modifications were based upon incorporating lead bike signals, which provide a three-second lead for bicyclists to enter the intersection before the start of the vehicular phase. In the case of intersections that also would include LPIs, the lead bike signal would occur at the same time as the pedestrian-only phase. These locations include:

- 7: Ruffin Road & Kearny Villa Road/Waxie Way (all legs)
- 8: Ruffin Road & Chesapeake Drive (north, south legs)
- 11: Ruffin Road & Hazard Way (north, south legs)
- 13: I-805 NB Off-Ramp & Clairemont Mesa Boulevard (east, west legs)
- 14: Shawline Street & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- 15: Ruffner Street & Clairemont Mesa Boulevard (signal with LPI- all legs)
- 16: Convoy Street & Clairemont Mesa Boulevard (signal with LPI - all legs)
- 17: Mercury Street & Clairemont Mesa Boulevard (signal with LPI - all legs)

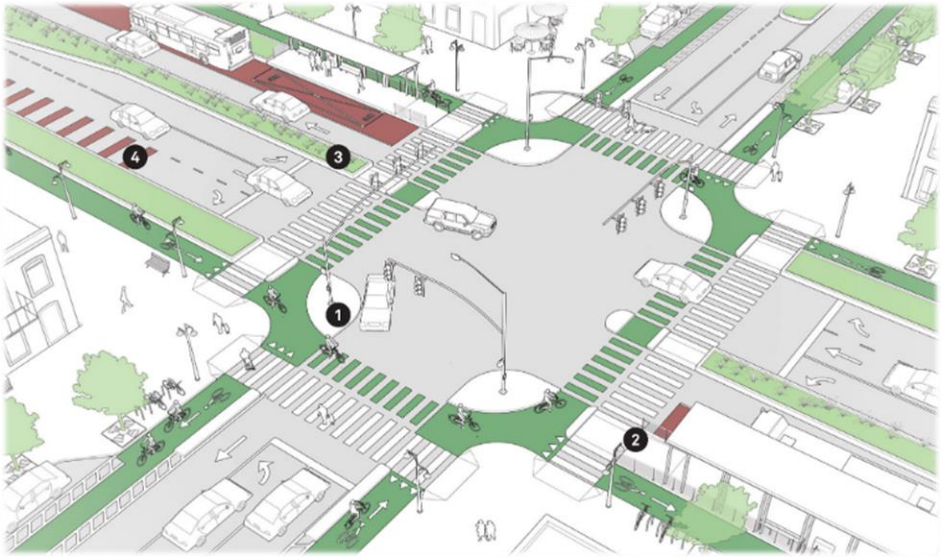
- 18: Industrial Park Driveway & Clairemont Mesa Boulevard (east, west legs)
- 19: Kearny Mesa Road & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- 20: SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard (east, west legs)
- 21: SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Boulevard (east, west legs)
- 22: Kearny Villa Road & Clairemont Mesa Boulevard (lead bike signals on all legs with LPIs on legs with crosswalks)
- 23: Complex Street & Clairemont Mesa Boulevard (signal with LPI- all legs)
- 24: Overland Avenue & Clairemont Mesa Boulevard (signal with LPI - all legs)
- 25: Ruffin Road & Farnham Street (north, south legs)
- 26: Ruffin Road & Clairemont Mesa Boulevard (all legs)
- 27: Murphy Canyon Road & Clairemont Mesa Boulevard (east, west legs)
- 28: Clairemont Mesa Boulevard & SR-52 EB & I-15 SB Off-Ramps (east, west legs)
- 29: I-15 NB Ramps & Clairemont Mesa Boulevard (east, west legs)
- 31: Kearny Villa Road & Lightwave Avenue (all legs)
- 32: Overland Avenue & Lightwave Avenue (east, west legs)
- 33: Ruffin Road & Lightwave Avenue/Ruffin Court (signal with LPI - all legs)
- 34: Convoy Street & Engineer Road (signal with LPI - all legs)
- 35: Kearny Villa Road & Spectrum Center Boulevard (north, south legs)
- 37: Ruffin Road & Spectrum Center Boulevard (north, south legs)
- 38: Mercury Street & Engineer Road (signal with lead pedestrian interval - all legs)
- 39: Kearny Villa Road & Tech Way (all legs)
- 40: Mercury Street & SR-163 SB On-Off Ramps (north, south legs)
- 41: Kearny Villa Road & SR-163 NB On-Off Ramps/Century Park Court (north, south legs)
- 44: Balboa Avenue & Ruffner Street (signal with LPI - all legs)
- 45: Convoy Street & Balboa Avenue (signal with LPI - all legs)
- 46: Mercury Street & Balboa Avenue (signal with LPI - all legs)
- 49: Kearny Villa Road & Balboa Avenue (all legs)
- 50: Balboa Avenue & Pennisi Driveway (east, west legs)
- 51: Ponderosa Avenue & Balboa Avenue (east, west legs)
- 52: Ruffin Road & Balboa Avenue (all legs)
- 58: Mercury Street & Armour Street (signal with LPI - all legs)
- 59: Kearny Villa Road & SR-163 On-Off Ramps (north, south legs)
- 60: Ruffin Road & Ridgehaven Court (north, south legs)
- 62: Ruffin Road & Sky Park Court (north, south legs)
- 64: Convoy Street & Aero Drive (north, south, east legs)
- 65: Kearny Villa Road & Aero Drive (all legs)
- 66: Aero Court & Aero Drive (signal with LPI - all legs)
- 67: Afton Road/Glenn H Curtiss Road & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)

- 68: Broadstone Driveway & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)
- 69: Sandrock Road/John J Montgomery Drive & Aero Drive (signal with LPI – all legs)
- 70: Ruffin Road & Aero Drive (east, west legs)
- 71: West Canyon Avenue & Aero Drive (lead bike signals on east and west legs with LPIs on legs with crosswalks)
- 72: Daley Center Drive/Ruffin Road & Aero Drive (all legs)
- 73: Murphy Canyon Road & Aero Drive (all legs)
- 76: Daley Center Drive & Granite Ridge Drive (north, south legs)
- 80: Mesa College Drive/Kearny Villa Road & Berger Avenue (east, west legs)
- 81: I-805 NB Off-Ramp & Kearny Villa Road (east, west legs)
- 82: Murphy Canyon Road & Stonecrest Boulevard (all legs)

Protected Intersections

Protected intersection includes at-grade physical separations to define the turning paths of motor vehicles, slow motor-vehicle turning speed, better separate non-motorists from vehicles, promote yielding to bicyclists and offer comfort for bicyclists waiting at a red signal or traversing through the intersection. To facilitate cyclists safely maneuvering through a challenging intersection (i.e. intersection with high traffic volumes, wide cross-sections, unique lane configurations/signal timings, etc.), the following locations are identified as potential protected intersections:

- 26: Ruffin Road & Clairemont Mesa Boulevard
- 49: Kearny Villa Road & Balboa Avenue
- 52: Ruffin Road & Balboa Avenue
- 65: Kearny Villa Road & Aero Drive
- 72: Ruffin Road & Aero Drive



Source: Global Street Design Guide published by Island Press.

Prototype of a protected intersection. This image is for conceptual purposes only.

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 villages, employment centers, and other higher intensity uses to be located in areas that can be served by high quality transit services. This development strategy will allow more people to live and work within walking distance of transit.

The primary transit streets in Kearny Mesa are Clairemont Mesa Boulevard, Ruffin Road, Convoy Street, and Balboa Avenue, with Clairemont Mesa Boulevard having the most transit service levels and the highest ridership. Secondary transit streets include Kearny Villa Road (between Balboa Avenue and Clairemont Mesa Boulevard) and Aero Drive. Secondary transit streets have a lower level of service; however, they are subject to change as ridership demand changes. With the planned intensification of development along transit corridors, ridership demand on bus lines with low frequency may reach levels that can sustain higher frequency service, which will improve transit connections between circulator routes (i.e. Route 25) and frequent cross-city/regional routes (i.e. Rapid 235).

The Kearny Mesa Transit Center (KMTC) at Clairemont Mesa Boulevard and Complex Drive is the transit hub for Kearny Mesa, with connections for MTS Routes 20, 25, 27, 120, and the Rapid 235. MTS bus routes connect Kearny Mesa to Escondido along the I-15 Corridor, Fashion Valley through Linda Vista, Pacific Beach through Clairemont, and Downtown San Diego through Clairemont, Morena, and the I-15 Corridor.

First/last mile mobility is critical for a successful transit network in Kearny Mesa due to its role as a Subregional Employment Area in the city. The bus network operates on auto-oriented, commercial corridors with no bus stops on interior streets where many office and industrial uses are located. Further compounding the limited pedestrian access are the large block size and street network pattern, which is often disconnected or constrained by highways or the Montgomery-Gibbs Executive Airport. Bus services often form the core of a trip, but transit users complete the first and last portion of their trip by walking, so convenient first/last mile infrastructure will help fill connectivity gaps between transit access and destinations.

Transportation needs in Kearny Mesa primarily stem from cross-community access issues, such as connecting major employment centers to the community's well-developed retail and restaurant districts. These transit needs are illustrated in **Figure 3-6**, which highlights a potential for transit service improvement opportunities in the central portion of the community.

Community Circulators

Community members in Kearny Mesa have expressed the desire to explore the potential for a community circulator to provide connections from regional employment centers to the well-established retail and restaurant districts. A community circulator may provide lunchtime or after-work access to dining and shopping while reducing roadway and parking congestion. An example of a retail and restaurant district is the Convoy District, which seeks to promote local businesses,

as well as to establish the district as a cultural, dining, and innovation hub. Community circulators can be a traffic-mitigating community amenity and are often implemented through various sources of financing, such as by conditions established during a development's approval process, through business district support, or by private financing.

Access Limitations

Substandard service quality is present along many major corridors that serve the core of Kearny Mesa. In particular, infrequent service (defined as 30-minute headways or more) is found along portions of Clairemont Mesa Boulevard, Balboa Avenue, Aero Drive, and Ruffin Road. Additionally, poor on-time performance is found along bus routes that serve Aero Drive, which limits the convenience and reliability of public transit. Bus route 25 on-time performance is significantly below the goals set by the San Diego Metropolitan Transit System (MTS). Inadequate on-time performance could be attributed by traffic congestion along this route both within and outside Kearny Mesa and by the length and circuity of the route. With no dedicated transit priority treatments in the community, these buses are frequently stuck in the same congestion as private vehicles. Implementation of transit priority measures may be desired along some roadway segments.

Since many bus routes serve the community, it is possible that a reexamination of bus routing within the community to and from the Kearny Mesa Transit Center may yield the potential for increased service frequency, due to the positive correlation between the presence of multiple transit routes along a corridor, and improved overall frequency, particularly where multiple routes serve major destinations or transit hubs.

Common Choke Points

Review of the transit network, alongside consultation with MTS, identified a number of particular "choke points" in the transit network in Kearny Mesa that affect transit performance. These points include several freeway overpasses, where traffic congestion and freeway ramp operations impede transit performance, and congested intersections that either impede performance or prevent certain movements from occurring:

1. I-805 overpasses along Clairemont Mesa Boulevard and Balboa Avenue
2. SR-163 overpasses along Aero Drive, Clairemont Mesa Boulevard, and Balboa Avenue
3. I-15 overpasses along Clairemont Mesa Boulevard and Balboa Avenue
4. The intersection of Clairemont Mesa Boulevard and Ruffin Road
5. The Intersection of Aero Drive and Murphy Canyon Road
6. The intersection of Clairemont Mesa Boulevard and Kearny Villa Road
7. The intersection of Balboa Avenue and Kearny Villa Road
8. The intersection of Clairemont Mesa Boulevard and Complex Drive
9. The intersection of Aero Drive and Ruffin Road

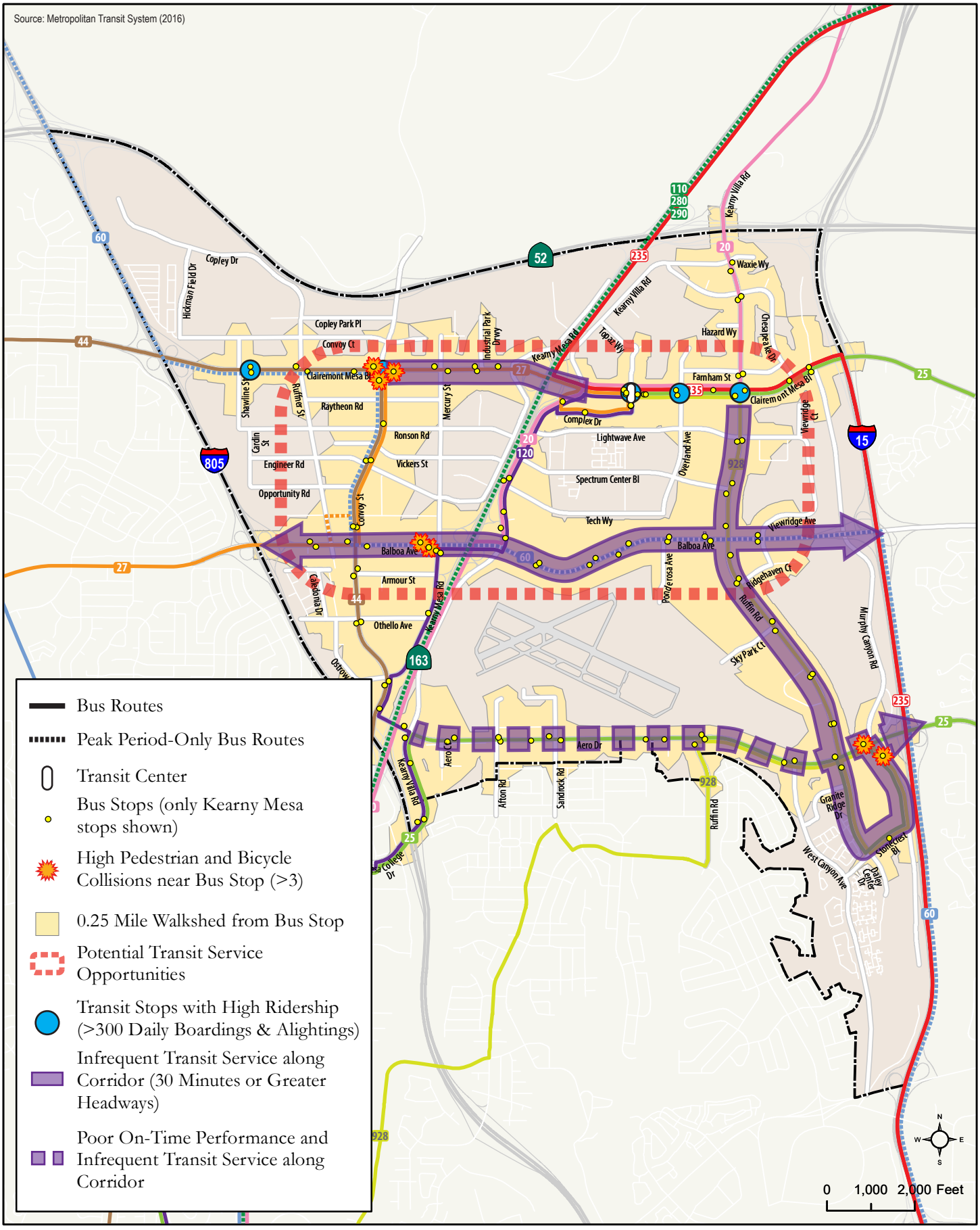


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Figure 3-6
Transit Needs

SMART Corridors

The Proposed Plan incorporates SMART Corridors, to further SANDAG's 5 Big Moves strategy, as introduced in Chapter 2. The Proposed Plan incorporates two SMART Corridors, which include:

- Clairemont Mesa Boulevard, from I-805 to I-15
- Balboa Avenue, from I-805 to SR-163

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 existing mobility challenges related to connectivity and accessibility for transit users at that location. Collisions have been proximate to stops along Clairemont Mesa Boulevard, Balboa Avenue, Aero Drive, and Murphy Canyon Road during the five-year collision analysis period. Stops include:

- 5 stops along Clairemont Mesa Boulevard, near Convoy Street and Mercury Street
- 6 stops along Balboa Avenue, near Terry Bennett Driveway and Kearny Mesa Road
- 5 stops along Aero Drive, near Murphy Canyon Road, Ruffin Road, and West Canyon Avenue

Transit Opportunities

The majority of Kearny Mesa is anticipated to fall within a Transit Priority Area[7] by the year 2035, per the City of San Diego's Climate Action Plan (CAP). Transit commute mode share goals, per *CAP Strategy 3 – Bicycling, Walking, and Land Use*, are 25%, which would thus apply to the majority of the community. Implementing improved transit headways of 7 minutes on major transit routes by the year 2040, as prescribed per SANDAG's *San Diego Forward* regional transportation plan framework, as well as construction of the planned Purple and Red Lines of the San Diego Trolley, with planned stations in Kearny Mesa, will provide prime opportunities to increase transit mode share in pursuit of CAP goals.

Transit operations can benefit from additional priority treatments such as implementation of a SMART Corridor along Clairemont Mesa Boulevard and Balboa Avenue, transit signal priority along Convoy Street/Linda Vista Road, Ruffin Road, and Aero Drive.

Additionally, there is potential to create one or more mobility hubs in Kearny Mesa, perhaps adjacent to the Kearny Mesa Transit Center or future trolley station, by utilizing the framework provided in SANDAG's *Regional Mobility Hub Implementation Strategy* and *San Diego Forward*. Mobility hubs are a tool for improving connectivity between transit and home, work, or other destinations, and increasing transit mode share through the implementation of a first-last mile programs and infrastructure. Mobility hubs are often located near high-frequency transit or where there is a concentration of employment, housing, shopping, and/or recreation. They vary in size

[7] Transit Priority Areas, within the context of Kearny Mesa, include areas within one-half mile of planned trolley stations or the intersection of two or more major bus routes, each having a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods.

and design depending on existing and anticipated ridership and availability of public right-of-way or private property that is publicly accessible. Mobility hubs can include a mix of features, such as enhanced transit waiting areas, passenger loading zones, real time travel information, walkways, high-visibility crosswalks, bicycle parking, bikeshare, carshare, on-demand rideshare, neighborhood electric vehicles, micromobility, microtransit, electric vehicle charging, and wayfinding. Such a strategy will be of high importance in Kearny Mesa to implement the vision for the Community Plan. Mobility hubs have been identified as part of the Proposed Plan at locations including:

- Aero Court & Aero Drive
- Convoy Street & Clairemont Mesa Boulevard
- Complex Drive & Clairemont Mesa Boulevard
- Convoy Street & Othello Avenue
- Kearny Villa Road & Balboa Avenue
- Ruffin Road & Balboa Avenue

Transit Service Quality and Arterial Performance

Many transit routes within Kearny Mesa 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 *Mobility Existing Conditions Report* conducted in support of this Community Plan Update process identified delay-prone segments of Balboa Avenue, Clairemont Mesa Boulevard, Ruffin Road, and Convoy Street. These roadways serve as routing for a portion of the following transit routes:

Balboa Avenue
- Route 27
- Route 20
- Route 120
- Route 60

Clairemont Mesa Boulevard
- Route 60
- Route 44
- Route 27
- Route 20
- Route 235
- Route 25
- Route 120
- Route 928

Ruffin Road
- Route 928
- Route 670
- Route 20

Convoy Street
- Route 27
- Route 60
- Route 44

The arterials that serve these transit routes often operate at LOS D conditions or below during peak periods along the segments shared with transit. **Table 3.1** shows on-time performance (OTP) rates provided by the 2018 MTS Annual Service Performance Monitoring Report. OTP is measured at each bus timepoint for every trip; buses departing timepoints within 0-5 minutes of the scheduled time are considered to be "on-time." OTP is measured by service change period in order to show the results of scheduling changes. MTS' goal for OTP is 85% for Urban Frequent and Rapid

bus routes, and 90% for Trolley and all other bus route categories. Performance of fixed bus routes can be affected by congestion through high density corridors.

Table 3.1 Kearny Mesa Transit Performance

Route	Goal	On-Time Performance
20: Rancho Bernardo Transit Center – Downtown San Diego	90%	85%
27: Pacific Beach-Kearny Mesa Transit Center	85%	82%
44: Old Town – Clairemont Square	85%	84%
60: UTC via Kearny Mesa – Euclid Avenue Trolley Station via Kearny Mesa	90%	74%
120: Kearny Mesa Transit Center Limited Stops – Downtown Limited Stops	85%	86%
235: Downtown San Diego – Escondido Transit Center	85%	85%
928: Fashion Valley Transit Center – Kearny Mesa Transit Center	85%	79%
25: Kearny Mesa Transit Center – Fashion Valley Transit Center	90%	48%

Source: FY2018 MTS Performance Monitoring Report

As shown, the aforementioned routes that utilize congested arterials in Kearny Mesa experience a schedule adherence that ranges between 48% (Route 25) and 86% (Route 120). Many transit routes are regional in scope, serving communities beyond Kearny Mesa which offer additional potential for delay. The central location of Kearny Mesa and the Kearny Mesa Transit Center indicate that there is strong potential that improvements made to the Kearny Mesa roadway environment can at least partially reduce the delay currently experienced along these routes. Intersections that can prioritize transit, such as through transit signal priority along Kearny Mesa's arterial roadways, can improve transit by up to several minutes per intersection, particularly where transit may need to wait multiple cycles per intersection to progress along the roadway. Similarly, the ability to improve performance along segments, such as through a SMART Corridor that allow dedicated flexible lanes for transit and other congestion-reducing mobility forms, will allow the portion of the route that traverses Kearny Mesa to enjoy seamless travel and reduce the impact to transit performance that may currently be occurring from roadway operations within the community.

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 Kearny Mesa 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 timelines currently target approximately 2035 for this project.
- *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 Kearny Mesa. Within Kearny Mesa, the alignment will run north-south, west of I-15. Implementation timelines currently target approximately 2035 for operation of Phase I.

- *Purple Line (Phase II)* – The second Purple Line Trolley phase will extend from the anticipated endpoint of Phase I of the Purple Line, in Kearny Mesa, to Carmel Valley. Implementation timelines currently target approximately 2050 for operation of Phase II.
- *Red Line* – The Red Line Trolley will run from Pacific Beach to the El Cajon Transit Center via Kearny Mesa. Implementation timelines currently target approximately 2050 for operation of the Red Line.
- *BRT Route 653* – A future BRT service, that may carry a *RAPID* or different service designator, will run from Mid-City San Diego to Palomar Airport Road via Kearny Mesa, I-805, and I-5. Implementation timelines currently target approximately 2035 for operation of this future bus route.
- *BRT Route 890* – A future BRT service, that may carry a *RAPID* or different service designator, will run from El Cajon to Sorrento Mesa via Kearny Mesa. Implementation timelines currently target approximately 2035 for operation of this future bus route.
- *Rapid Bus Route 28* – A new Rapid bus route will run from Point Loma to Kearny Mesa via Old Town and Linda Vista. Implementation timelines currently target approximately 2035 for operation of this future bus route.
- *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 timelines currently target approximately 2035 for operation of this future bus route.
- *Rapid Bus Route 120* – A new Rapid bus route will run from Kearny Mesa to Downtown via Kearny Mesa. Implementation timelines currently target approximately 2035 for operation of this future bus route.
- *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 timelines currently target approximately 2035 for operation of this future bus route.

Note that in the Community Plan and this *Mobility Technical Report*, the Purple Line is displayed as part of the general illustration of "San Diego Forward Transit Corridors" and reflects the alignment indicated in the adopted 2015 *San Diego Forward: The Regional Plan*. According to the Regional Plan, transit corridors include Rapid Bus and Trolley services on key corridors such as I-15, SR-52, Balboa Avenue, Convoy Street, Clairemont Mesa Boulevard, Spectrum Center Boulevard, Kearny Villa Road, and Ruffin Road.

City staff has requested that SANDAG consider the preferred alignment of the Purple Line along Ruffin Road and Clairemont Mesa Boulevard, as prescribed in the 2017 *Final Purple Line Conceptual Planning Study*, in the 2021 Regional Plan. As the first major step in the 2021 Regional Plan process, SANDAG staff introduced the key strategies, known as 5 Big Moves, that will be used to identify transportation solutions for critical connections throughout the region. The Purple Line is identified as one of these critical connections.

Specific route alignments and stations are not included in the Kearny Mesa Community Plan as future transit corridors from SANDAG are preliminary and subject to change. With the 2021 Regional Plan process underway, transit-focused policies in the proposed CPU includes to coordinate with SANDAG to plan and implement transit infrastructure and service enhancements in the upcoming Regional Plan, including light rail and/or bus rapid transit to serve areas of future residential and employment uses. This can include, but is not limited to, alignment of the planned Purple Line.

Furthermore, MTS is considering a sales tax measure for the November 2020 ballot to fund transit projects within its service area. Potential transit projects in Kearny Mesa include Rapid stations at Clairemont Mesa Boulevard and Balboa Avenue at Interstate 805 and the required sidewalk improvements to support these stations.

Figure 3-7 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 will be considered in coordination with MTS and community circulator operators in an effort to maximize route efficiency and on-time performance. Transit signal priority, queue jump lanes, and transit only lanes, or shared transit/right-turn lanes are examples of measures that can be utilized to give transit priority at intersections and can be implemented as applicable at the project-level. The Proposed Plan includes transit priority measures on the following corridors:

- *Clairemont Mesa Boulevard (SMART Corridor)* between I-805 NB On-Ramp to I-15 SB On-Ramp;
- *Balboa Avenue (SMART Corridor)* between I-805 NB and SR-163 SB ramps;
- *Balboa Avenue* between SR-163 SB ramps and I-15 NB ramps;
- *Aero Drive* between Convoy Road and I-15 NB ramps;
- *Convoy Street* between SR-52 WB ramps and Aero Drive; and
- *Ruffin Road* between Chesapeake Drive and Aero Drive.

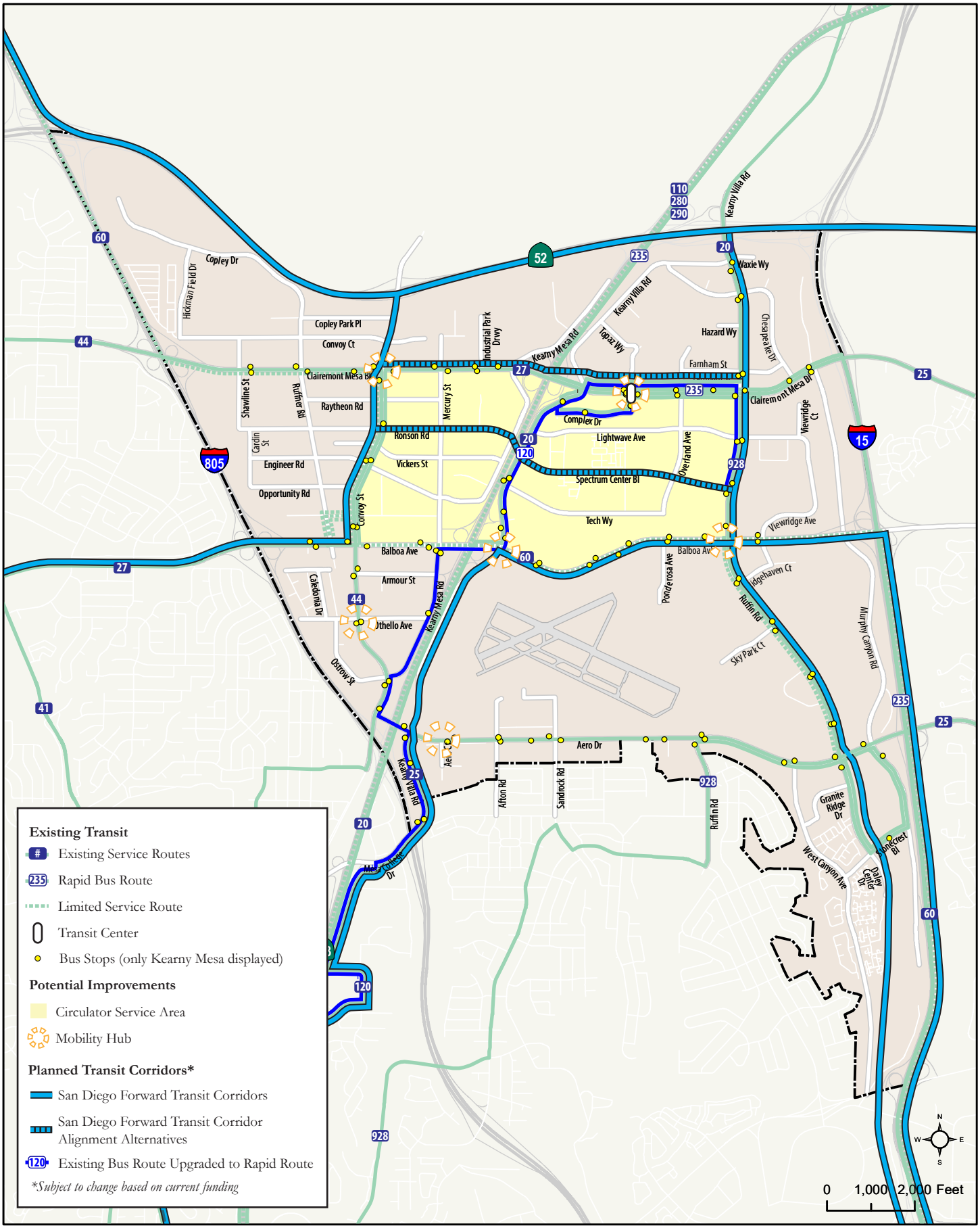

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Figure 3-7
Transit Coverage - Proposed Plan Conditions

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 the form of and quality of life within the community. When the street system is plagued by congestion and collisions, it can have a major impact on the community. The roadways and intersections that are level of service (LOS) D or below and high frequency of accidents are shown in Figure 3-8.

Arterials

Although Kearny Mesa is readily accessible by freeway, roadways that directly serve freeway ramps can be prone to delay during the peak hours. In the morning and midday peak hours, congestion occurs along freeway-serving roadways as workers living in other communities travel to jobs in Kearny Mesa, while in the evening the surface street system backs up as workers access freeways for outbound travel, as well as due to motorists coming into the Community to frequent restaurants and shops after work.

These high vehicular traffic volumes result in a number of roadway segments operating at substandard LOS (LOS E or F). In particular, north-south links, such as Convoy Street between Engineer Road and Othello Avenue, Kearny Villa Road between SR-163 Northbound off-ramp and Lightwave Avenue, Sandrock Road between Aero Drive and Hurlbut Street, and Murphy Canyon Road between the Wal-Mart driveway and Stonecrest Boulevard, experience LOS E or F conditions. East-west links, such as portions of Clairemont Mesa Boulevard and Balboa Avenue, also experience LOS E conditions or worse.

Freeways

The four freeways that serve Kearny Mesa are I-15, I-805, SR-52, and SR-163. These freeways are utilized by residents, employees, and patrons of Kearny Mesa, as well as provide significant regional pass-through trips. As shown in Figure 3-8, the freeway segments within Kearny Mesa operate at LOS D or worse daily along one or both directions.

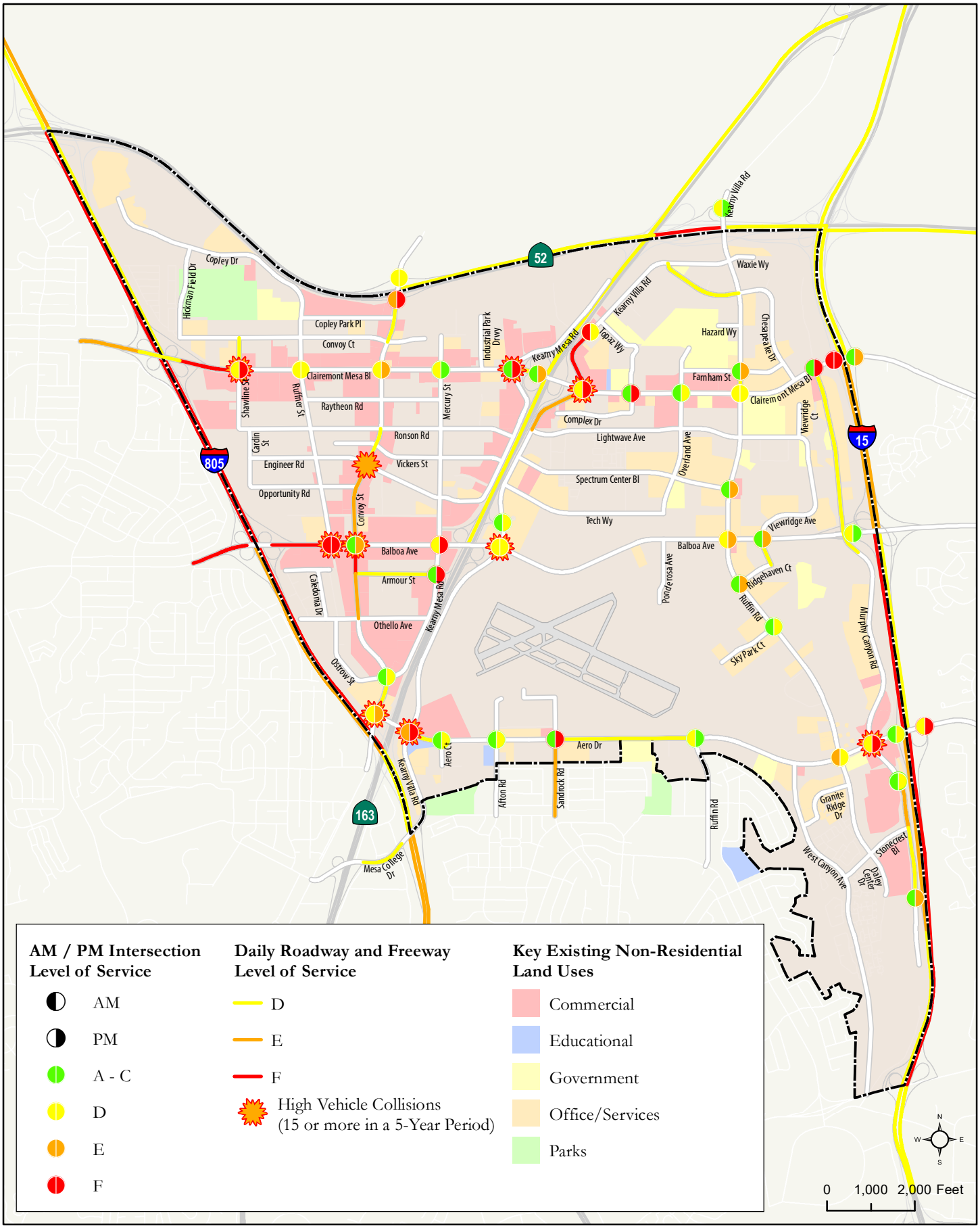

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Figure 3-8
Street and Freeway Needs

Intersections

The following 27 intersections were found to operate at substandard (LOS E or F) levels of service during the AM, PM and/or midday peak hour under existing conditions. Note that a midday peak period analysis was performed at 49 of the 83 intersections, where nearby land uses were determined likely to drive significant midday activities, such as lunch or errand-related trips.

2. Convoy Street & SR-52 EB Ramps – AM LOS E, Midday/PM LOS F
10. Kearny Villa Road & SR-163 NB Off-Ramp – AM LOS F
14. Shawline Street & Clairemont Mesa Boulevard – Midday LOS E, PM LOS F
16. Convoy Street & Clairemont Mesa Boulevard – PM LOS F
19. Kearny Mesa Road & Clairemont Mesa Boulevard – PM LOS F
20. SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard – PM LOS E
22. Kearny Villa Road & Clairemont Mesa Boulevard – PM LOS F
23. Complex Street & Clairemont Mesa Boulevard – PM LOS F
25. Ruffin Road & Farnham Street – PM LOS E
27. Murphy Canyon Road & Clairemont Mesa Boulevard – PM LOS F
28. Clairemont Mesa Boulevard & SR-52 EB & I-15 SB Off-Ramps – AM/PM LOS F
29. I-15 NB Ramps & Clairemont Mesa Boulevard – PM LOS E
37. Ruffin Road & Spectrum Center Boulevard – PM LOS E
44. Balboa Avenue & Ruffner Street – AM/Midday/PM LOS F
45. Convoy Street & Balboa Avenue – PM LOS E
46. Mercury Street & Balboa Avenue – PM LOS F
52. Ruffin Road & Balboa Avenue – PM LOS E
53. Viewridge Avenue & Balboa Avenue – PM LOS E
58. Mercury Street & Armour Street – PM LOS F
60. Ruffin Road & Ridgehaven Court – PM LOS E
64. Convoy Street & Aero Drive – Midday LOS F, PM LOS E
65. Kearny Villa Road & Aero Drive – AM LOS E, PM LOS F
69. Sandrock Road/John J. Montgomery Drive & Aero Drive – PM LOS F
72. Daley Center Drive/Ruffin Road & Aero Drive – AM LOS E
73. Murphy Canyon Road & Aero Drive – PM LOS F
75. I-15 NB Ramps & Aero Drive – PM LOS F
83. Murphy Canyon Road & Golf Center Driveway/I-15 SB On-Ramp – PM LOS E

Safety

Several intersections within Kearny Mesa were reported to have a high number of vehicular collisions, defined as 15 or more within the 5- year analysis period of 2011-2015:

14. Shawline Street & Clairemont Mesa Boulevard
19. Kearny Mesa Road & Clairemont Mesa Boulevard
22. Kearny Villa Road & Clairemont Mesa Boulevard
34. Convoy Street & Engineer Road
44. Ruffner Street and Balboa Avenue
45. Convoy Street & Balboa Avenue

49. Kearny Villa Road & Balboa Avenue
64. Convoy Street & Aero Drive
65. Kearny Villa Road & Aero Drive
73. Murphy Canyon Road & Aero Drive

Parking

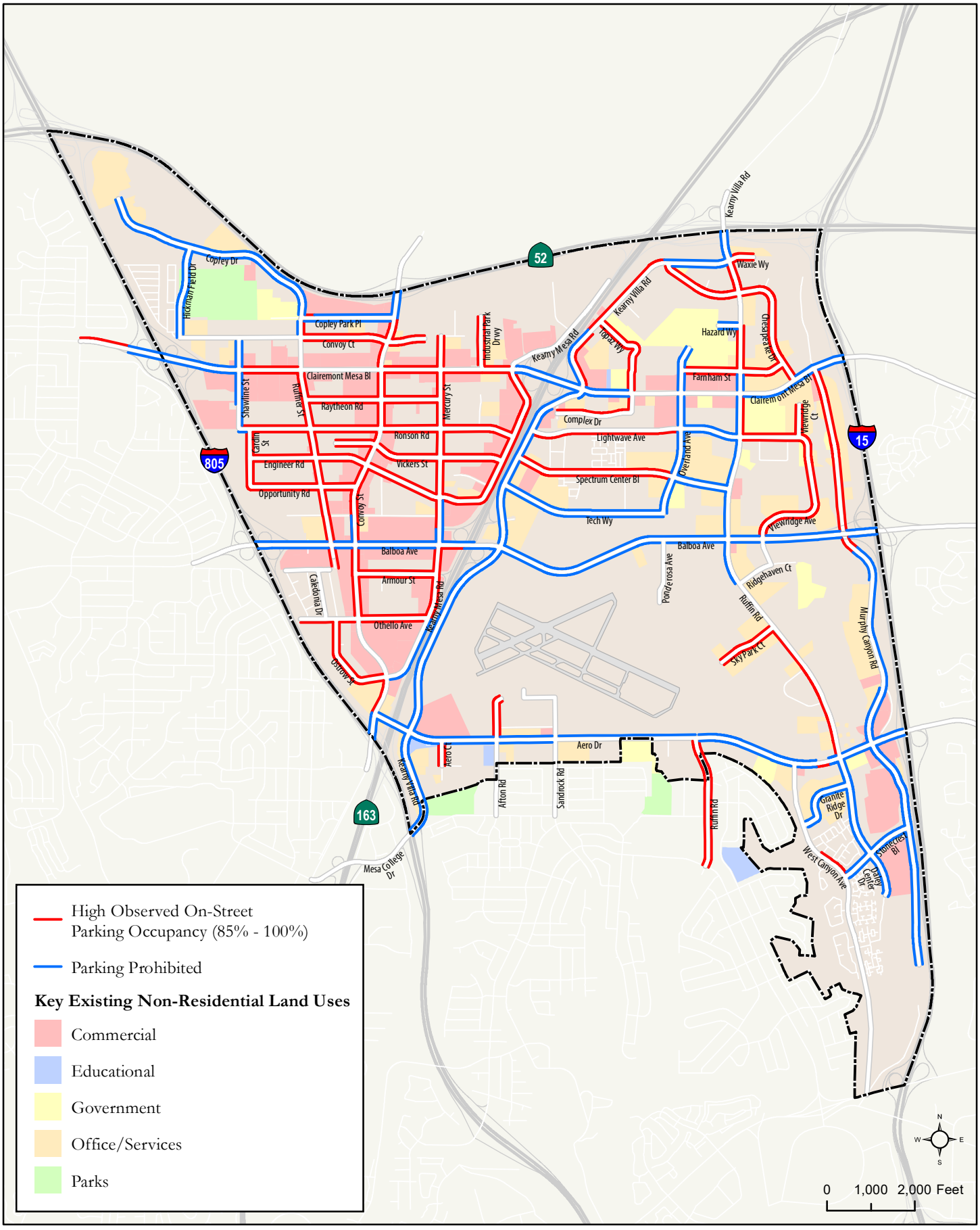
Roadways in Kearny Mesa with high rates of observed on-street parking occupancy (over 85%) during one or more peak periods are generally located in the central portion of the community, near retail, commercial, light industrial, or office land uses, as shown in Figure 3-9. In particular, portions of major community corridors and connectors are found to have high parking occupancy, such as along Ruffner Street, Convoy Street, Mercury Street, Kearny Mesa Road, Ruffin Road, Murphy Canyon Road, Clairemont Mesa Boulevard, Ronson Road, Lightwave Avenue, Engineer Road, and Spectrum Center Boulevard. Many additional secondary community roadways also exhibit high on-street parking occupancy. Establishment of a parking district in key urban villages and corridors can help manage parking supply and demand. Through parking districts, parking mechanisms, such as time-limited parking, can be installed. Revenue from parking mechanisms within these districts may be used to implement solutions such as parking structures, wayfinding and signage, and community circulators. A community serving circulator connecting residential area and employment centers to Convoy Street could reduce the high parking demand. In addition, park-once or unbundled parking strategies combined with time-limited or charged parking could also alleviate the high on-street parking demand surrounding the Convoy Street corridor.

3.5.2 Street and Freeway Improvements

A list of Proposed Plan roadway, intersection, 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 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 Proposed Plan roadways is provided in Chapter 5.

Roadway Modifications

- *Balboa Avenue, from I-805 NB On-Ramp to SR-163 SB On-Ramp* – Reclassify this segment from a 6-Lane Major Arterial with raised median and intermittent on-street parking to a SMART Corridor, with two general purpose travel lanes, one flexible Lane, and a one-way Class IV Cycle Track provided in each direction in lieu of on-street parking.
- *Clairemont Mesa Boulevard, from I-805 NB On-Ramp to I-15 SB On-Ramp*– Reclassify this segment from a 6-Lane Major Arterial with raised median and intermittent on-street parking to a SMART Corridor, with two general purpose travel lanes, one flexible lane, and a one-way Class IV Cycle Track provided in each direction in lieu of on-street parking. Figure 3-10 presents a conceptual representation of Clairemont Mesa Boulevard. It depicts two transit alternatives (i.e. at-grade vs grade separation) on Clairemont Mesa Boulevard; the alternative with the at-grade transit lanes that will utilize the flexible lanes were included in the analysis.

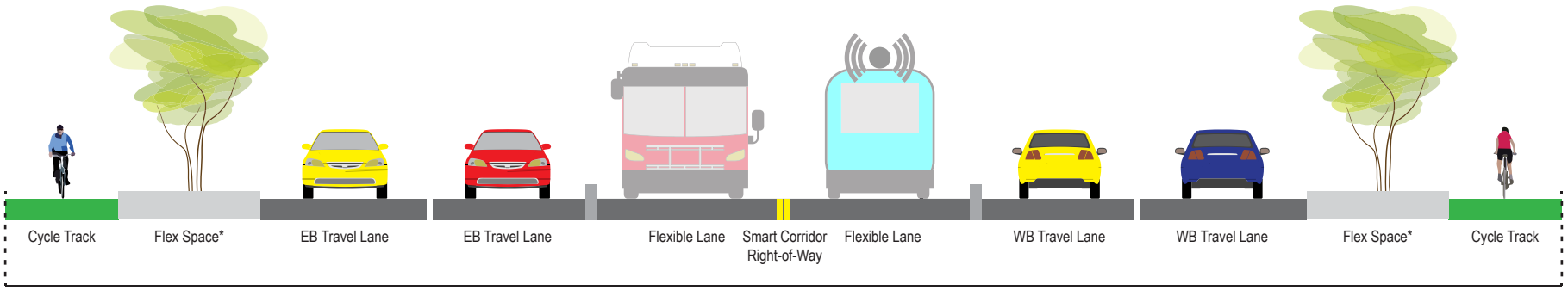


Kearny Mesa Community Plan Update
Mobility Technical Report

CHEN RYAN

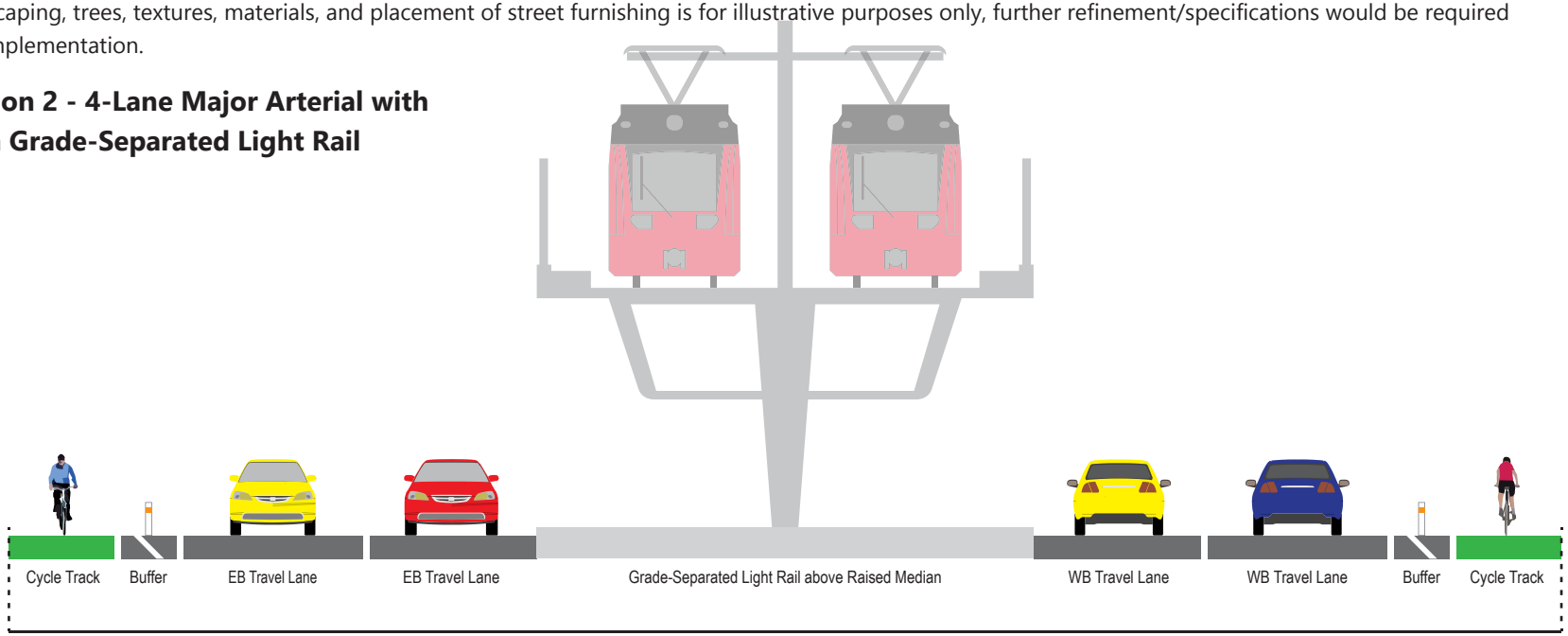
Figure 3-9
Parking Needs

Option 1 - 4-Lane Major Arterial with 2 Flexible Lanes



*This graphic is for conceptual purposes only. Further engineering study would be required at the project-level prior to implementation.
**Flex Space (width varies) - May be used as buffer for landscaping, pick-up and drop-off, micro-mobility storage, or electric vehicle charging
***Additional right-of-way will be required where transit stations are present
****Landscaping, trees, textures, materials, and placement of street furnishing is for illustrative purposes only, further refinement/specifications would be required prior to implementation.

Option 2 - 4-Lane Major Arterial with with Grade-Separated Light Rail



- *Copley Park Place, from Copley Drive to Convoy Street* – Reclassify this segment from a 4-Lane Collector with two-way left-turn lane to a 2-Lane Collector with two-way left-turn lane (TWLTL), repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Daley Center Drive, from Aero Drive to Stonecrest Boulevard* - Reclassify this segment from a 4-Lane Major with raised median to a 2-Lane Collector without TWLTL, repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Kearny Mesa Road, from Armour Street to Convoy Street* – Reclassify this segment from a 4-Lane Collector with striped median or two-way left-turn lane to a 3-Lane Collector (2 southbound and 1 northbound) with a TWLTL, repurposing the additional width as one-way Class IV Cycle Track provided in each direction. Two southbound lanes are needed to serve the higher vehicle volumes, whereas one northbound lane is sufficient to serve the lower vehicle volumes. Intermittent parking loss may be required to accommodate the cycle tracks.
- *Kearny Villa Road, from Ruffin Road to Chesapeake Drive* – Reclassify this segment from a 3-Lane Collector with two-way left-turn lane, 2 eastbound lanes, and 1 westbound lane to a 4-Lane Collector without TWLTL, with one-way Class IV Cycle Track provided in each direction.
- *Kearny Villa Road, from Chesapeake Drive to Clairemont Mesa Boulevard* – Reclassify this segment from a 2-Lane Collector with two-way left-turn lane with on-street parking to a 4-Lane Major Arterial, repurposing existing Class II Bike Lanes, on-street parking, and two-way left-turn lane for additional lanes and one-way Class IV Cycle Track provided in each direction.
- *Tech Way, from Kearny Villa Road to Overland Avenue* – Reclassify this segment from a 4-Lane Collector with two-way left-turn lane to a 2-Lane Collector with two-way left-turn lane (TWLTL), repurposing the additional width as one-way Class IV Cycle Track provided in each direction.
- *Murphy Canyon Road, from 1,300 feet south of Balboa Avenue Overcrossing to 1,600 feet north of Aero Drive* – Reclassify this segment from a 3-Lane Collector with two-way left-turn lane, 2 northbound lanes, and 1 southbound lane to a 3-lane Collector with no median, 2 northbound lanes, and 1 southbound lane to accommodate Class IV Cycle Tracks.
- *Ronson Road, from Shawline Street to Ruffner Street* – Reclassify this segment from a 2-lane collector with two-way left-turn lane to 2-Lane collector without TWLTL, to accommodate Class II Bike Lanes.
- *Ruffner Street, south of Balboa Avenue* – Remove this segment by truncating the 2-Lane Collector of Ruffner Street segment south of Balboa Avenue at the existing driveway and create a Class I Multi-Use Path that connects to future park and open space uses

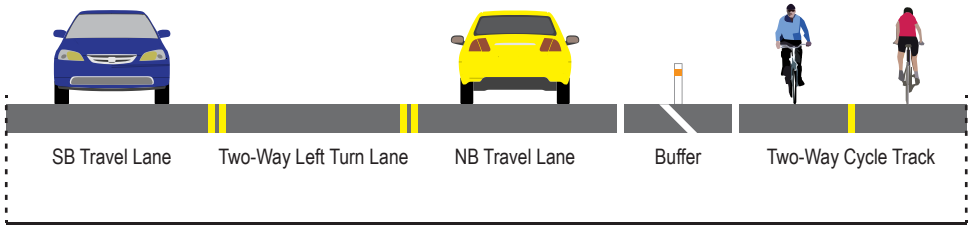
Not all modifications alter a roadway's street classification. For some segments discussed in this chapter, existing right-of-way dedicated to vehicular use, such as on-street parking and wide travel lanes, are proposed to be repurposed to include facilities that support pedestrian, bicycle, and transit activity. Below are some notable examples of select segments where the Proposed Plan enhancements to streetscapes and street functionality accommodate other modes of transportation while still maintaining vehicular travel lanes and capacity.

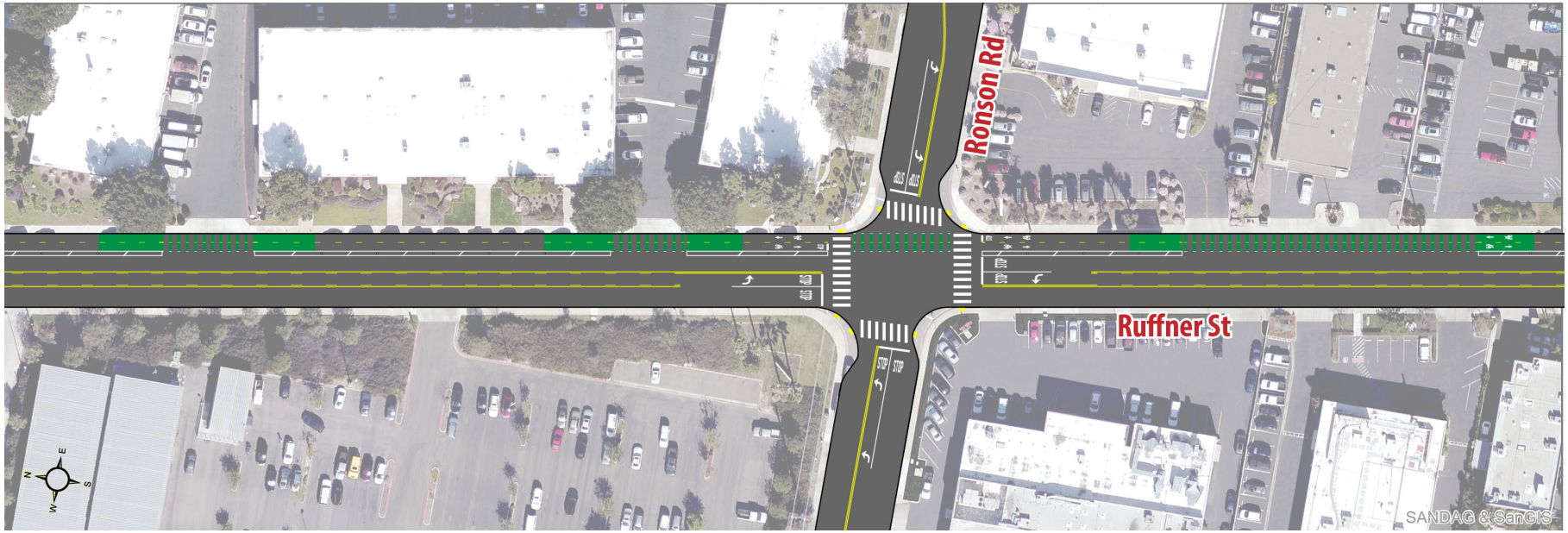
- Ruffner Street from Convoy Court to Balboa Avenue will continue to be classified as a 2-Lane Collector with two-way left-turn lane (TWLTL) under the Proposed Plan; however, the roadway configuration through this segment would be modified to accommodate the two-way Class IV Cycle Track proposed on the east side. Figure 3-11 presents a conceptual representation of Ruffner Street from Clairemont Mesa Boulevard to Balboa Avenue.
- Convoy Street from Clairemont Mesa Boulevard and Balboa Avenue will continue to be classified as a 4-Lane Collector with TWLT under the Proposed Plan; however to help transform the Convoy Corridor Village into a walkable, active district, space along the roadway is proposed to be repurposed for multimodal facilities as shown in the conceptual representation on Figure 3-12. Specifically, the proposed removal of on-street parking will allow for the roadway curb-to-curb to be reduced, which provide opportunities to expand the sidewalk space into an urban pathway or promenade and to implement buffered bicycle lanes while maintaining vehicular throughput.
- Kearny Villa Road from Balboa Avenue to Aero Drive will continue to be classified as 4-Lane Major Arterial under the Proposed Plan; however, the roadway configuration through this segment would be modified to accommodate a southbound Class IV Cycle Track on the west side and a Class I Multi-Use Path on the east side. Coordination with abutting property owners (i.e., Montgomery-Gibbs Executive Airport) would be required in order to obtain the additional right-of-way needed for the proposed active transportation facilities for commuting and recreational needs. Figure 3-13 presents a conceptual representation of this segment.
- Ruffin Road from Lightwave Avenue to Spectrum Boulevard will continue to be classified as a 4-Lane Collector with TWLT under the Proposed Plan, but with roadway modifications to accommodate one-way Class IV Cycle Tracks. It should be noted that Ruffin Road has been identified as a potential future transit corridor where the Purple Line or a new rail component could traverse; however, specific route alignments are not included in the CPU as the future transit corridors are preliminary and subject to change with the upcoming 2021 Regional Plan. In the case that high-frequency transit continues to be regionally programmed along Ruffin Road, Figure 3-14 illustrates configuration options (i.e., at-grade trolley or elevated light rail) for the roadway, which could then be functionally classified to a 4-Lane Major Arterial with the implementation of such separated transit facilities.
- Segments between Aero Drive from Kearny Villa Road to West Canyon Avenue will continue to maintain their existing classifications of either a 4-Lane Major Arterial or a 4-Lane Collector with TWLT under the Proposed Plan; however the roadway would be modified to better accommodate bicyclists and pedestrians as depicted in the conceptual

representation on Figure 3-15. Specifically, the proposed removal of on-street parking and potential additional right-of-way obtained through coordination with abutting property owners (i.e., Montgomery-Gibbs Executive Airport), will allow for a Class IV Cycle Track on the south side and a Class I Multi-Use Path on the north side.

Figure 5-6, located in Chapter 5 displays the Proposed Plan roadway classifications. A summary of the roadway modifications involving reclassification that affect vehicle carrying capacity is presented in Table 3.2.

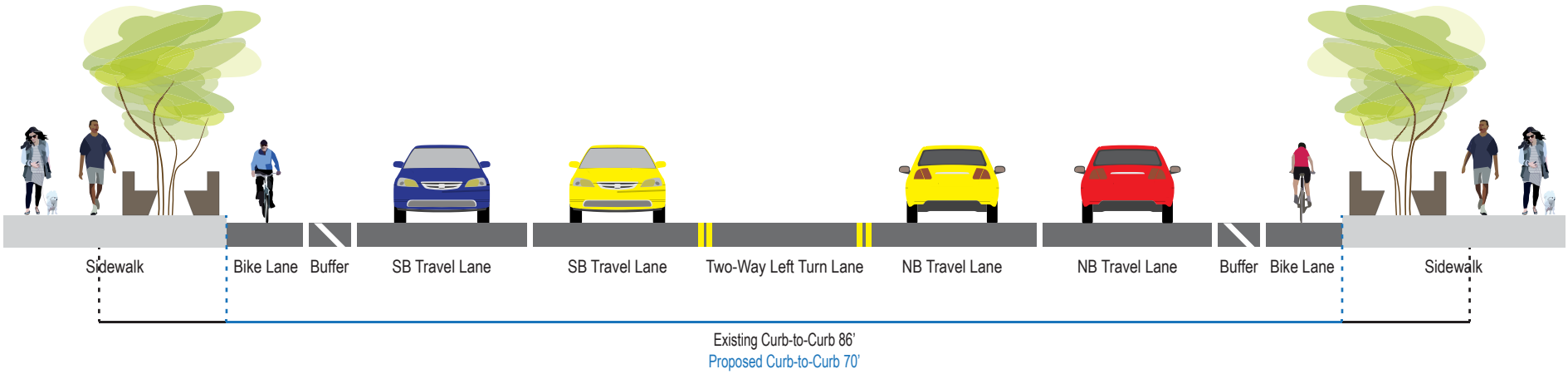
The hierarchy of street classifications contained in the City's General Plan and its companion Community plans, such as this Kearny Mesa Community Plan Update, is intended to provide for safe and orderly traffic flow and efficient circulation. While planned street classification of the roadway network indicated in Figure 5-6 and Table 3.2 and described in this chapter shall maintain such a hierarchy, the organization of right-of-way surface improvements for a classified roadway is contingent upon several factors including, but not limited to: safety and mobility for all users, transit performance, emergency response, freight movement, and travel delay. Determining the configuration of surface improvements including travel lanes at the time of need should be based on the best available data and analysis that addresses the aforementioned factors, to the satisfaction of the City Engineer.





*This graphic is for conceptual purposes only. Further engineering study would be required at the project-level prior to implementation.

Figure 3-11
Ruffner Street from Clairemont Mesa Boulevard to Balboa Avenue
Cross-Section



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**Landscaping, trees, textures, materials, and placement of street furnishing is for illustrative purposes only, further refinement/specifications would be required prior to implementation.

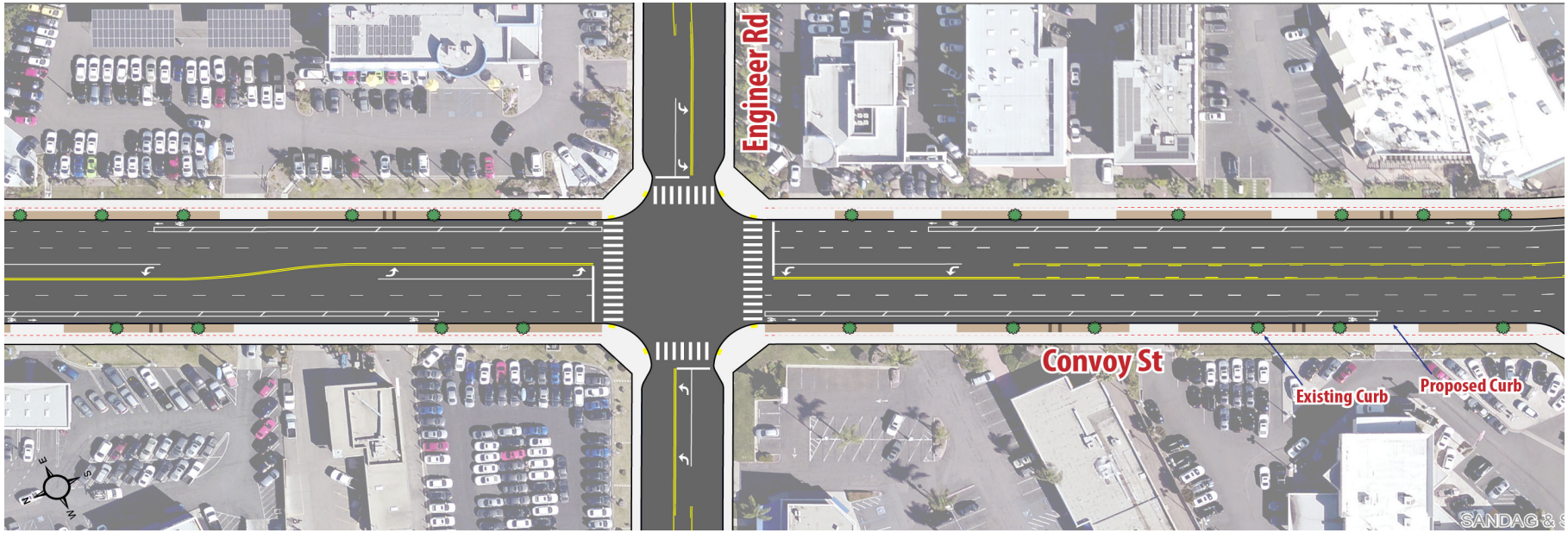
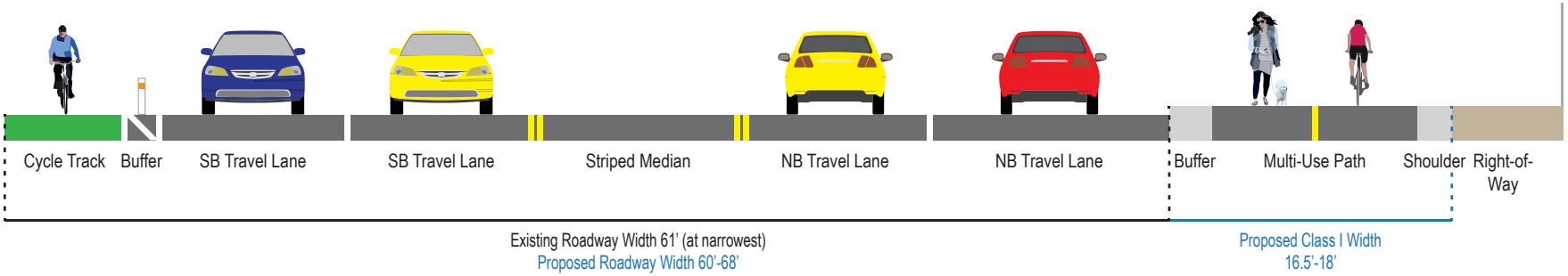
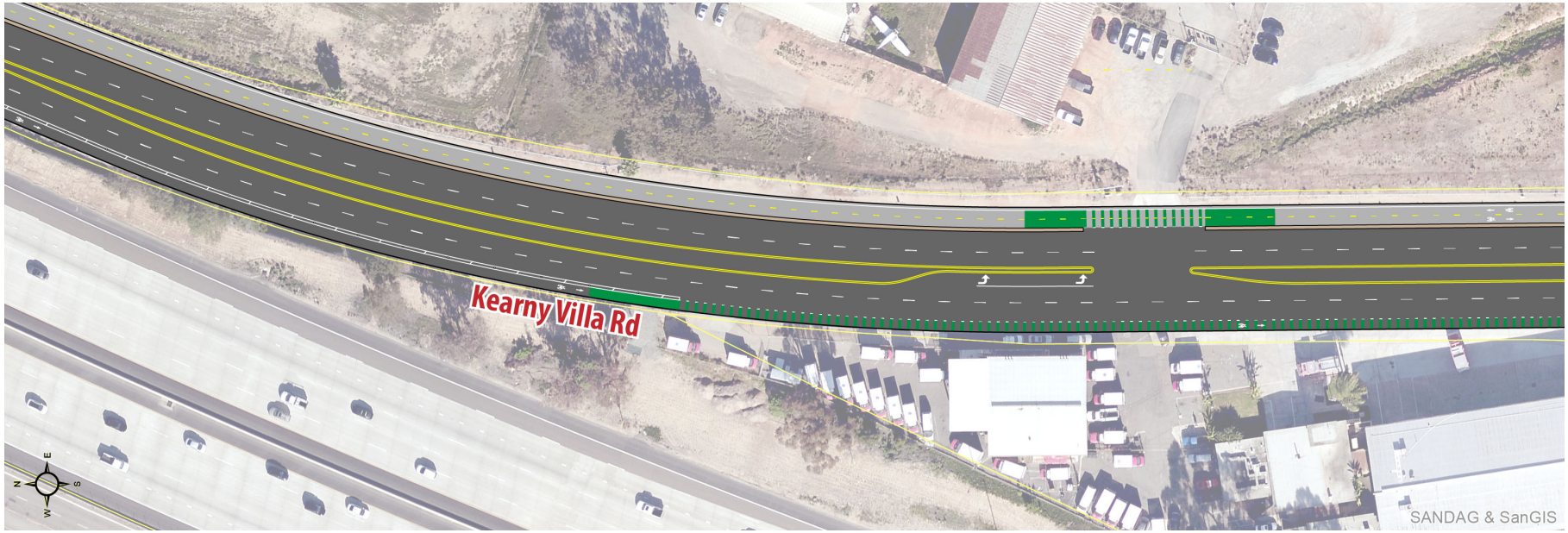


Figure 3-12
Convoy Street between Clairemont Mesa Boulevard and Balboa Avenue Cross-Section

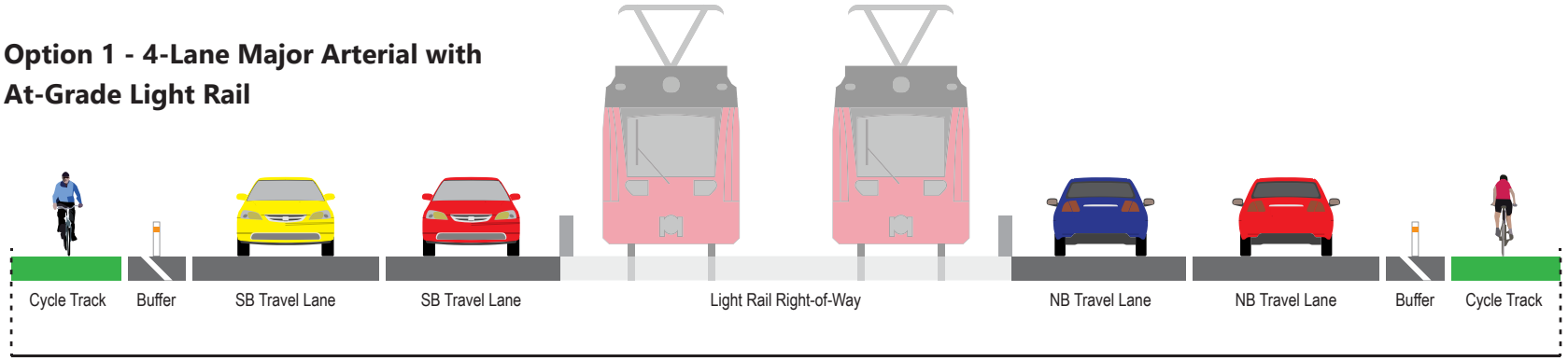




*This graphic is for conceptual purposes only. Further engineering study would be required at the project-level prior to implementation.

Figure 3-13
Kearny Villa Road between Balboa Avenue and Aero Drive
Cross-Section

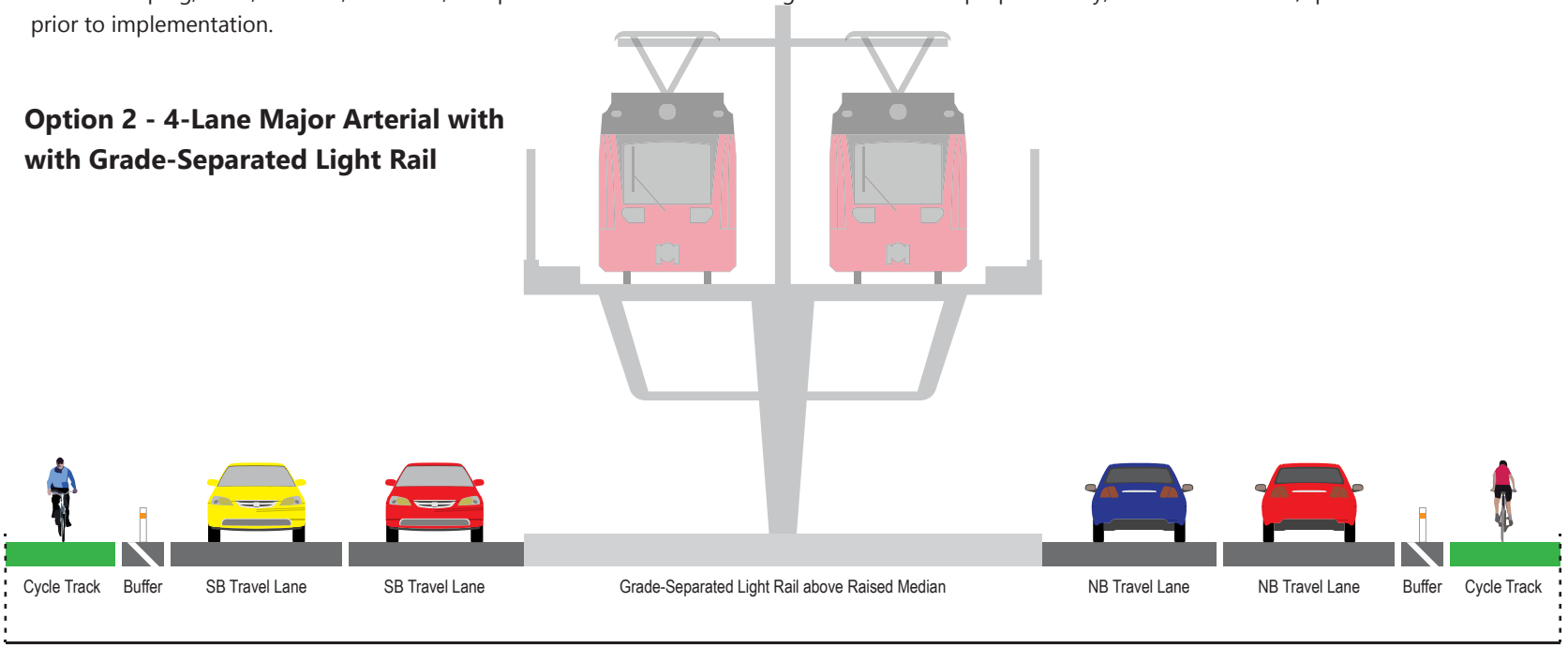
Option 1 - 4-Lane Major Arterial with At-Grade Light Rail



Existing Curb-to-Curb 96'
Proposed Curb-to-Curb 96'

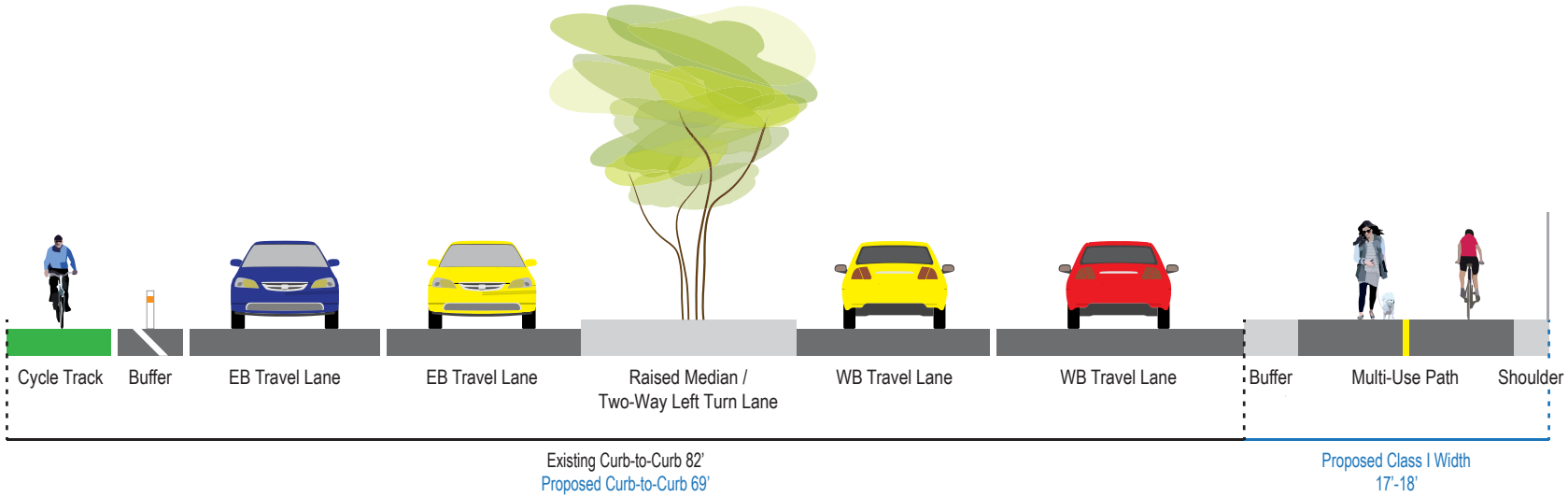
*This graphic is for conceptual purposes only. Further engineering study would be required at the project-level prior to implementation.
**Additional right-of-way will be required where transit stations are present
****Landscaping, trees, textures, materials, and placement of street furnishing is for illustrative purposes only, further refinement/specifications would be required prior to implementation.

Option 2 - 4-Lane Major Arterial with with Grade-Separated Light Rail



Existing Curb-to-Curb 96'
Proposed Curb-to-Curb 96'

Figure 3-14
Ruffin Road from Lightwave Avenue to Spectrum Center Boulevard
Cross-Sections



*This graphic is for conceptual purposes only. Further engineering study would be required at the project-level prior to implementation.
**Landscaping, trees, textures, materials, and placement of street furnishing is for illustrative purposes only, further refinement/specifications would be required prior to implementation.

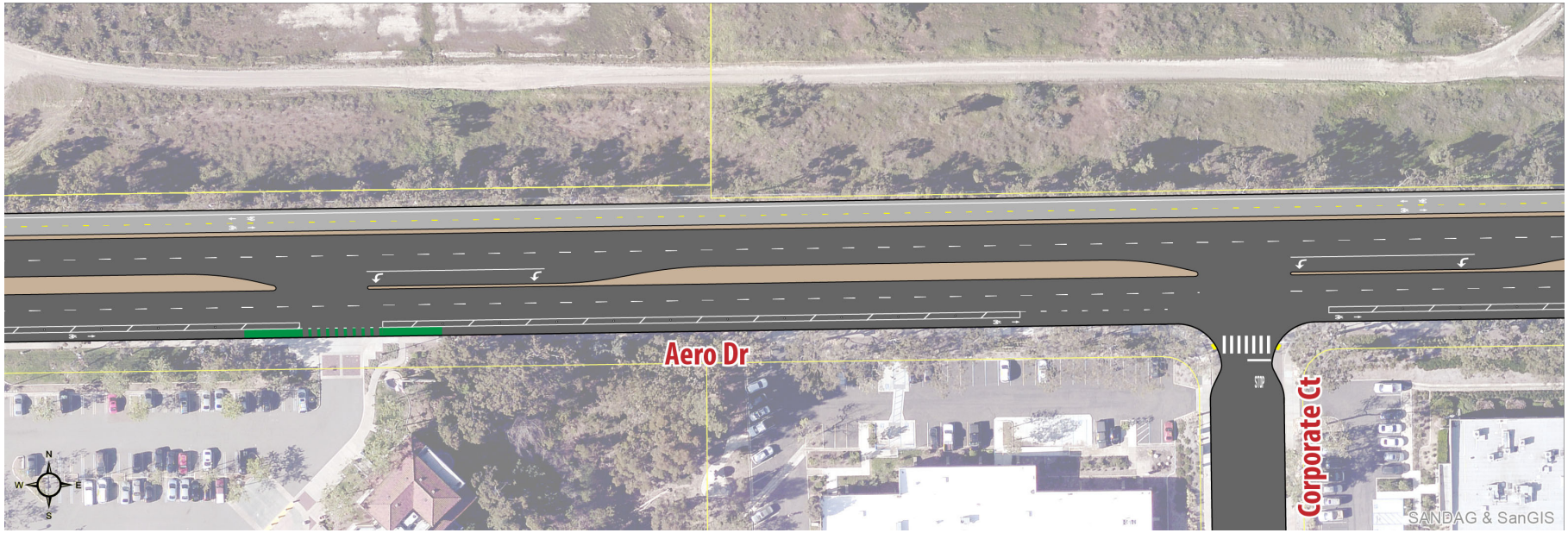


Figure 3-15
Aero Drive from Kearny Villa Road to West Canyon Avenue
Cross-Section

Table 3.2 Planned Roadway Classification Modifications[1]

Roadway	Segment	Existing Functional Classification	Planned Classification Designation
Segment Modifications[1]			
Balboa Avenue	I-805 NB On-Ramp to SR-163 SB On-Ramp	6-Lane Major Arterial	6-Lane Major Arterial as a SMART Corridor
Clairemont Mesa Boulevard	I-805 NB On-Ramp to I-15 SB On-Ramp	6-Lane Major Arterial	6-Lane Major Arterial as a SMART Corridor
Copley Park Place	Copley Drive to Convoy Street	4-Lane Collector with TWLTL	2-Lane Collector with TWLTL
Daley Center Drive	Aero Drive to Stonecrest Boulevard	4-Lane Major Arterial	2-Lane Collector
Kearny Mesa Road	Armour Street to Convoy Street	4-Lane Collector with TWLTL	3-Lane Collector (2 lanes southbound; 1 lane northbound) with TWLTL
Kearny Villa Road	Ruffin Road to Chesapeake Drive	3-Lane Collector with TWLTL	4-Lane Collector
Kearny Villa Road	Chesapeake Drive to Clairemont Mesa Boulevard	2-Lane Collector with TWLTL	4-Lane Major Arterial
Tech Way	Kearny Villa Road to Overland Avenue	4-Lane Collector with TWLTL	2-Lane Collector with TWLTL
Murphy Canyon Road	1,300 feet south of Balboa Avenue Overcrossing to 1,600 feet north of Aero Drive	3-Lane Collector with TWLTL	3-Lane Collector (1 lane southbound; 2 lanes northbound)
Ronson Road	Shawline Street to Ruffner Street	2-Lane Collector with TWLTL	2-Lane Collector
Ruffner Street[2]	South of Balboa Avenue	2-Lane Collector	2-Lane Collector but truncated

Source: Chen Ryan Associates (2019)

TWLTL = Two-Way Left-Turn Lane

A SMART Corridor is a 6-Lane Major Arterial with a flexible lane in each direction that provides access to or between at least two freeways, whereby mobility improvements are made for multimodal modes through the repurposing of roadway space.

Notes:

[1] Although the roadway modifications presented in this table reflect reclassifications and changes to vehicle carrying capacity along segments, there are other planned modifications that repurpose roadway space to accommodate multimodal facilities while maintaining vehicle travel lanes. These planned roadway improvements are not presented in this table but are described in combination with other planned improvements in this chapter including the Roadway Modifications subsection within Section 3.5.2 Streets and Freeway Improvements. Segments that propose roadway modifications without changing the existing classification, include but are not limited to, portions of Ruffner Street, Convoy Street, Kearny Villa Road, Ruffin Road, and Aero Drive.

[2] Ruffner Street is planned to be truncated at the southern existing driveway (Mandarin Restaurant complex) near the existing cul-de-sac. Ruffner Street is currently not a through street as there are barricades at the Armour Street connection. Therefore, truncating Ruffner Street does not change the classification of the roadway or circulation, but only shortens the roadway approximately 100 feet from the existing cul-de-sac.

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 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, some of which were described in the Roadway Modifications subsection, will be removed at the following locations as network improvements are implemented:

- Ruffner Street, Copley Park Place to Balboa Avenue
- Othello Avenue, Kirkaldy Drive to Convoy Street
- Kearny Mesa Road, Clairemont Mesa Boulevard to Engineer Road
- Clairemont Mesa Boulevard, Shawline Street to Ruffin Road
- Aero Drive, Sandrock Road to Corporate Court
- Kearny Villa Road, Chesapeake Drive to Clairemont Mesa Boulevard
- Convoy Street, Clairemont Mesa Boulevard to Aero Drive
- Murphy Canyon Road, 1600' north of Aero Drive to Aero Drive
- Ruffin Road, Balboa Avenue to Calle Fortunada

Some loss of on-street parking can be minimized with conversion of parallel parking on one side to angled parking along 50' wide 2-Lane Collector roads. Potential opportunities for future parallel to angled conversion include along Cardin Street, Opportunity Road, and Armour Street.

Intersection Modifications

Several intersections were modified to accommodate buildout of the roadway segment and bicycle classifications, as well as to support the transit corridors and pedestrian treatments associated with the pedestrian route typologies. Buildout intersection geometry is provided in Chapter 5. In addition to intersection related improvements described in previous sections, a summary of intersection modifications to accommodate buildout of the roadway segment classifications, such as new intersection legs, lane geometry and signal modifications to accommodate SMART Corridors along Clairemont Mesa Boulevard and portions of Balboa Avenue, and major traffic control modifications is presented in **Table 3.3**.

A traffic signal warrant was conducted at the intersection 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 the intersection would meet the warrants. Signal warrant worksheets are included in **Appendix C**.

Consistent with the proposed changes to the California 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	Geometry Modification[1]	Signal Modification[2]	New Signal
3	Kearny Villa Road & SR-52 WB Ramps	Right-turn overlap added to eastbound right		✓	
8	Ruffin Road & Chesapeake Drive	East leg restriped to westbound left, westbound through, westbound right; right-turn overlap added to westbound right	✓	✓	
9	Convoy Street & Convoy Court	Right-turn overlap removed from eastbound right; west leg restriped to eastbound left, eastbound through/right	✓	✓	
14	Shawline Street & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
15	Ruffner Street & Clairemont Mesa Boulevard	Protected phasing for northbound left, southbound left; through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
16	Convoy Street & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
17	Mercury Street & Clairemont Mesa Boulevard	Protected phasing for northbound left, southbound left; through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
18	Industrial Park Driveway & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
19	Kearny Mesa Road & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
20	SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
21	SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
22	Kearny Villa Road & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	

Table 3.3 Planned Intersection Modifications

No.	Intersection	Improvement	Geometry Modification[1]	Signal Modification[2]	New Signal
23	Complex Drive & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
24	Overland Avenue & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
25	Ruffin Road & Farnham Street	West leg restriped to eastbound left, eastbound through/right; east leg restriped to westbound left, westbound through/right	✓	✓	
26	Ruffin Road & Clairemont Mesa Boulevard	Protected intersection with through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
27	Murphy Canyon Road & Clairemont Mesa Boulevard	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
38	Mercury Street & Engineer Road	Protected phasing for northbound left, southbound left		✓	
44	Ruffner Street & Balboa Avenue	North leg restriped to southbound left, southbound through/right; south leg restriped to northbound left, northbound through/right; through lane removed from west and east leg to accommodate SMART Corridor	✓		✓
45	Convoy Street & Balboa Avenue	Through lane removed from west and east leg to accommodate SMART Corridor	✓	✓	
46	Mercury Street & Balboa Avenue	Through lane removed from west and east leg to accommodate SMART Corridor, through/right southbound right lane restriped to through lane	✓	✓	
49	Kearny Villa Road & Balboa Avenue	Protected intersection	✓	✓	
52	Ruffin Road & Balboa Avenue	Protected intersection	✓	✓	
53	Viewridge Avenue & Balboa Avenue	South leg restriped to northbound left and through/right, protected phasing for northbound and southbound lefts	✓	✓	
58	Mercury Street/Kearny Mesa Road & Armour Street/SR-163 SB Ramps	Through lane removed on south leg	✓	✓	
60	Ruffin Road & Ridgehaven Court	West leg restriped to eastbound left, eastbound through/right; east leg restriped to westbound left,	✓	✓	

Table 3.3 Planned Intersection Modifications

No.	Intersection	Improvement	Geometry Modification[1]	Signal Modification[2]	New Signal
		westbound through/right, protected phasing for eastbound and westbound lefts			
65	Kearny Villa Road & Aero Drive	Protected intersection	✓	✓	
69	Sandrock Road/John J Montgomery Drive & Aero Drive	Right-turn overlap added to eastbound right		✓	
72	Daley Center Drive/ Ruffin Road & Aero Drive	Protected intersection with westbound left-turn lane removed on east leg; northbound through lane removed on south leg	✓	✓	
76	Daley Center Drive & Granite Ridge Drive	Through lane removed on south leg	✓	✓	

Source: City of San Diego and Chen Ryan Associates (2020)

Notes:

[1] Geometry modifications are changes to the intersection configuration and examples include: restriping, lane addition or removal, new intersection legs, new turn pockets, and channelization of turning movements. It is assumed that implementation of the Proposed Plan's protected intersections will include intersection reconfiguration.

[2] Signal modifications are changes to the phasing and key timings and examples include: change in left-turn phasing (i.e., protected phasing, permissive phasing) and addition or removal of a right-turn overlap. It is assumed that intersections along the proposed SMART corridors will have signal modifications associated with the mobility concept. Additionally, this listing of intersections does not include locations with only recommended LPIs and/or bicycle signal phasing and focus more on signal modifications related to vehicular movement and associated with accommodating buildout of the Proposed Plan's roadway classifications.

Freeway Improvements

Freeway improvements within the Kearny Mesa 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-52, from I-805 to SR-125

Two reversible managed lanes will be added to this segment of SR-52. This segment will consist of six general purpose lanes and two managed lanes. Further, two general purpose lanes will be added to this segment between SR-125 and Mast Boulevard to provide six general purpose lanes throughout the entirety of the segment. The additional general-purpose lanes are anticipated to be implemented by 2035, with managed lanes implemented by 2050.

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-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.

While the Kearny Mesa Community Plan Update considers the currently adopted regional plan for freeway improvements, it is important to note that the California Department of Transportation (Caltrans) is the state agency responsible for the planning, construction, and maintenance of highway and freeway lanes and bridges. Therefore, the City of San Diego will have to coordinate with Caltrans to access, connect to or build on facilities (i.e., interchanges, overcrossings, undercrossings, ramps) within Caltrans' right-of-way.

Both the City and Caltrans strive to develop a safe, functional, interconnected, multimodal transportation network, and to ensure this complete, integrated system of regional and local facilities early collaboration between the City and Caltrans District 11 on planning for projects is critical. The City has a policy framework in place in the Kearny Mesa Community Plan Update to continue coordinating with Caltrans during the project-level development and design process of Proposed Plan improvements that will traverse facilities adjacent to and under Caltrans' jurisdiction. City-Caltrans coordination efforts could include, but are not limited to, the following:

- Implementation of the proposed facilities depicted in Figure 3-5, especially the regional Class I facility on the south side of SR-52 and Class IV facilities

- Implementation of SMART corridors, notably the interaction and transition with freeway access points

- Reconstruction and/or retrofit of freeway interchanges (e.g., reducing turning radii, "squaring-up" or "T-up" ramps) to accommodate active transportation connections and to reduce conflicts between bicyclists, pedestrians, and motorists
- Installation of signage, lighting, and high-visibility crosswalks at freeway access points

3.6 Currently Planned Improvements

The following section outlines the mobility-related Capital Improvement Projects identified within Kearny Mesa. In addition to these improvements, projects within Kearny Mesa included in the City's Transportation Unfunded Needs List (TUNL) (February 2020) 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 (CIP) were identified in the Council District 6 CIP Project List (2020):

Citywide Street Lights Group 1702 (CIP Project B17051) – Installation of streetlights in various San Diego communities, including Kearny Mesa. This project is partially funded.

Citywide Street Lights Group 15 (CIP Project B15012) – Installation of streetlights in various San Diego communities, including Kearny Mesa. This project is fully funded, with construction currently underway and a scheduled completion date of 2021.

Citywide Street Lights Group 1701 (CIP Project B17050) – Installation of streetlights in various San Diego communities, including Kearny Mesa. This project is partially funded, with a scheduled completion date to be determined.

Citywide Street Lights Group 1601 (CIP Project B16007) – Installation of streetlights in various San Diego communities, including Kearny Mesa. This project is fully funded, with a scheduled completion date of 2022.

Citywide Street Lights Group 1602 (CIP Project B16008) – Installation of streetlights in various San Diego communities, including Kearny Mesa. This project is fully funded, with a scheduled completion date of 2022.

Aero Drive/Convoy Street Traffic Signal Modification (CIP Project B00902) – One traffic signal modification at the intersection of Aero Drive and Convoy Street. This project is fully funded, with a scheduled completion date of 2021.

Balboa Avenue Corridor Improvements (CIP Project S00831) – Traffic signal modifications, ADA upgrades, and removal of free right turn at southwest corner of Kearny Villa Road. Traffic signal modifications and ADA upgrades at Moraga Avenue and Viewridge Avenue. Additional traffic signal

modifications, ADA upgrades, and installation of median landscaping in the Clairemont Mesa community. This project is fully funded, with a scheduled completion date of 2022.

SR-163/Clairemont Mesa Boulevard Interchange (CIP Project S00905) – Improves the intersection of Clairemont Mesa Boulevard/SR163 to 6-lane prime arterial standard. The improvements consist of converting the ramp configuration to a partial cloverleaf and widen Clairemont Mesa Boulevard to 6 lanes to Kearny Mesa Road, similar to the existing east side of the interchange. The project also includes a signal modification at Clairemont Mesas Boulevard and Kearny Mesa Road, removing the eastbound free right turn, installing curb, gutter, and sidewalk, paving, drainage improvements, and lane striping. The project is fully funded, with the completion of construction to be determined.

3.6.2 Bicycle

Capital Improvement Projects

The streetlight projects identified in the previous section will also benefit cyclists in Kearny Mesa.

Transportation Unfunded Needs List (TUNL) Projects

The following Capital Improvement Projects were identified in the Transportation Unfunded Needs List (TUNL) (2020):

SR-52 from I-805 to SR-163 – A Class I multi-use path has been identified for this segment, which is consistent with the proposed bicycle network.

Daley Center Drive – A bicycle facility has been identified for this roadway, which has been incorporated into the proposed bicycle network as a Class IV Cycle Track.

Kearny Villa Road from Miramar Rd to Clairemont Mesa Blvd – a set of Class II Bike Lanes have been implemented along this roadway. The proposed bicycle network includes a further upgrade to a Class IV Cycle Track.

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

Aero Drive/Convoy Street Traffic Signal Modification (CIP Project B00902) – One traffic signal modification at the intersection of Aero Drive and Convoy Street. This project is fully funded, with anticipated construction completion in 2021.

Balboa Avenue Corridor Improvements (CIP Project S00831) – Traffic signal modifications, ADA upgrades, and removal of free right turn at southwest corner of Kearny Villa Road. Traffic signal modifications and ADA upgrades at Moraga Avenue and Viewridge Avenue. Additional traffic

signal modifications, ADA upgrades, and installation of median landscaping in the Clairemont Mesa community. This project is fully funded, with anticipated construction completion in 2022.

SR-163/Clairemont Mesa Boulevard Interchange (CIP Project S00905) – Improves the intersection of Clairemont Mesa Boulevard/SR163 to 6-lane prime arterial standard. The improvements consist of converting the ramp configuration to a partial cloverleaf and widen Clairemont Mesa Boulevard to 6 lanes to Kearny Mesa Road, similar to the existing east side of the interchange. The project also includes a signal modification at Clairemont Mesas Boulevard and Kearny Mesa Road, removing the eastbound free right turn, installing curb, gutter, and sidewalk, paving, drainage improvements, and lane striping. The project is funny funded, with the completion of construction to be determined.

Note that CIP Projects S00831 and S00905 were also presented in Chapter 3.6.1 given the fact that they also benefit pedestrians.

4.0 Modeling and Forecasting

This chapter summarizes the Future Year travel demand model forecasting process utilized to project the future travel patterns within Kearny Mesa, under buildout of the community plan update conditions. Future Year traffic volumes were derived from the SANDAG 2050 Series 13 Regional Travel Demand Model run, which was verified per the City of San Diego's Small Study Area Traffic Modeling Process (April 2012) and calibrated for Kearny Mesa. 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 Kearny Mesa. 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 Kearny Mesa 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
- Number of lanes for roadways
- Traffic controls
- Posted speed limits
- Signalized intersection geometrics
- Street classification
- Roadway speed limits
- Turn restrictions
- Bicycle facilities
- Multi-use paths

4.1.3 Base Year Ground Count Validation & Adjustment

Historical traffic volumes over the past 8 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 2010, 2011, 2013, and finally 2016. 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

Four (4) 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 Proposed Plan 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 one new roadway assumption:
    - Ruffner Street & Balboa Avenue: Reconstruct this intersection as a 4-legged signalized intersection with full access.
- Future active transportation network within the study area with the bicycle facilities identified in Section 3.3.2.
- Year 2050 land uses outside of the study area.
- Year 2050 roadway and active transportation networks 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. It should also be noted that since development and running of the customized Future Year model of the Proposed Plan, some of the land use components have been further refined and the land use inputs that were modeled were slightly different from the latest Proposed Plan. This difference includes a slight shift in dwelling units from a few parcels along Clairemont Mesa Boulevard. Under the Proposed Project, the dwelling units were redistributed amongst several adjacent parcels around the Clairemont Mesa Boulevard and Convoy Street intersection easterly to parcels between Mercury Street and Overland Avenue along Clairemont Mesa Boulevard. Though the model is not exactly replicative of the Proposed Project's land use distribution, the difference is considered insignificant as it relates to VMT since the land uses are only being shifted to immediately adjacent parcels and not changing the land use type or total quantity. Therefore, the model used in the analysis was still considered to accurately represent the Kearny Mesa's VMT for the Proposed Project. As for the forecasted ADT volumes, manual adjustments were made to better reflect the traffic redistribution and reassignment associated with the latest Proposed Plan land use refinements. 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. VMT for the purpose of transportation impact analysis and SB-743 compliance are discussed and provided in the Transportation Impact Study (TIS). CAP compliance analysis and mode share information are included in a separate memorandum.

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 for allocating VMT to a study area for the purposes of GH analysis 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:

> Total Study Area VMT = (I-I intrazonal VMT) + (I-I interzonal VMT) + 50%*(I-E VMT + E-I VMT).

Table 4.1 presents Community Planning Area VMT, calculated to provide a normalized comparison of the Kearny Mesa Community Planning Area VMT under Base Year and Proposed Plan conditions.

Table 4.1 Vehicle Miles Traveled (VMT) Scenario Comparison

Measure (miles)	Base Year	Proposed Plan	Δ in Value	Δ in %
Community VMT	2,477,173	3,698,527	1,221,354	49%

Source: SANDAG Series 13 Regional Model – Kearny Mesa CPU Subarea Model (2019)

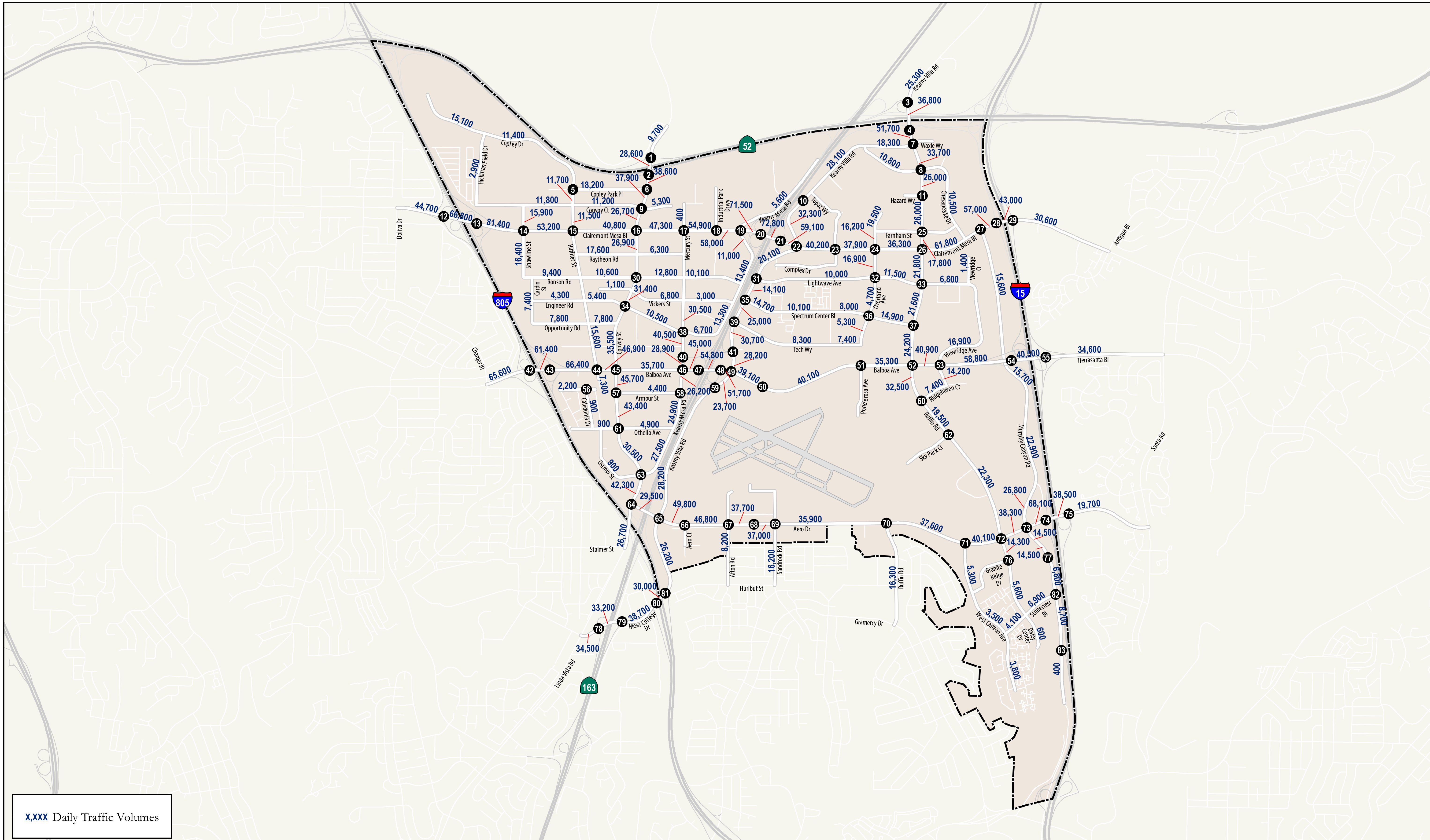


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Figure 4-1
Average Daily Traffic Volumes - Proposed Plan Conditions

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 central portion of the community (other than areas bisected by SR-163), such as along Convoy Street, Clairemont Mesa Boulevard, Balboa Avenue, Mercury Street, Overland Avenue and Ruffin Road. Connectivity is generally lower adjacent to natural and physical barriers, such as along Kearny Villa Road (adjacent to SR-163), Aero Drive (adjacent to Montgomery Field), areas near I-805, and the hillsides adjacent to SR-52 and I-15.

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. Note that no mid-block crossing locations are proposed. 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. The remainder of the Pedestrian Study Area received Medium scores, appropriate for the respective environments, such as posted speed limit greater than 40 mph.

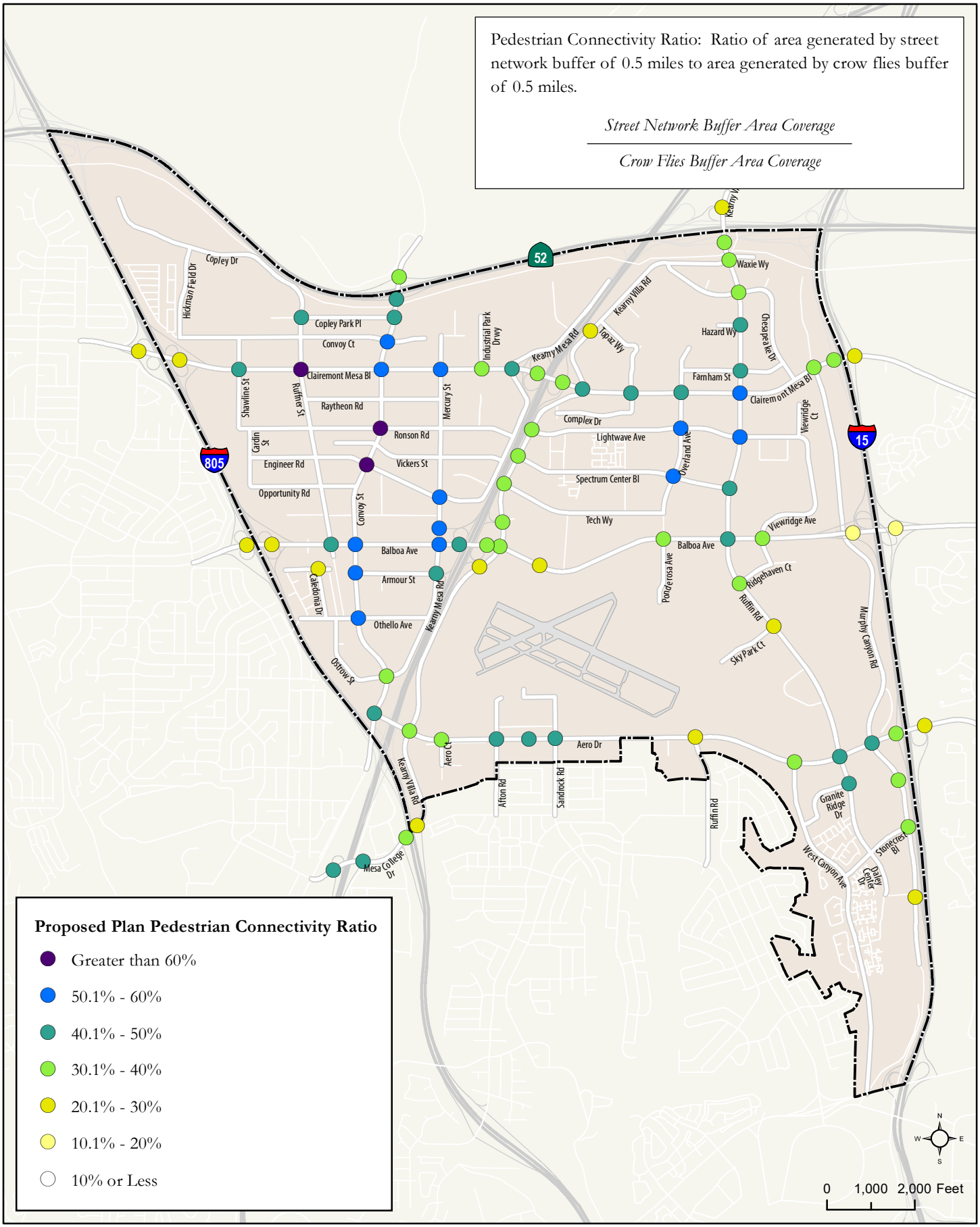

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Figure 5-1
Pedestrian Connectivity Ratio - Proposed Plan Conditions

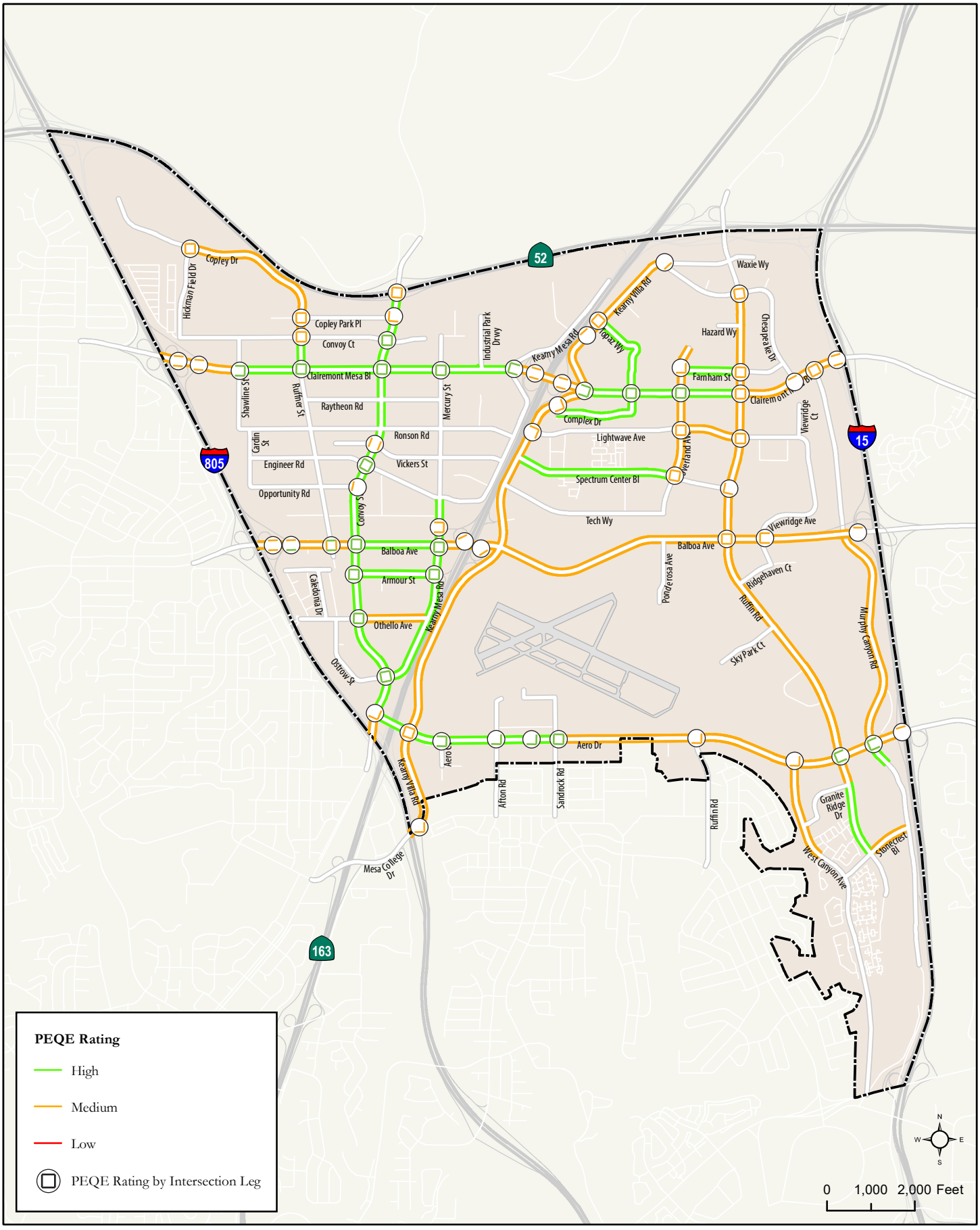

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Figure 5-2
Pedestrian Environmental Quality Evaluation (PEQE) - Proposed Plan Conditions

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Copley Dr	Hickman Field Dr	Copley Park Pl	6	Medium	6	Medium	Connector
Ruffner St	Copley Park Pl	Convoy Ct	6	Medium	6	Medium	Connector
Ruffner St	Convoy Ct	Clairemont Mesa Blvd	7	High	7	High	Connector
Convoy St	SR-52 EB Ramps	Copley Park Pl	7	High	7	High	Connector
Convoy St	Copley Park Pl	Convoy Ct	7	High	7	High	Connector
Convoy St	Convoy Ct	Clairemont Mesa Blvd	7	High	7	High	District
Convoy St	Clairemont Mesa Blvd	Raytheon Rd	7	High	7	High	District
Convoy St	Raytheon Rd	Ronson Rd	7	High	7	High	District
Convoy St	Ronson Rd	Vickers Rd	7	High	7	High	District
Convoy St	Vickers St	Engineer Rd	7	High	7	High	District
Convoy St	Engineer Rd	Opportunity Rd	7	High	7	High	District
Convoy St	Opportunity Rd	Balboa Ave	7	High	7	High	District
Convoy St	Balboa Ave	Armour St	7	High	7	High	District
Convoy St	Armour St	Othello Ave	7	High	7	High	District
Convoy St	Othello Ave	Kearny Mesa Rd	7	High	7	High	District
Convoy St	Kearny Mesa Rd	Aero Dr	7	High	7	High	District
Convoy St	Aero Dr	Community Boundary	6	Medium	6	Medium	Connector
Mercury St	Engineer Rd	SR-163 SB Ramps	7	High	7	High	Corridor
Mercury St	SR-163 SB Ramps	Balboa Ave	7	High	7	High	Corridor
Mercury St	Balboa Ave	Armour St	7	High	7	High	Corridor
Kearny Mesa Rd	Armour St	Convoy St	7	High	7	High	Connector
Kearny Villa Rd	Chesapeake Dr	Topaz Wy	6	Medium	6	Medium	Connector
Kearny Villa Rd	Topaz Wy	Clairemont Mesa Blvd	6	Medium	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	
Kearny Villa Rd	Clairemont Mesa Blvd	Kearny Villa Ct	6	Medium	6	Medium	Connector
Kearny Villa Rd	Kearny Villa Ct	Lightwave Ave	6	Medium	6	Medium	Connector
Kearny Villa Rd	Lightwave Ave	Balboa Ave	6	Medium	6	Medium	Connector
Kearny Villa Rd	Balboa Ave	Aero Dr	6	Medium	6	Medium	Connector
Kearny Villa Rd	Aero Dr	I-805 NB On-Ramp	6	Medium	6	Medium	Connector
Topaz Wy	Kearny Villa Rd	Complex Dr	7	High	7	High	Connector
Complex Dr	Topaz Wy	Clairemont Mesa Blvd	7	High	7	High	Connector
Complex Dr	Clairemont Mesa Blvd	Kearny Villa Wy	7	High	7	High	Connector
Overland Ave	End	Farnham St	6	Medium	6	Medium	Connector
Overland Ave	Farnham St	Clairemont Mesa Blvd	6	Medium	6	Medium	Connector
Overland Ave	Clairemont Mesa Blvd	Lightwave Ave	6	Medium	6	Medium	Connector
Overland Ave	Lightwave Ave	Spectrum Center Blvd	6	Medium	6	Medium	Connector
West Canyon Ave	Aero Dr	Granite Ridge Dr	6	Medium	6	Medium	Connector
West Canyon Ave	Granite Ridge Dr	W Canyon Terrace	6	Medium	6	Medium	Connector
Ruffin Rd	Chesapeake Dr	Farnham St	5	Medium	5	Medium	Connector
Ruffin Rd	Farnham St	Clairemont Mesa Blvd	5	Medium	5	Medium	Connector
Ruffin Rd	Clairemont Mesa Blvd	Lightwave Ave / Ruffin Ct	6	Medium	6	Medium	Corridor
Ruffin Rd	Lightwave Ave / Ruffin Ct	Spectrum Center Blvd	5	Medium	5	Medium	Connector
Ruffin Rd	Spectrum Center Blvd	Balboa Ave	5	Medium	5	Medium	Connector
Ruffin Rd	Balboa Ave	Aero Dr	5	Medium	5	Medium	Connector
Daley Center Dr	Aero Dr	Granite Ridge Dr	6	Medium	6	Medium	Connector
Daley Center Dr	Granite Ridge Dr	Stonecrest Blvd	7	High	7	High	Connector
Murphy Canyon Rd	Balboa Ave	Aero Dr	6	Medium	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	
Murphy Canyon Rd	Aero Dr	430 Ft South of Aero Dr	7	High	7	High	Corridor
Farnham St	Overland Ave	Ruffin Rd	7	High	7	High	Connector
Clairemont Mesa Blvd	I-805 West Side Ramps	I-805 East Side Ramps	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	I-805 East Side Ramps	Shawline St	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	Shawline St	Ruffner St	7	High	7	High	Corridor
Clairemont Mesa Blvd	Ruffner St	Convoy St	7	High	7	High	District
Clairemont Mesa Blvd	Convoy St	Mercury St	7	High	7	High	District
Clairemont Mesa Blvd	Mercury St	Kearny Mesa Rd	7	High	7	High	Corridor
Clairemont Mesa Blvd	Kearny Mesa Rd	SR-163 West Side Ramps	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	SR-163 West Side Ramps	SR-163 East Side Ramps	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	SR-163 East Side Ramps	Kearny Villa Rd	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	Kearny Villa Rd	Complex St / Complex Dr	7	High	7	High	Corridor
Clairemont Mesa Blvd	Complex St / Complex Dr	Overland Ave	7	High	7	High	Corridor
Clairemont Mesa Blvd	Overland Ave	Ruffin Rd	7	High	7	High	Corridor
Clairemont Mesa Blvd	Ruffin Rd	Chesapeake Dr	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	Chesapeake Dr	Murphy Canyon Rd	6	Medium	6	Medium	Connector
Clairemont Mesa Blvd	Murphy Canyon Rd	I-15 SB Ramps	6	Medium	6	Medium	Connector
Lightwave Ave	Overland Ave	Ruffin Rd	5	Medium	5	Medium	Connector
Spectrum Center Blvd	Kearny Villa Rd	Paramount Dr	7	High	7	High	Corridor
Balboa Ave	I-805 West Side Ramps	I-805 East Side Ramps	5	Medium	5	Medium	Connector
Balboa Ave	I-805 East Side Ramps	Ruffner St	6	Medium	6	Medium	Connector
Balboa Ave	Ruffner St	Convoy St	6	Medium	6	Medium	Connector
Balboa Ave	Convoy St	Mercury St	7	High	7	High	Corridor

Table 5.1a PEQE Segment Analysis Results – Proposed Plan Conditions

Roadway	From	To	North / East		South / West		Route Type
			Score	Grade	Score	Grade	
Balboa Ave	Mercury St	SR-163 SB On-Ramp	6	Medium	6	Medium	Connector
Balboa Ave	SR-163 SB On-Ramp	SR-163 NB On-Ramp	6	Medium	6	Medium	Connector
Balboa Ave	SR-163 NB On-Ramp	Kearny Villa Rd	6	Medium	6	Medium	Connector
Balboa Ave	Kearny Villa Rd	Ruffin Rd	6	Medium	6	Medium	Connector
Balboa Ave	Ruffin Rd	Viewridge Ave	6	Medium	6	Medium	Connector
Balboa Ave	Viewridge Ave	I-15 SB Off-Ramps	6	Medium	6	Medium	Connector
Armour St	Convoy St	Kearny Mesa Rd / Mercury St	7	High	7	High	Corridor
Othello Ave	Convoy St	Kearny Mesa Rd	6	Medium	6	Medium	Connector
Aero Dr	Convoy St	Kearny Villa Rd	7	High	7	High	Connector
Aero Dr	Kearny Villa Rd	Afton Rd	7	High	7	High	Corridor
Aero Dr	Afton Rd	Sandrock Rd	7	High	7	High	Corridor
Aero Dr	Sandrock Rd	Ruffin Rd	5	Medium	5	Medium	Connector
Aero Dr	Ruffin Rd	West Canyon Ave	5	Medium	5	Medium	Connector
Aero Dr	West Canyon Ave	Daley Center Dr/Ruffin Rd (North)	6	Medium	6	Medium	Corridor
Aero Dr	Daley Center Dr/Ruffin Rd (North)	Murphy Canyon Rd	6	Medium	6	Medium	Corridor
Aero Dr	Murphy Canyon Rd	I-15 SB Ramps	5	Medium	5	Medium	Connector
Stonecrest Blvd	Daley Center Dr	Murphy Canyon Rd	6	Medium	6	Medium	Connector

Source: Chen Ryan Associates (2019)

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
Ruffner St and Convoy Ct	5	Medium	5	Medium	5	Medium	5	Medium
Ruffner St and Clairemont Mesa Blvd	7	High	7	High	7	High	7	High
Convoy St and Convoy Ct	7	High	7	High	7	High	7	High
Convoy St and Clairemont Mesa Blvd	7	High	7	High	7	High	7	High
Convoy St and Vickers St	N/A	N/A	N/A	N/A	6	Medium	6	Medium
Convoy and Engineer Rd	7	High	7	High	7	High	7	High
Convoy St and Balboa Ave	7	High	7	High	7	High	7	High
Convoy St and Armour St	7	High	7	High	7	High	7	High
Convoy St and Othello St	7	High	7	High	7	High	7	High
Convoy St and Aero Dr	N/A	N/A	6	Medium	6	Medium	N/A	N/A
Mercury St and Balboa Ave	7	High	7	High	7	High	7	High
Mercury St and Armour St	7	High	7	High	7	High	7	High
Kearny Villa Rd and Aero Dr	6	Medium	6	Medium	6	Medium	6	Medium
Kearny Villa Rd and Chesapeake Dr	N/A	N/A	5	Medium	N/A	N/A	N/A	N/A
Kearny Villa Rd and Clairemont Mesa Blvd	7	High	7	High	7	High	N/A	N/A
Kearny Villa Rd and Lightwave Ave	6	Medium	N/A	N/A	6	Medium	N/A	N/A
Overland Ave and Clairemont Mesa Blvd	7	High	7	High	7	High	7	High
Overland Ave and Lightwave Ave	6	Medium	6	Medium	6	Medium	6	Medium
Ruffin Rd and Chesapeake Dr	6	Medium	6	Medium	6	Medium	6	Medium
Ruffin Rd and Clairemont Mesa Blvd	6	Medium	6	Medium	6	Medium	6	Medium
Ruffin Rd and Balboa Ave	6	Medium	6	Medium	6	Medium	6	Medium
Ruffin Rd and Aero Dr	7	High	7	High	N/A	N/A	7	High
Murphy Canyon Rd and Aero Dr	7	High	7	High	N/A	N/A	7	High
Clairemont Mesa Blvd and Shawline St	7	High	7	High	7	High	N/A	N/A
Clairemont Mesa Blvd and Mercury St	7	High	7	High	7	High	7	High
Clairemont Mesa Blvd and Kearny Mesa Rd	7	High	7	High	N/A	N/A	7	High
Clairemont Mesa Blvd and Murphy Canyon Rd	6	Medium	6	Medium	6	Medium	6	Medium
Kearny Villa Rd and Kearny Villa Wy	N/A	N/A	5	Medium	5	Medium	N/A	N/A
Complex Dr and Clairemont Mesa Blvd	7	High	7	High	7	High	7	High
Topaz Wy and Kearny Villa Rd	6	Medium	6	Medium	6	Medium	6	Medium
Farnham St and Overland Ave	N/A	N/A	6	Medium	6	Medium	N/A	N/A
Farnham St and Ruffin Rd	6	Medium	6	Medium	6	Medium	6	Medium
Lightwave Ave / Ruffin Ct and Ruffin Rd	6	Medium	6	Medium	6	Medium	6	Medium
Balboa Ave and Viewridge Ave	6	Medium	6	Medium	N/A	N/A	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
Aero Dr and Afton Rd	N/A	N/A	7	High	7	High	N/A	N/A
Aero Dr and Sandrock Dr	7	High	7	High	7	High	7	High
Aero Dr and West Canyon Ave	N/A	N/A	6	Medium	6	Medium	N/A	N/A
SR-163 SB Ramps and Mercury St	6	Medium	6	Medium	6	Medium	N/A	N/A
Aero Dr and I-15 SB Ramps	6	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Kearny Villa Rd and I-805 NB Off-Ramp	N/A	N/A	6	Medium	6	Medium	N/A	N/A
Clairemont Mesa Blvd and I-15 SB Ramps	6	Medium	6	Medium	N/A	N/A	N/A	N/A
Clairemont Mesa Blvd Eastbound and I-805 NB Off-Ramp	N/A	N/A	6	Medium	N/A	N/A	N/A	N/A
Balboa Ave Westbound and I-805 NB Off-Ramp	4	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Balboa Ave Westbound and I-805 NB On-Ramp	4	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Balboa Ave Eastbound and I-805 NB On-Ramp	N/A	N/A	4	Medium	N/A	N/A	N/A	N/A
Balboa Ave Eastbound and I-805 NB Off-Ramp	N/A	N/A	7	High	N/A	N/A	N/A	N/A
Balboa Ave and I-15 SB Off-Ramp	6	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Clairemont Mesa Blvd and SR-163 SB Ramps	6	Medium	6	Medium	N/A	N/A	N/A	N/A
Clairemont Mesa Blvd and SR-163 NB Ramps	6	Medium	6	Medium	N/A	N/A	N/A	N/A
Balboa Ave Westbound and SR-163 SB On-Ramp	4	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Balboa Ave Eastbound and SR-163 SB On-Ramp	N/A	N/A	4	Medium	N/A	N/A	N/A	N/A
Hickman Field Dr and Copley Dr	6	Medium	6	Medium	6	Medium	6	Medium
Ruffner St and Copley Park Pl	5	Medium	5	Medium	5	Medium	5	Medium
Ruffner Street and Balboa Ave	6	Medium	6	Medium	6	Medium	6	Medium
Convoy St and Copley Park Pl	N/A	N/A	6	Medium	N/A	N/A	6	Medium
Convoy St and Opportunity Rd	N/A	N/A	N/A	N/A	N/A	N/A	5	Medium
Convoy St and Ostrow St/Kearny Mesa Rd	7	High	7	High	7	High	7	High
Ruffin Rd (south) and Aero Dr	N/A	N/A	6	Medium	6	Medium	N/A	N/A
Ruffin Rd and Spectrum Center Blvd	N/A	N/A	6	Medium	N/A	N/A	6	Medium
Convoy St and SR-52 EB Ramps	6	Medium	6	Medium	6	Medium	6	Medium
Overland Ave and Spectrum Center Blvd	6	Medium	6	Medium	6	Medium	6	Medium
Clairemont Mesa Blvd and Chesapeake Dr	5	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Kearny Villa Rd and SR-163 NB Ramps	N/A	N/A	N/A	N/A	N/A	N/A	4	Medium
Clairemont Mesa Blvd Westbound and I-805 NB on-Ramp	4	Medium	N/A	N/A	N/A	N/A	N/A	N/A
Clairemont Mesa Blvd Eastbound and I-805 NB On-Ramp	N/A	N/A	4	Medium	N/A	N/A	N/A	N/A
Aero Ct and Aero Dr	7	High	7	High	7	High	N/A	N/A

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
Broadstone Drwy and Aero Dr	N/A	N/A	7	High	7	High	N/A	N/A
Ruffner St and Balboa Ave	7	High	7	High	6	Medium	6	Medium

Source: Chen Ryan Associates (2019)

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 (41.4% vs. 6.5%), while reducing Low PEQE grades (0% vs. 25.6%). 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	16.1	41.4%
Medium	22.8	58.6%
Low	0	0%
TOTAL	**38.9**	**100%**

Source: Chen Ryan Associates (2019)

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 57.8% of intersection legs to consist of Low scoring features. Similar to the segments, many 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 features, such as lead pedestrian intervals, 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	79	42.2%
Medium	108	57.8%
Low	0	0.0%
TOTAL	**187**	**100%**

Source: Chen Ryan Associates (2019)

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 21.6 miles when compared to existing conditions. This growth is largely attributed to the increase in protected or physically separated bicycle facilities, including Class I Multi-Use Paths and Class IV Cycle Tracks. Over 70% of the Proposed Plan bicycle network will be comprised of these separated bicycle facilities (30.1 miles), compared to 3.3% or 0.7 miles of the existing network.

Table 5.4 Bicycle Facilities by Network Mileage – Proposed Plan Conditions

	Existing Conditions		Proposed Plan	
Facility Type	**Mileage**	**Percent**	**Mileage**	**Percent**
Class I – Multi-Use Path	0.7	3.3%	12.1	28.5%
Class II – Bike Lane	17.4	83.3%	11.1	26.1%
Class III – Bike Route	2.8	13.4%	1.3	3.0%
Class IV – Cycle Track (One-Way)	0.0	0.0%	16.9	39.8%
Class IV – Cycle Track (Two-Way)	0.0	0.0%	1.1	2.6%
TOTAL	**20.9**	**100%**	**42.5**	**100%**

Source: Chen Ryan Associates (2019)

5.2.1 Bicycle Connectivity Ratio

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 similar locations as seen with pedestrians, along major thoroughfares and in the center of the community where access roadway network is most robust.

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.

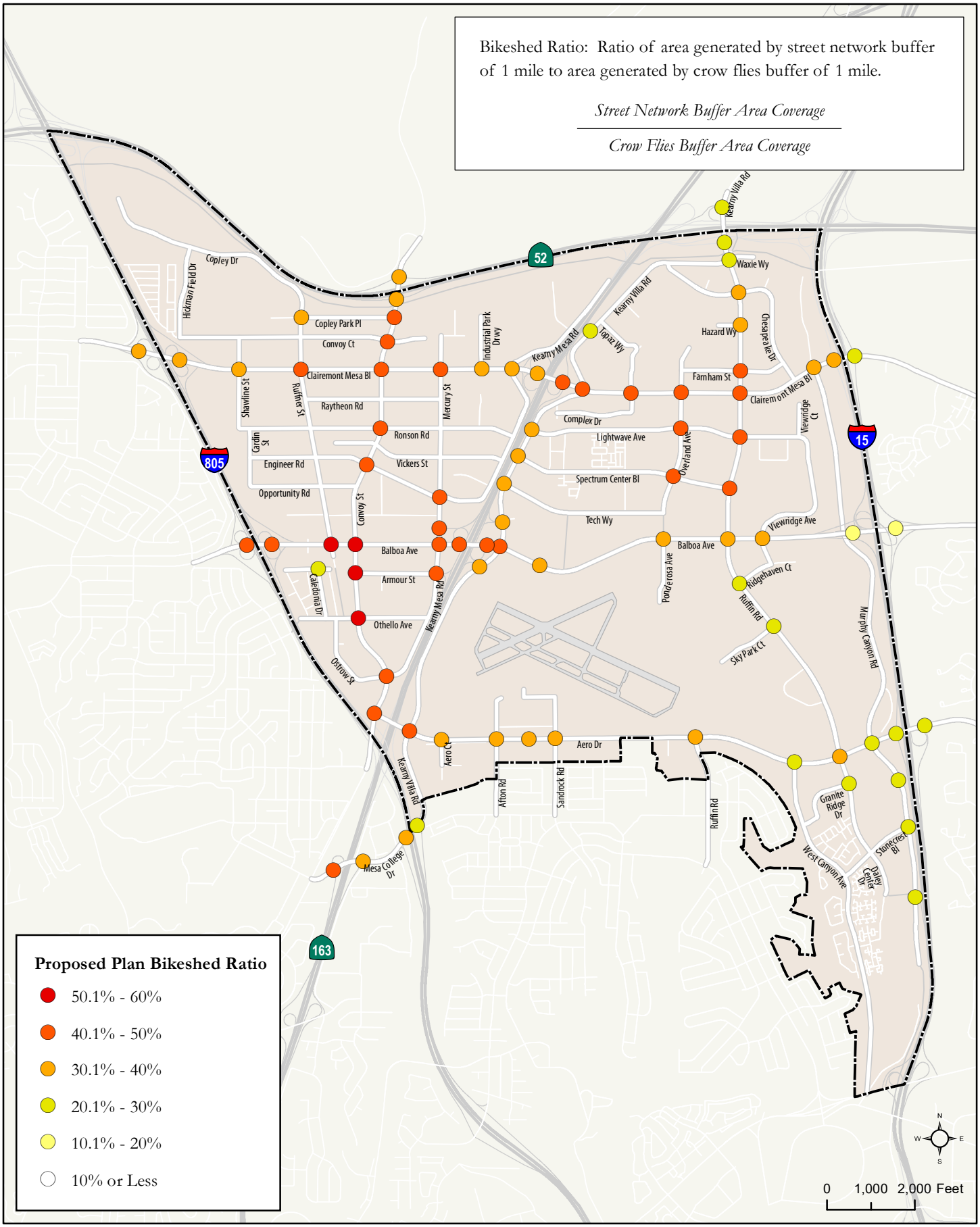

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Figure 5-3
Bicycle Network Connectivity - Proposed Plan Conditions

Figure 5-4 displays the bicycle LTS analysis results for all bikeable roadways within Kearny Mesa under Proposed Plan conditions. The LTS analysis includes all bicycle facilities, as summarized in Section 5.2 above. 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	29.9	70.7%
LTS 2	5.2	12.3%
LTS 3	3.5	8.3%
LTS 4	3.7	8.7%
TOTAL	**42.3**	**100%**

Source: Chen Ryan Associates (2019)

The Proposed Plan bicycle network relies heavily on facilities that provide physical separation from vehicular traffic such as Class I multi-use paths and Class IV Cycle Tracks. The increase in separated facilities is reflected in the high prevalence of facilities scored as LTS 1, accounting for 70.7% of network mileage under the Proposed Plan compared to 13.6% of facilities under existing conditions. Under existing conditions, 25.8% of facilities were identified as LTS 4, dropping to 8.7% with implementation of the Proposed Plan network. LTS 4 segments still remain due to vehicular speeds and volumes along roadways where a separated facility is infeasible, such as along portions of Murphy Canyon Road between Clairemont Mesa Boulevard and south of Balboa Avenue.

5.2.3 Low Stress Bicycle Connectivity Analysis

The low-stress bicycle connectivity analysis 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, between 10.1 and 60% over existing conditions in most areas, is the result of an expanded bicycle network, consisting of nearly twenty miles of physically separated bicycle facilities. The greatest increases are shown along Aero Drive, which is poised to benefit from a dual Class I/Class IV facility.

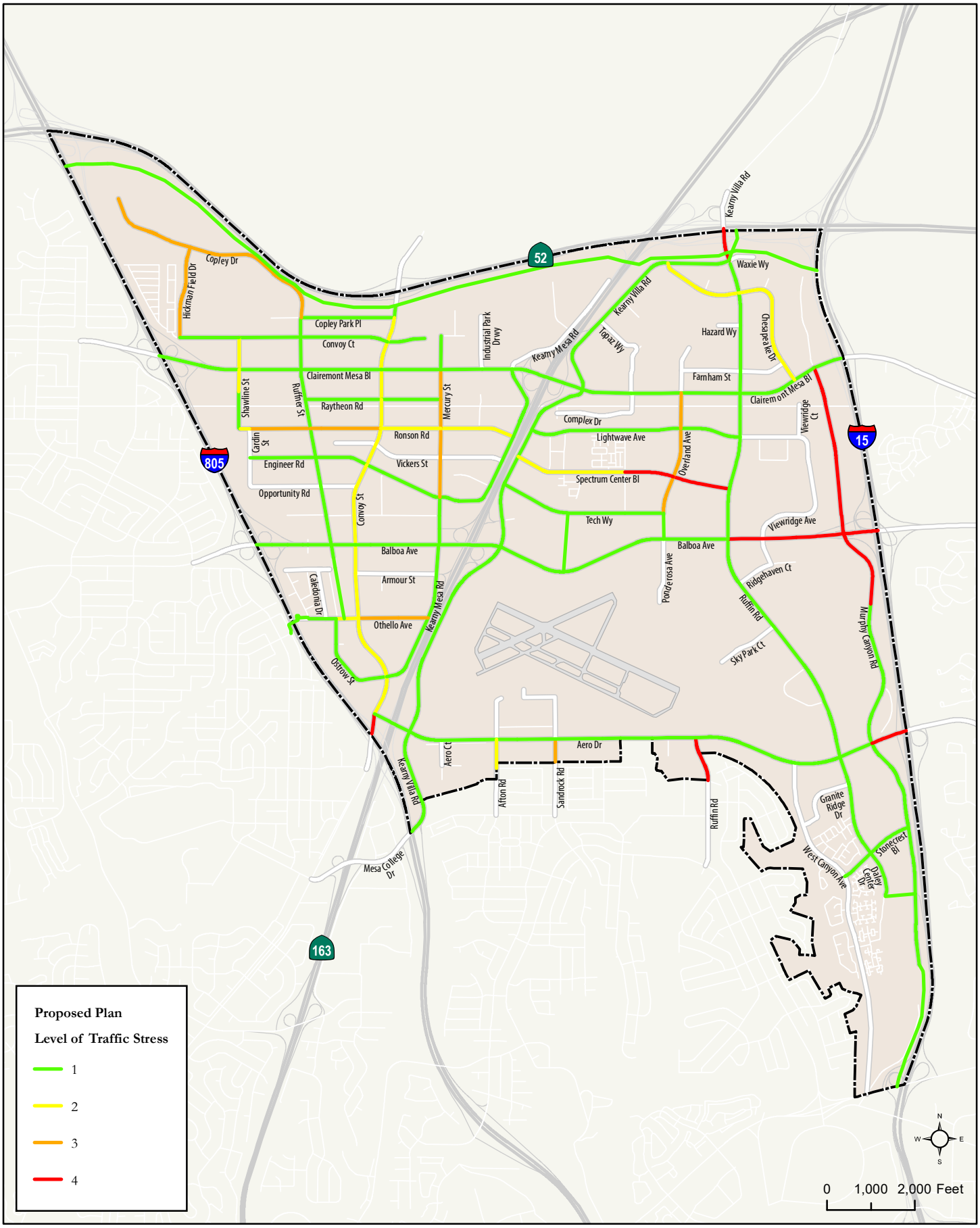

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Figure 5-4
Bicycle Level of Traffic Stress (LTS) - Proposed Plan Conditions

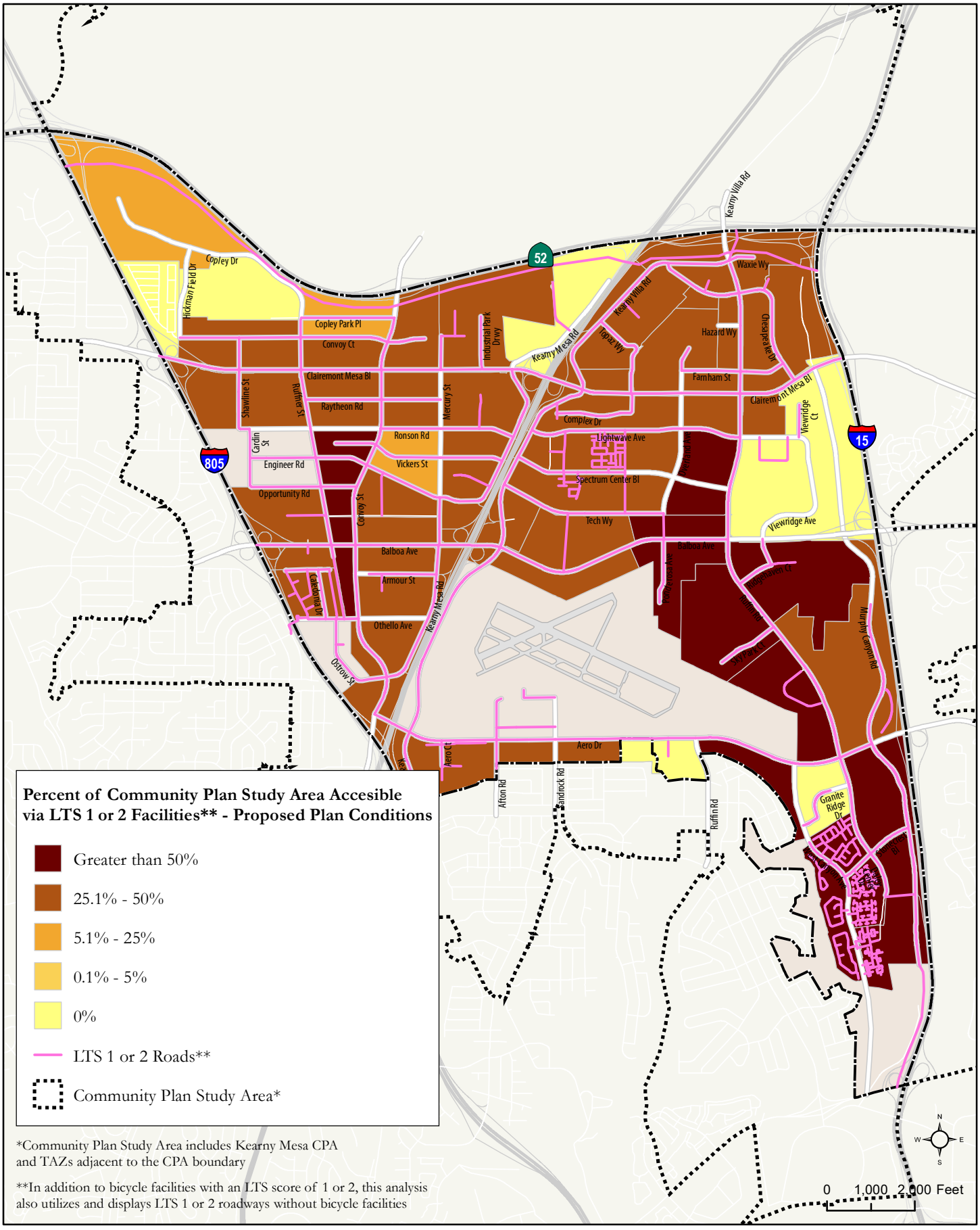

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Figure 5-5
Combined Bicycle Network Connectivity and Quality Assessment - Proposed Plan Conditions

5.3 Public Transit Services and Facilities Assessment and Results

Public transit services and facilities under Proposed Plan conditions assume implementation of improved and new transit routes as per SANDAG's *San Diego Forward: The Regional Plan* (2015).

Frequent, high-quality transit services are located along major community corridors, and build upon current local and Rapid bus routes. Further, new Rapid routes are proposed through a combination of upgrades to current limited-stop service, as well as new service. As discussed in Chapter 3, a circulator service area bounded by Clairemont Mesa Boulevard, Balboa Avenue, Convoy Street, and Ruffin Road may be useful in encouraging non-auto circulation by employees and residents of Kearny Mesa when accessing other destinations within the community. Transit and circulators will both be aided by implementation of mobility hubs, which are proposed at major intersections and transit nodes, such as:

- Aero Court & Aero Drive
- Convoy Street & Clairemont Mesa Boulevard
- Convoy Street & Othello Avenue
- Kearny Villa Road and Balboa Avenue
- Complex Drive/Topaz Way & Clairemont Mesa Boulevard (Kearny Mesa Transit Center)
- Ruffin Road & Balboa Avenue

5.3.1 Transit Stop/Station Amenities

Mixed-use development, pedestrian districts, SMART Corridors, and transit-oriented development are known supporters of increased transit usage. As this Plan calls for increased multimodal connectivity, and acknowledges the potential for redevelopment, transit stops in Kearny Mesa are likely to be candidates to receive increased amenities. The *MTS Designing for Transit* manual (2018) outlines the standard amenities that should be provided at bus stops based on the projected daily passenger boardings (across all routes) and is presented in Table 5.6. As stops are reevaluated and as ridership volumes grow as per the Regional Plan, likely amenities to be added include:

- Expanded sidewalks,
- ADA accessibility at all stops,
- Seating,
- Shelters,
- Trash receptacles,
- System maps and schedule information, and
- Real-time "next arrivals" displays.

Table 5.6 Bus Stop Amenity Standards by Ridership Levels

Amenity	Daily Passenger Boardings by Stop/Station				
	< 50	50 - 100	101 - 200	201 – 500	> 500
Sign and Pole	S	S	S	S	O
Built-in Sign	-	-	-	O	S
Expanded Sidewalk	O	O	S	S	S
Accessible	S	S	S	S	S
Seating	O	S	S	S	S
Passenger Shelter	O	O	S	S	S
Route Designations	S	S	S	S	S
Schedule Display	O	O	O	S	S
Route Map	O	O	O	S	S
System Map	-	-	O	O	S
Trash/Recycling Receptacle	O	O	O	S	S
Real Time Digital Display	-	-	O	O	O
Bus Pads (Street)*	*	*	*	*	S
Red Curbs	S	S	S	S	S

Source: Designing for Transit, MTS (2018)

Notes:
1) Some features may be provided by others. Actual deployment of features depends upon individual site conditions and constraints.
S = Standard Feature
O = Optional Feature
- = Not Applicable
* = Required for stops with four or more buses per hour, as a specification of the jurisdiction that controls the right-of-way

Additionally, the *MTS Designing for Transit* manual identifies the following amenities pertaining to transit stations, such as for light rail or Rapid buses:

- Lighting
- Shelters
- Seating
- Ticket Vending Machines
- Raised Transit Curbs

The following are identified as "enhanced" transit station amenities that may be considered for addition:

- Trashcans
- Bike Parking
- Trees
- Landscaping

5.3.2 Land Use & Transit Coordination

While the Kearny Mesa Community Plan Update considers the adopted *San Diego Forward: The Regional Plan* (October 2015) for planned regional transit routes, it is important to note that SANDAG is in the process of developing the 2021 Regional Plan. This transformative Plan will bring a bold new vision to our region framing around the 5 Big Moves including Complete Corridors, Transit Leap, Mobility Hubs, Flexible Fleets, and Next OS. It is likely that the planned transit will vary from the current regional plan in terms of type (rapid bus, bus rapid transit, light rail, subway, etc.), routes alignment, and station locations, however, transit priority treatment, access to transit, mobility hubs, and transit-oriented developments were focuses as a part of this planning effort.

Agency coordination is a critical as SANDAG moves forward with the 2021 Regional Plan and the City of San Diego will work closely with SANDAG on providing transit network inputs that best accommodate City's land use visions. The City is moving through the planning process on several community plan updates (CPUs) and these CPUs provide an opportunity to plan appropriate land uses and design recommendations to support transit investments and increase ridership. The proposed land changes to Kearny Mesa focus on new mixed-use and employment development along corridors with existing and planned high frequency transit. Therefore, it is important to ensure that the land use planning and transit planning are aligned.

The land use plan in the Kearny Mesa Community Plan Update retains the community's core industrial employment lands, enhances commercial corridors, and creates villages by adding residential in mixed-use, urban village settings. Potential buildout resulting from the implementation of the proposed land uses in the proposed Community Plan would increase the residential and employment capacity. The potential yield of new housing units would total approximately 25,826 dwelling units, which is an increase of approximately 20,000 dwelling units over the adopted Community Plan. The proposed Community Plan Update would also provide additional capacity for approximately 24,000 more jobs over the adopted Community Plan. A large portion of the new housing and jobs are located along Clairemont Mesa Boulevard and Ruffin Road, respectively.

As a result, City staff has requested that SANDAG consider the preferred alignment of the Purple Line along Ruffin Road and Clairemont Mesa Boulevard, as prescribed in the 2017 *Final Purple Line Conceptual Planning Study*, in the 2021 Regional Plan.

5.4 Street and Freeway System Assessment and Results

The local street and freeway systems are evaluated under Proposed Plan conditions, which assume 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. Roadway classifications under the Proposed Plan are presented in Figure 5-6.

5.4.1 Roadway Segment Analysis

The roadway segment analysis was conducted for the Proposed Plan roadway classifications, displayed in Figure 5-6. Figure 5-7 and Table 5.7 display the projected ADT volumes and associated roadway LOS under Proposed Plan conditions.

As shown, of 172 segments analyzed under Proposed Plan conditions, 88 Mobility Element roadway segments are projected to operate at an acceptable LOS D or better under Proposed Plan conditions, and 84 segments are projected to operate at LOS E or F (48.8%):

- Copley Drive between Western End and Hickman Field Drive (LOS F)
- Kearny Villa Road between Chesapeake Drive and Ruffin Road/Waxie Way (LOS F)
- Chesapeake Drive between Kearny Villa Road and Ruffin Road (LOS F)
- Copley Park Place between Copley Drive and Convoy Street (LOS F)
- Clairemont Mesa Boulevard between Doliva Drive and I-805 SB Ramps (LOS E)
- Clairemont Mesa Boulevard between I-805 SB Ramps and I-805 NB Ramps (LOS F)
- Clairemont Mesa Boulevard between I-805 NB Ramps and Shawline Street (LOS F)
- Clairemont Mesa Boulevard between Shawline Street and Ruffner Street (LOS E)
- Clairemont Mesa Boulevard between Mercury Street and Industrial Park Drive (LOS F)
- Clairemont Mesa Boulevard between Industrial Park Drive and Kearny Mesa Road (LOS F)
- Clairemont Mesa Boulevard between Kearny Mesa Road and SR-163 SB Ramps (LOS F)
- Clairemont Mesa Boulevard between SR-163 SB Ramps and SR-163 NB Ramps (LOS F)
- Clairemont Mesa Boulevard between SR-163 NB Ramps and Kearny Villa Road (LOS F)
- Clairemont Mesa Boulevard between Ruffin Road and Murphy Canyon Road (LOS F)
- Clairemont Mesa Boulevard between Murphy Canyon Road and I-15 SB Ramps (LOS F)
- Clairemont Mesa Boulevard between I-15 SB Ramps and I-15 NB Ramps (LOS E)
- Raytheon Road between Ruffner Street and Convoy Street (LOS F)
- Ronson Road between Shawline Street and Ruffner Street (LOS F)
- Ronson Road between Ruffner Street and Convoy Street (LOS F)
- Ronson Road between Convoy Street and Mercury Street (LOS F)
- Ronson Road between Mercury Street and Kearny Mesa Road (LOS F)
- Vickers Street between Convoy Street and Mercury Street (LOS E)
- Spectrum Center Boulevard between Sunroad Centrum Lane and Paramount Drive (LOS F)
- Engineer Road between Mercury Street and Kearny Mesa Road (LOS E)
- Opportunity Road between Cardin Street and Ruffner Street (LOS E)
- Balboa Avenue between Charger Boulevard and I-805 SB Ramps (LOS F)

- Balboa Avenue between I-805 NB Ramps and Ruffner Street (LOS F)
- Balboa Avenue between SR-163 NB On-Ramp and Kearny Villa Road (LOS F)
- Balboa Avenue between Kearny Villa Road and Pennisi Driveway (LOS E)
- Balboa Avenue between Pennisi Driveway and Ponderosa Avenue (LOS F)
- Balboa Avenue between Ponderosa Avenue and Ruffin Road (LOS E)
- Balboa Avenue between Viewridge Avenue and I-15 SB Ramps (LOS E)
- Ridgehaven Court between Ruffin Road and Eastern End (LOS E)
- Aero Drive between Kearny Villa Road and Aero Court (LOS F)
- Aero Drive between Aero Court and Afton Road (LOS F)
- Aero Drive between Afton Road and Broadstone Driveway (LOS E)
- Aero Drive between Sandrock Road and Ruffin Road (LOS F)
- Aero Drive between Ruffin Road and West Canyon Avenue (LOS E)
- Aero Drive between West Canyon Avenue and Ruffin Road/Daley Center Drive (LOS F)
- Aero Drive between Murphy Canyon Road and I-15 SB Ramps (LOS E)
- Mesa College Drive between SR-163 NB Off-Ramp and I-805 SB On-Ramp (LOS E)
- Shawline Street between Convoy Court and Clairemont Mesa Blvd (LOS F)
- Shawline Street between Clairemont Mesa Blvd and Ronson Road (LOS F)
- Cardin Street between Ronson Road and Opportunity Road (LOS E)
- Ruffner Street between Clairemont Mesa Blvd and Balboa Avenue (LOS F)
- Ruffner Street between Balboa Avenue and Armour Street (LOS E)
- Convoy Street between Metropolitan Biosolids Center and SR-52 WB Ramps (LOS E)
- Convoy Street between SR-52 WB Ramps and SR-52 EB Ramps (LOS E)
- Convoy Street between SR-52 EB Ramps and Copley Park Place (LOS E)
- Convoy Street between Copley Park Place and Convoy Court (LOS F)
- Convoy Street between Convoy Court and Clairemont Mesa Blvd A (LOS E)
- Convoy Street between Clairemont Mesa Blvd and Ronson Road (LOS E)
- Convoy Street between Ronson Road and Engineer Road (LOS F)
- Convoy Street between Engineer Road and Balboa Avenue (LOS F)
- Convoy Street between Balboa Avenue and Armour Street (LOS F)
- Convoy Street between Armour Street and Othello Avenue (LOS F)
- Convoy Street between Kearny Mesa Road and Aero Drive (LOS F)
- Mercury Street between Clairemont Mesa Blvd and Engineer Road (LOS F)
- Mercury Street between Engineer Road and SR-163 SB Ramps (LOS F)
- Kearny Mesa Road between Armour Street and Othello Avenue (LOS F)
- Kearny Mesa Road between Othello Avenue and Convoy Street (LOS F)
- Kearny Mesa Road between 350 ft South of Clairemont Mesa Blvd and Ronson Road (LOS E)
- Kearny Mesa Road between Ronson Road and Engineer Road (LOS E)
- Kearny Villa Road between Clairemont Mesa Blvd and Lightwave Avenue (LOS F)
- Afton Road between Aero Drive and Hurlbut Street (LOS F)
- Sandrock Road between Aero Drive and Hurlbut Street (LOS F)
- Overland Avenue between Northern End and Farnham Street (LOS F)

- Overland Avenue between Farnham Street and Clairemont Mesa Blvd (LOS F)
- Kearny Villa Road between 360 ft North of SR-52 WB Ramps and SR-52 WB Ramps (LOS E)
- Kearny Villa Road between SR-52 WB Ramps and SR-52 EB Ramps (LOS E)
- Kearny Villa Road between SR-52 EB Ramps and Ruffin Road/Waxie Way (LOS F)
- Ruffin Road between Kearny Villa Road and Chesapeake Drive (LOS F)
- Ruffin Road between Hazard Way and Farnham Street (LOS E)
- Ruffin Road between Farnham Street and Clairemont Mesa Blvd (LOS F)
- Ruffin Road between Balboa Avenue and Ridgehaven Court (LOS F)
- Ruffin Road between Chesapeake Drive and Hazard Way (LOS E)
- Chesapeake Drive between Ruffin Road and Clairemont Mesa Blvd (LOS F)
- Viewridge Avenue between Ruffin Court and Balboa Avenue (LOS F)
- Viewridge Avenue between Balboa Avenue and Ridgehaven Court (LOS F)
- Daley Center Drive between Aero Drive and Granite Ridge Drive (LOS F)
- Murphy Canyon Road between Clairemont Mesa Blvd and 550 ft South of Balboa Ave Overcrossing (LOS F)
- Murphy Canyon Road between 550 ft South of Balboa Avenue Overcrossing and 1300 ft South of Balboa Avenue Overcrossing (LOS F)
- Murphy Canyon Road between 1300 ft South of Balboa Avenue Overcrossing and 1600 ft North of Aero Drive (LOS F)
- Murphy Canyon Road between Wal-Mart Driveway and Stonecrest Boulevard (LOS E)

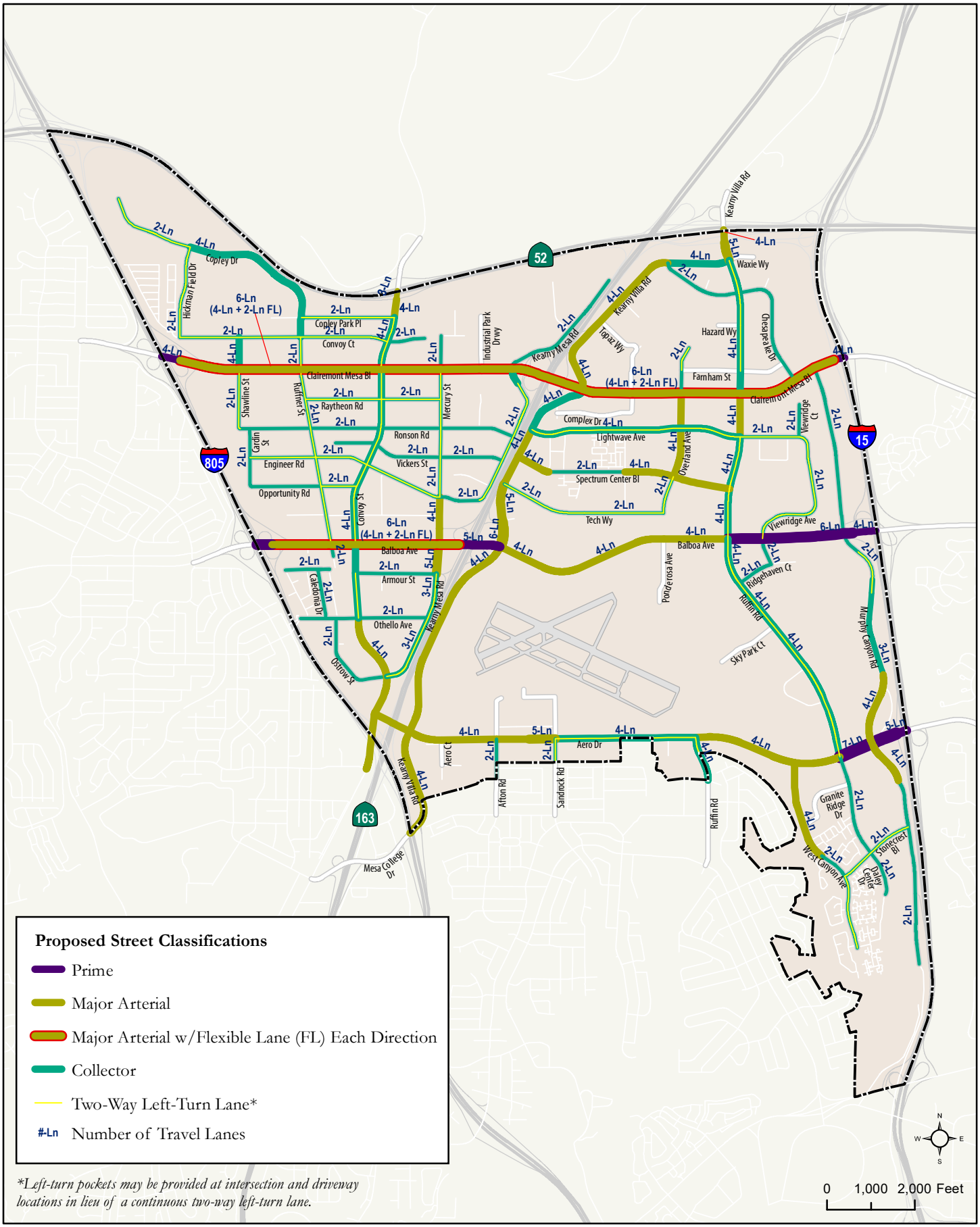

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Figure 5-6
Roadway Classifications - Proposed Project Conditions

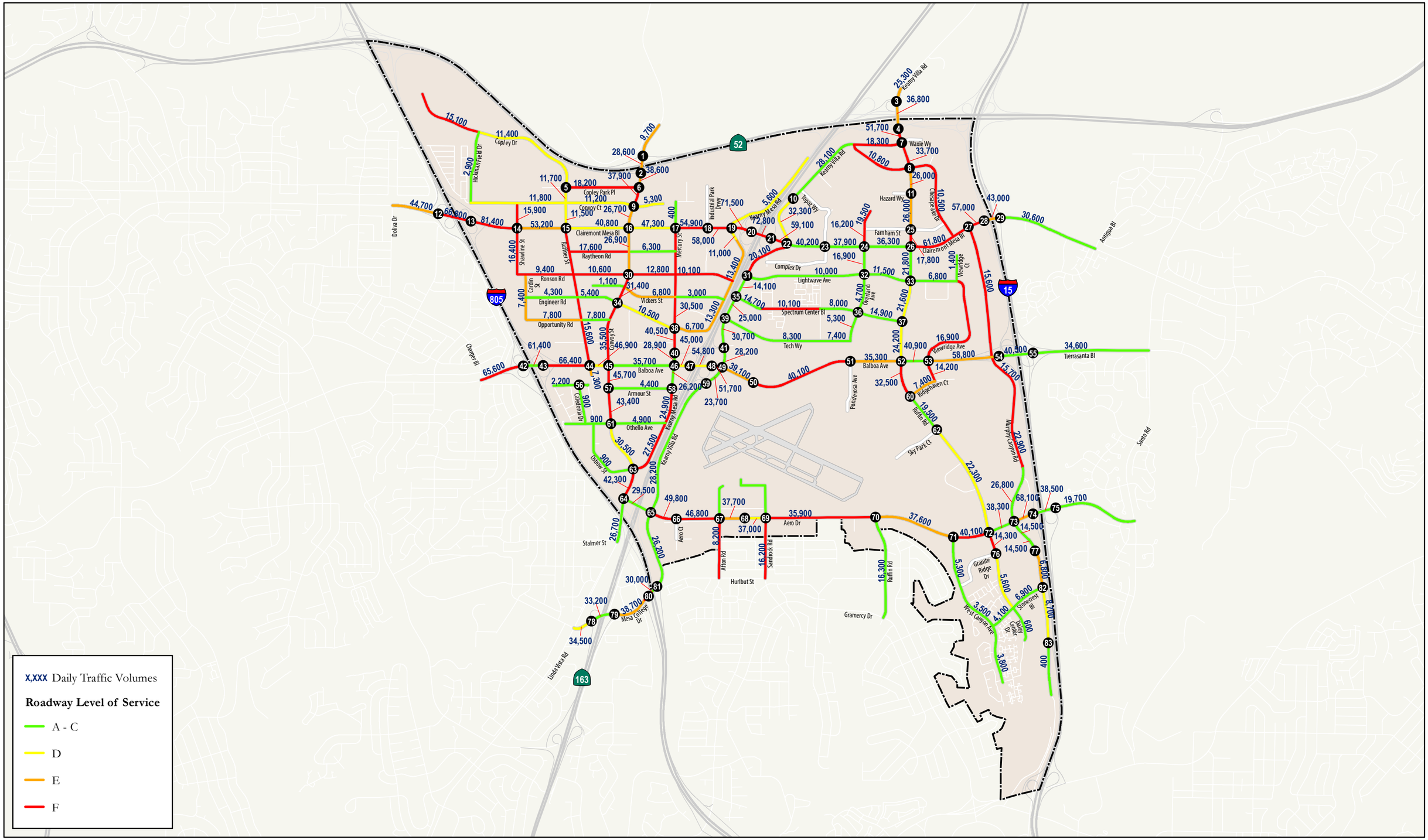

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Figure 5-7
Daily Roadway Segment Traffic Volumes and LOS - Proposed Plan Conditions

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Copley Drive	Between Western End and Hickman Field Drive	2-Lane Collector w/ TWLTL	15,000	15,100	1.007	**F**	Class II
	Between Hickman Field Drive and Convoy Terrace/Copley Park Place	4-Lane Collector	15,000	11,400	0.760	D	Class II
Kearny Villa Road	Between Chesapeake Drive and Ruffin Road/Waxie Way	4-Lane Collector	15,000	18,300	1.220	**F**	Class IV
Chesapeake Drive	Between Kearny Villa Road and Ruffin Road	2-Lane Collector	8,000	10,800	1.350	**F**	Class II
Copley Park Place	Between Copley Drive and Convoy Street	2-Lane Collector w/ TWLTL	15,000	18,200	1.213	**F**	Class IV
Convoy Court	Between Hickman Field Drive and Ruffner Street	2-Lane Collector w/ TWLTL	15,000	11,800	0.787	D	Class I
	Between Ruffner Street and Convoy Street	2-Lane Collector w/ TWLTL	15,000	11,200	0.747	D	Class I
	Between Convoy Street and Eastern End	2-Lane Collector	8,000	5,300	0.663	D	Class I
Clairemont Mesa Boulevard	Between Doliva Drive and I-805 SB Ramps	5-Lane Major Arterial	45,000	44,700	0.993	**E**	Class IV
	Between I-805 SB Ramps and I-805 NB Ramps	4-Lane Prime Arterial	64,100[3]	66,800	1.042	**F**	Class IV
	Between I-805 NB Ramps and Shawline Street	6-Lane Major Arterial as a SMART Corridor	40,000	61,000 (81,400)[1]	1.525	**F**	Class IV
	Between Shawline Street and Ruffner Street	6-Lane Major Arterial as a SMART Corridor	40,000	40,000 (53,200)[1]	1.000	**E**	Class IV
	Between Ruffner Street and Convoy Street	6-Lane Major Arterial as a SMART Corridor	40,000	31,000 (40,800)[1]	0.775	D	Class IV
	Between Convoy Street and Mercury Street	6-Lane Major Arterial as a SMART Corridor	40,000	35,000 (47,300)[1]	0.875	D	Class IV
	Between Mercury Street and Industrial Park Drive	6-Lane Major Arterial as a SMART Corridor	40,000	41,000 (54,900)[1]	1.025	**F**	Class IV
	Between Industrial Park Drive and Kearny Mesa Road	6-Lane Major Arterial as a SMART Corridor	40,000	44,000 (58,000)[1]	1.100	**F**	Class IV
	Between Kearny Mesa Road and SR-163 SB Ramps	6-Lane Major Arterial as a SMART Corridor	40,000	54,000 (71,500)[1]	1.350	**F**	Class IV

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Clairemont Mesa Boulevard	Between SR-163 SB Ramps and SR-163 NB Ramps	6-Lane Major Arterial as a SMART Corridor	48,500[3]	55,000 (72,800)[1]	1.134	**F**	Class IV
	Between SR-163 NB Ramps and Kearny Villa Road	6-Lane Major Arterial as a SMART Corridor	40,000	44,000 (59,100)[1]	1.100	**F**	Class IV
	Between Kearny Villa Road and Complex Drive	6-Lane Major Arterial as a SMART Corridor	40,000	30,000 (40,200)[1]	0.750	C	Class IV
	Between Complex Street and Overland Avenue	6-Lane Major Arterial as a SMART Corridor	40,000	28,000 (37,900)[1]	0.700	C	Class IV
	Between Overland Avenue and Ruffin Road	6-Lane Major Arterial as a SMART Corridor	40,000	27,000 (36,300)[1]	0.675	C	Class IV
	Between Ruffin Road and Murphy Canyon Road	6-Lane Major Arterial as a SMART Corridor	40,000	46,000 (61,800)[1]	1.150	**F**	Class IV
	Between Murphy Canyon Road and I-15 SB Ramps	6-Lane Major Arterial as a SMART Corridor	40,000	43,000 (57,000)[1]	1.075	**F**	Class IV
	Between I-15 SB Ramps and I-15 NB Ramps	4-Lane Prime Arterial	45,000	43,000	0.956	**E**	Class IV
	Between I-15 NB Ramps and Antigua Boulevard	4-Lane Prime Arterial	45,000	30,600	0.680	C	– [2]
Raytheon Road	Between Ruffner Street and Convoy Street	2-Lane Collector w/ TWLTL	15,000	17,600	1.173	**F**	Class I
	Between Convoy Street and Mercury Street	2-Lane Collector w/ TWLTL	15,000	6,300	0.420	B	Class I
Ronson Road	Between Shawline Street and Ruffner Street	2-Lane Collector	8,000	9,400	1.175	**F**	Class II
	Between Ruffner Street and Convoy Street	2-Lane Collector	8,000	10,600	1.325	**F**	Class II
	Between Convoy Street and Mercury Street	2-Lane Collector	8,000	12,800	1.600	**F**	Class II
	Between Mercury Street and Kearny Mesa Road	2-Lane Collector	8,000	10,100	1.263	**F**	Class II
Lightwave Avenue	Between Kearny Villa Road and Overland Avenue	4-Lane Collector w/ TWLTL	30,000	10,000	0.333	A	Class IV
	Between Overland Avenue and Ruffin Road	4-Lane Collector w/ TWLTL	30,000	11,500	0.383	B	Class IV

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Ruffin Court	Between Ruffin Road and Viewridge Avenue	2-Lane Collector w/ TWLTL	15,000	6,800	0.453	B	None
Vickers Street	Between Western End and Convoy Street	2-Lane Collector	8,000	1,100	0.138	A	None
	Between Convoy Street and Mercury Street	2-Lane Collector	8,000	6,800	0.850	**E**	None
	Between Mercury Street and Kearny Mesa Road	2-Lane Collector	8,000	3,000	0.375	B	None
Spectrum Center Boulevard	Between Kearny Villa Road and Sunroad Centrum Lane	4-Lane Major Arterial	40,000	14,700	0.368	A	Class II
	Between Sunroad Centrum Lane and Paramount Drive	2-Lane Collector	8,000	10,100	1.263	**F**	Class III
	Between Paramount Drive and Overland Avenue	4-Lane Major Arterial	40,000	8,000	0.200	A	Class II
	Between Overland Avenue and Ruffin Road	4-Lane Major Arterial	40,000	14,900	0.373	A	Class II
Engineer Road	Between Cardin Street and Ruffner Street	2-Lane Collector w/ TWLTL	15,000	4,300	0.287	A	Class I
	Between Ruffner Street and Convoy Street	2-Lane Collector w/ TWLTL	15,000	5,400	0.360	B	Class I
	Between Convoy Street and Mercury Street	2-Lane Collector w/ TWLTL	15,000	10,500	0.700	D	Class I
	Between Mercury Street and Kearny Mesa Road	2-Lane Collector	8,000	6,700	0.838	**E**	Class I
Tech Way	Between Kearny Villa Road and 1800 ft West of Overland Avenue	2-Lane Collector w/ TWLTL	15,000	8,300	0.553	C	Class IV
	Between 1800 ft West of Overland Avenue and Overland Avenue	2-Lane Collector w/ TWLTL	15,000	7,400	0.493	C	Class IV
Opportunity Road	Between Cardin Street and Ruffner Street	2-Lane Collector	8,000	7,800	0.975	**E**	None
	Between Ruffner Street and Convoy Street	2-Lane Collector w/ TWLTL	15,000	7,800	0.520	C	None
Balboa Avenue	Between Charger Boulevard and I-805 SB Ramps	6-Lane Prime Arterial	60,000	65,600	1.093	**F**	Class II
	Between I-805 SB Ramps and I-805 NB Ramps	6-Lane Prime Arterial	77,000[3]	61,400	0.797	C	Class II
	Between I-805 NB Ramps and Ruffner Street	6-Lane Major Arterial as a SMART Corridor	40,000	50,000 (66,400)[1]	1.250	**F**	Class IV
	Between Ruffner Street and Convoy Street	6-Lane Major Arterial as a SMART Corridor	40,000	35,000 (46,900)[1]	0.875	D	Class IV

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Balboa Avenue	Between Convoy Street and Mercury Street	6-Lane Major Arterial as a SMART Corridor	40,000	27,000 (35,700)[1]	0.675	C	Class IV
	Between Mercury Street and SR-163 SB On-Ramp	6-Lane Major Arterial as a SMART Corridor	40,000	34,000 (45,000)[1]	0.850	D	Class IV
	Between SR-163 SB On-Ramp and SR-163 NB On-Ramp	5-Lane Prime Arterial	67,000[3]	54,800	0.818	D	Class IV
	Between SR-163 NB On-Ramp and Kearny Villa Road	5-Lane Prime Arterial	50,000	51,700	1.034	**F**	Class IV
	Between Kearny Villa Road and Pennisi Driveway	4-Lane Major Arterial	40,000	39,100	0.978	**E**	Class IV
	Between Pennisi Driveway and Ponderosa Avenue	4-Lane Major Arterial	40,000	40,100	1.003	**F**	Class IV
	Between Ponderosa Avenue and Ruffin Road	4-Lane Major Arterial	40,000	35,300	0.883	**E**	Class IV
	Between Ruffin Road and Viewridge Avenue	6-Lane Prime Arterial	60,000	40,900	0.682	C	Class II
	Between Viewridge Avenue and I-15 SB Ramps	6-Lane Prime Arterial	60,000	58,800	0.980	**E**	Class II
Tierrasanta Boulevard	Between I-15 SB Ramps and I-15 NB Ramps	4-Lane Prime Arterial	64,100[3]	40,500	0.632	C	– [2]
	Between I-15 NB Ramps and Santo Road	5-Lane Prime Arterial	50,000	34,600	0.692	C	– [2]
Armour Street	Between Kirkcaldy Drive and Delwood Street	2-Lane Collector	8,000	2,200	0.275	C	None
	Between Convoy Street and Mercury Street	2-Lane Collector	8,000	4,400	0.550	C	None
Ridgehaven Court	Between Ruffin Road and Eastern End	2-Lane Collector	8,000	7,400	0.925	**E**	None
Othello Avenue	Between Kirkcaldy Drive and Convoy Street	2-Lane Collector	8,000	900	0.113	A	Class II
	Between Convoy Street and Kearny Mesa Road	2-Lane Collector	8,000	4,900	0.613	C	Class II
Aero Drive	Between Linda Vista Road and Kearny Villa Road	4-Lane Major Arterial	40,000	29,500	0.738	C	Class IV
	Between Kearny Villa Road and Aero Court	4-Lane Major Arterial	40,000	49,800	1.245	**F**	Class I (WB) / Class IV (EB)
	Between Aero Court and Afton Road	4-Lane Major Arterial	40,000	46,800	1.170	**F**	Class I (WB) /

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Aero Drive							Class IV (EB)
	Between Afton Road and Broadstone Driveway	4-Lane Major Arterial	40,000	37,700	0.943	**E**	Class I (WB) / Class IV (EB)
	Between Broadstone Driveway and Sandrock Road	5-Lane Major Arterial	45,000	37,000	0.822	D	Class I (WB) / Class IV (EB)
	Between Sandrock Road and Ruffin Road	4-Lane Collector w/ TWLTL	30,000	35,900	1.197	**F**	Class I (WB) / Class IV (EB)
	Between Ruffin Road and West Canyon Avenue	4-Lane Major Arterial	40,000	37,600	0.940	**E**	Class I (WB) / Class IV (EB)
	Between West Canyon Avenue and Ruffin Road/Daley Center Drive	4-Lane Major Arterial	40,000	40,100	1.003	**F**	Class IV
	Between Ruffin Road/Daley Center Drive and Murphy Canyon Road	7-Lane Prime Arterial	70,000	38,300	0.547	B	Class IV
	Between Murphy Canyon Road and I-15 SB Ramps	7-Lane Prime Arterial	70,000	68,100	0.973	**E**	Class II
	Between I-15 SB Ramps and I-15 NB Ramps	5-Lane Prime Arterial	50,000	38,500	0.770	C	Class II
	Between I-15 NB Ramps and Santo Road	4-Lane Major Arterial	40,000	19,700	0.493	B	– [2]
Mesa College Drive	Between Linda Vista Road and SR-163 SB Ramps	4-Lane Major Arterial	40,000	34,500	0.863	D	– [2]
	Between SR-163 SB Ramps and SR-163 NB Off-Ramp	4-Lane Prime Arterial	45,000	33,200	0.738	C	– [2]
	Between SR-163 NB Off-Ramp and I-805 SB On-Ramp	4-Lane Major Arterial	40,000	38,700	0.968	**E**	– [2]
Stonecrest Boulevard	Between West Canyon Avenue and Daley Center Drive	2-Lane Collector w/ TWLTL	15,000	4,100	0.273	A	Class II

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
	Between Daley Center Drive and Murphy Canyon Road	2-Lane Collector w/ TWLTL	15,000	6,900	0.460	B	Class I
Hickman Field Drive	Between Copley Drive and Convoy Court	2-Lane Collector w/ TWLTL	15,000	2,900	0.193	A	Class II
Shawline Street	Between Convoy Court and Clairemont Mesa Blvd	4-Lane Collector	15,000	15,900	1.060	**F**	Class II
	Between Clairemont Mesa Blvd and Ronson Road	2-Lane Collector w/ TWLTL	15,000	16,400	1.093	**F**	Class II
Cardin Street	Between Ronson Road and Opportunity Road	2-Lane Collector	8,000	7,400	0.925	**E**	None
Caledonia Drive	Between Armour Street and Othello Avenue	2-Lane Collector	8,000	900	0.113	A	None
Ruffner Street	Between Convoy Terrace/Copley Park Place and Convoy Court	4-Lane Collector	15,000	11,700	0.780	D	Class IV
	Between Convoy Court and Clairemont Mesa Blvd	2-Lane Collector w/ TWLTL	15,000	11,500	0.767	D	Class IV
	Between Clairemont Mesa Blvd and Balboa Avenue	2-Lane Collector w/ TWLTL	15,000	15,600	1.040	**F**	Class IV
	Between Balboa Avenue and Armour Street	2-Lane Collector	8,000	7,300	0.913	**E**	Class IV
Ostrow Street	Between Othello Avenue and Convoy Street	2-Lane Collector	8,000	900	0.113	A	Class II
Convoy Street	Between Metropolitan Biosolids Center and SR-52 WB Ramps	2-Lane Collector w/ NFP	10,000	9,700	0.970	**E**	None
	Between SR-52 WB Ramps and SR-52 EB Ramps	3-Lane Major Arterial	30,000	28,600	0.953	**E**	None
	Between SR-52 EB Ramps and Copley Park Place	4-Lane Major Arterial	40,000	38,600	0.965	**E**	Class I
	Between Copley Park Place and Convoy Court	4-Lane Collector w/ TWLTL	30,000	37,900	1.263	**F**	Class II
	Between Convoy Court and Clairemont Mesa Blvd	4-Lane Collector w/ TWLTL	30,000	26,700	0.890	**E**	Class II
	Between Clairemont Mesa Blvd and Ronson Road	4-Lane Collector w/ TWLTL	30,000	26,900	0.897	**E**	Class II
	Between Ronson Road and Engineer Road	4-Lane Collector w/ TWLTL	30,000	31,400	1.047	**F**	Class II
	Between Engineer Road and Balboa Avenue	4-Lane Collector w/ TWLTL	30,000	35,500	1.183	**F**	Class II
	Between Balboa Avenue and Armour Street[4]	4-Lane Collector	15,000	45,700	3.047	**F**	Class II
	Between Armour Street and Othello Avenue	4-Lane Collector w/ TWLTL	30,000	43,400	1.447	**F**	Class II
	Between Othello Avenue and Kearny Mesa Road	4-Lane Major Arterial	40,000	30,500	0.763	D	Class II

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Linda Vista Road	Between Kearny Mesa Road and Aero Drive	4-Lane Major Arterial	40,000	42,300	1.058	**F**	Class II
	Between Aero Drive and Stalmer Street	4-Lane Major Arterial	40,000	26,700	0.668	C	Class II
Mercury Street	Between Northern End and Clairemont Mesa Blvd	2-Lane Collector	8,000	400	0.050	A	Class II
	Between Clairemont Mesa Blvd and Engineer Road	2-Lane Collector w/ TWLTL	15,000	30,500	2.033	**F**	Class II
	Between Engineer Road and SR-163 SB Ramps	4-Lane Major Arterial	40,000	40,500	1.013	**F**	Class IV
	Between SR-163 SB Ramps and Balboa Avenue	4-Lane Major Arterial	40,000	28,900	0.723	C	Class IV
	Between Balboa Avenue and Armour Street	5-Lane Major Arterial	45,000	26,200	0.582	C	Class IV
Kearny Mesa Road	Between Armour Street and Othello Avenue	3-Lane Collector w/ TWLTL	22,500	24,900	1.107	**F**	Class IV
	Between Othello Avenue and Convoy Street	3-Lane Collector w/ TWLTL	22,500	27,500	1.222	**F**	Class IV
	Between Northern End and Clairemont Mesa Blvd	2-Lane Collector	8,000	5,600	0.700	D	None
	Between Clairemont Mesa Blvd and 350 ft South of Clairemont Mesa Blvd	4-Lane Collector	15,000	11,000	0.733	D	Class I
	Between 350 ft South of Clairemont Mesa Blvd and Ronson Road	2-Lane Collector w/ TWLTL	15,000	13,400	0.893	**E**	Class I
	Between Ronson Road and Engineer Road	2-Lane Collector w/ TWLTL	15,000	13,300	0.887	**E**	Class I
Kearny Villa Road	Between Chesapeake Drive and SR-163 NB Off-Ramp	4-Lane Major Arterial	40,000	28,100	0.703	C	Class IV
	Between SR-163 NB Off-Ramp and Clairemont Mesa Blvd	4-Lane Major Arterial	40,000	32,300	0.808	D	Class IV
	Between Clairemont Mesa Blvd and Lightwave Avenue	4-Lane Collector	15,000	20,100	1.340	**F**	Class IV
	Between Lightwave Avenue and Spectrum Center Boulevard	4-Lane Major Arterial	40,000	14,100	0.353	A	Class IV
	Between Spectrum Center Boulevard and Tech Way	4-Lane Major Arterial	40,000	25,000	0.625	C	Class IV
	Between Tech Way and SR-163 NB Ramps/Century Park Court	5-Lane Major Arterial	45,000	30,700	0.682	C	Class IV
	Between SR-163 NB Ramps/Century Park Court and Balboa Avenue	6-Lane Major Arterial	50,000	28,200	0.564	C	Class IV

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Kearny Villa Road	Between Balboa Avenue and SR-163 NB Ramps South of Balboa Avenue	4-Lane Major Arterial	40,000	23,700	0.593	C	Class IV (SB) / Class I (NB)
	Between SR-163 NB Ramps South of Balboa Avenue and Aero Drive	4-Lane Major Arterial	40,000	28,200	0.705	C	Class IV (SB) / Class I (NB)
	Between Aero Drive and I-805 NB Off-Ramp	4-Lane Major Arterial	40,000	26,200	0.655	C	Class IV
Afton Road	Between Aero Drive and Hurlbut Street	2-Lane Collector	8,000	8,200	1.025	**F**	Class III
Sandrock Road	Between Aero Drive and Hurlbut Street	2-Lane Collector w/ TWLTL	15,000	16,200	1.080	**F**	Class II
Overland Avenue	Between Northern End and Farnham Street	2-Lane Collector w/ TWLTL	15,000	19,500	1.300	**F**	None
	Between Farnham Street and Clairemont Mesa Blvd	2-Lane Collector	8,000	16,200	2.025	**F**	None
	Between Clairemont Mesa Blvd and Lightwave Avenue	4-Lane Major Arterial	40,000	16,900	0.423	B	Class II
	Between Lightwave Avenue and Spectrum Center Boulevard	4-Lane Major Arterial	40,000	4,700	0.118	A	Class II
	Between Spectrum Center Boulevard and Tech Way	2-Lane Collector w/ TWLTL	15,000	5,300	0.353	B	Class II
Ruffin Road (South of Aero Drive)	Between Aero Drive and Gramercy Drive/Mission Village Drive	4-Lane Collector w/ TWLTL	30,000	16,300	0.543	C	Class II
Kearny Villa Road	Between 360 ft North of SR-52 WB Ramps and SR-52 WB Ramps	4-Lane Collector w/ TWLTL	30,000	25,300	0.843	**E**	Class II
	Between SR-52 WB Ramps and SR-52 EB Ramps	4-Lane Major Arterial	40,000	36,800	0.920	**E**	Class II
	Between SR-52 EB Ramps and Ruffin Road/Waxie Way	5-Lane Major Arterial	45,000	51,700	1.149	**F**	Class II
Ruffin Road	Between Kearny Villa Road and Chesapeake Drive	4-Lane Collector w/ TWLTL	30,000	33,700	1.123	**F**	Class IV
	Between Chesapeake Drive and Hazard Way	4-Lane Collector w/ TWLTL	30,000	26,000	0.867	**E**	Class IV

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Ruffin Road	Between Hazard Way and Farnham Street	4-Lane Collector w/ TWLTL	30,000	26,000	0.867	**E**	Class IV
	Between Farnham Street and Clairemont Mesa Blvd	4-Lane Collector	15,000	17,800	1.187	**F**	Class IV
	Between Clairemont Mesa Blvd and Lightwave Avenue	4-Lane Major Arterial	40,000	21,800	0.545	C	Class IV
	Between Lightwave Avenue and Spectrum Center Boulevard	4-Lane Collector w/ TWLTL	30,000	21,600	0.720	D	Class IV
	Between Spectrum Center Boulevard and Balboa Avenue	4-Lane Collector w/ TWLTL	30,000	24,200	0.807	D	Class IV
	Between Balboa Avenue and Ridgehaven Court	4-Lane Collector w/ TWLTL	30,000	32,500	1.083	**F**	Class IV
	Between Ridgehaven Court and Sky Park Court	4-Lane Collector w/ TWLTL	30,000	19,500	0.650	C	Class IV
	Between Sky Park Court and Aero Drive	4-Lane Collector w/ TWLTL	30,000	22,300	0.743	D	Class IV
West Canyon Avenue	Between Aero Drive and 700 ft North of Stonecrest Boulevard	4-Lane Major Arterial	40,000	5,300	0.133	A	None
	Between 700 ft North of Stonecrest Boulevard and Stonecrest Boulevard	2-Lane Collector w/ NFP	10,000	3,500	0.350	A	None
	Between Stonecrest Boulevard and Southern End	2-Lane Collector w/ TWLTL	15,000	3,800	0.253	A	None
Chesapeake Drive	Between Ruffin Road and Clairemont Mesa Blvd	2-Lane Collector	8,000	10,500	1.313	**F**	Class II
Viewridge Court	Between Northern End and Ruffin Court	2-Lane Collector	8,000	1,400	0.175	A	None
Viewridge Avenue	Between Ruffin Court and Balboa Avenue	2-Lane Collector w/ TWLTL	15,000	16,900	1.127	**F**	None
	Between Balboa Avenue and Ridgehaven Court	2-Lane Collector	8,000	14,200	1.775	**F**	None
Daley Center Drive	Between Aero Drive and Granite Ridge Drive	2-Lane Collector	8,000	14,300	1.788	F	Class IV
	Between Granite Ridge Drive and Stonecrest Boulevard	2-Lane Collector	8,000	5,600	0.700	D	Class IV
	Between Stonecrest Boulevard and Southern End	2-Lane Collector w/ NFP	10,000	600	0.060	A	Class IV
Murphy Canyon Road	Between Clairemont Mesa Blvd and 550 ft South of Balboa Ave Overcrossing	2-Lane Collector	8,000	15,600	1.950	**F**	Class III (SB) / Class II (NB)

Table 5.7 Roadway Segment Analysis – Proposed Plan Conditions

Roadway	Segment	Classification	Capacity	ADT	V/C	LOS	Bicycle Facility
Murphy Canyon Road	Between 550 ft South of Balboa Avenue Overcrossing and 1300 ft South of Balboa Avenue Overcrossing	2-Lane Collector w/ TWLTL	15,000	15,700	1.047	**F**	Class II
	Between 1300 ft South of Balboa Avenue Overcrossing and 1600 ft North of Aero Drive	3-Lane Collector	11,000	22,900	2.082	**F**	Class IV
	Between 1600 ft North of Aero Drive and Aero Drive	4-Lane Major Arterial	40,000	26,800	0.670	C	Class IV
	Between Aero Drive and 410 ft South of Aero Drive	4-Lane Major Arterial	40,000	14,500	0.363	A	Class I
	Between 410 ft South of Aero Drive and Wal-Mart Driveway	4-Lane Major Arterial	40,000	14,500	0.363	A	Class I
	Between Wal-Mart Driveway and Stonecrest Boulevard	2-Lane Collector	8,000	6,800	0.850	**E**	Class I
	Between Stonecrest Boulevard and I-15 SB On-Ramp	2-Lane Collector w/ NFP	10,000	8,700	0.870	D	Class I
	Between I-15 SB On-Ramp and Southern End	2-Lane Collector w/ NFP	10,000	400	0.040	A	Class I
Mesa College Drive	Between I-805 NB Off-Ramp and I-805 SB On-Ramp	4-Lane Major Arterial	40,000	30,000	0.750	C	– [2]

Source: Chen Ryan Associates (2019)

Notes:

[1] A SMART Corridor is a 6-Lane Major Arterial with a flexible lane in each direction that provides access to or between at least two freeways, whereby mobility improvements are made for multimodal modes through the repurposing of roadway space. A 25% volume reduction was applied to SMART Corridors to reflect multimodal use of 2 lanes. The ADT in parenthesis reflects the pre-reduction value. Additionally, the roadway segment analysis for a SMART Corridor assumes the ADT volume reduction and the 4-Lane Major Arterial's daily traffic volume capacity and level of service standards.

[2] Segment outside of Kearny Mesa Community Plan area.

[3] Capacity accounts for auxiliary lanes along this segment.

[4] A-turn lane is present throughout the entire segment; however, the left-turn lane was precluded and the roadway was analyzed per the classification. Therefore, operations presented in the table are conservative and operations are better in the field.

TWLTL = Two-Way Left-Turn Lane

NFP = No Fronting Property

Bold letter indicates substandard LOS E or F.

5.4.2 Peak Hour Arterial Analysis

AM and PM peak hour segment level of service analyzes forecasted travel speeds based on anticipated conditions. Figure 5-8a and 5-8b display AM and PM peak hour arterial level of service results, respectively. The results are also presented in Table 5.8. 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:

Clairemont Mesa Boulevard:

- From I-15 SB Ramps to I-15 NB Ramps –westbound AM (LOS F); westbound PM (LOS F)

Balboa Avenue:

- From Mercury Street to Kearny Villa Road – eastbound AM (LOS F); westbound AM (LOS F); eastbound PM (LOS E); westbound PM (LOS F)
- From Kearny Villa Road to Pennisi Driveway – westbound AM (LOS E); westbound PM (LOS F)
- From Ponderosa Avenue to Ruffin Road –eastbound PM (LOS E)
- From Ruffin Road to I-15 SB Ramps – westbound AM (LOS F)

Aero Drive:

- From Convoy Street to Afton Road – eastbound AM (LOS E); westbound AM (LOS E); eastbound PM (LOS F)
- From Afton Road to Sandrock Road – eastbound AM (LOS F); westbound AM (LOS E); eastbound PM (LOS F); westbound PM (LOS E)
- From Daley Center Drive to I-15 NB Ramps - eastbound AM (LOS F); westbound AM (LOS F); eastbound PM (LOS F)

Convoy Street:

- From SR-52 WB Ramps to Clairemont Mesa Blvd – southbound AM (LOS F); southbound PM (LOS F)
- From Engineer Road to Balboa Avenue –southbound PM (LOS E)
- From Balboa Avenue to Othello Avenue – northbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS E)

Ruffin Road:

- From Chesapeake Drive to Hazard Way – northbound AM (LOS E); southbound AM (LOS F); northbound PM (LOS F); southbound PM (LOS F)
- From Hazard Way to Clairemont Mesa Blvd –southbound AM (LOS E); southbound PM (LOS F)
- From Clairemont Mesa Blvd to Lightwave Avenue – northbound AM (LOS F); southbound AM (LOS E); northbound PM (LOS F); southbound PM (LOS F)
- From Lightwave Avenue to Spectrum Center Blvd – northbound AM (LOS E); southbound PM (LOS F)

- From Spectrum Center Blvd to Balboa Avenue – northbound AM (LOS E); southbound AM (LOS F); southbound PM (LOS F)
- From Balboa Avenue to Ridgehaven Court – northbound AM (LOS F); southbound AM (LOS F); northbound PM (LOS F)
- From Ridgehaven Court to Sky Park Court – northbound PM (LOS F); southbound PM (LOS E)
- From Sky Park Court to Aero Drive – southbound PM (LOS E)

During the existing conditions analysis, field travel speeds were collected using a 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 *Mobility 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.

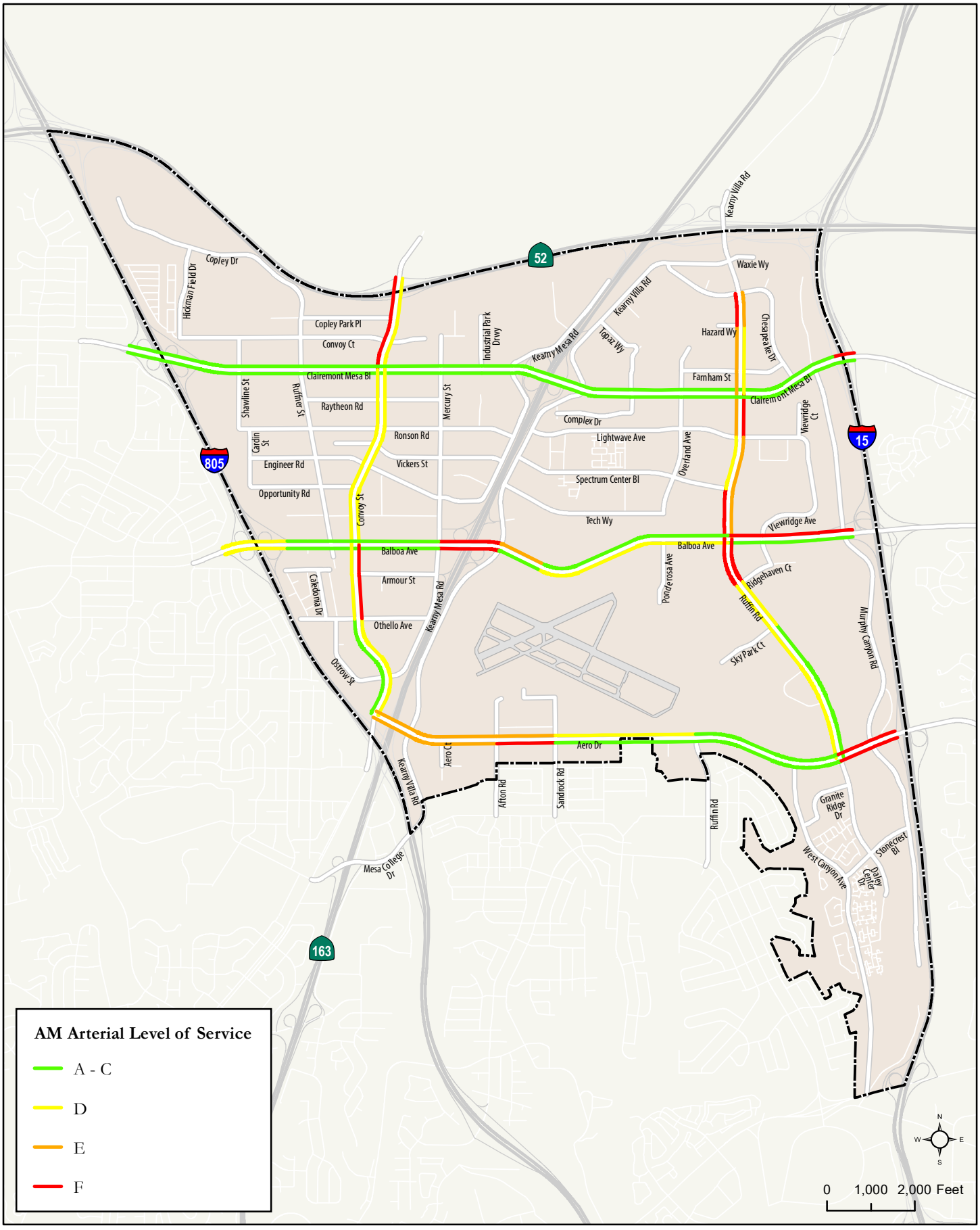

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Figure 5-8a
AM Arterial Level of Service - Proposed Plan Conditions

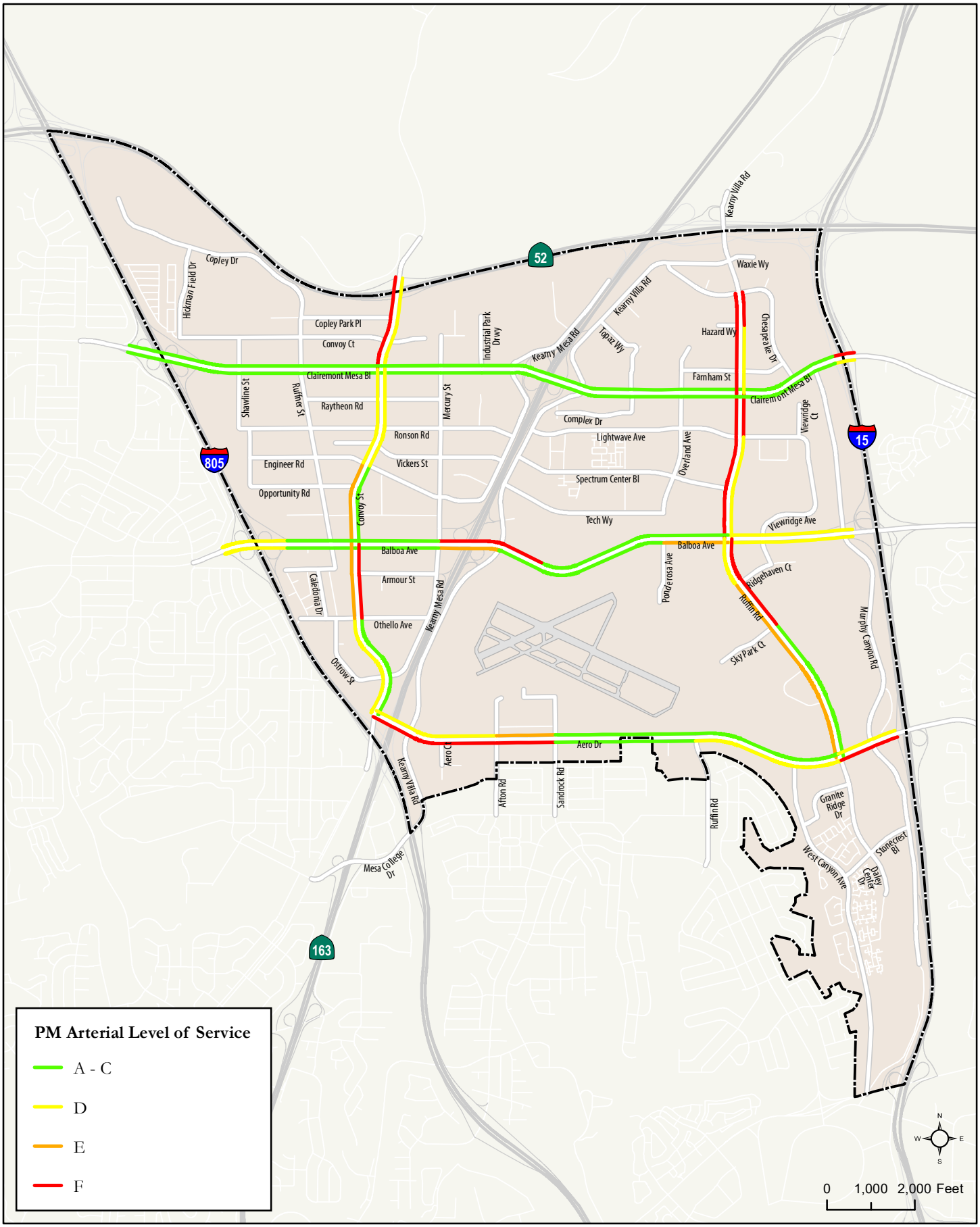

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Figure 5-8b
PM Arterial Level of Service - Proposed Plan Conditions

Table 5.8 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
Clairemont Mesa Boulevard	From I-805 SB Ramps to I-805 NB Off-Ramp	24.7	B	35.0	A	26.7	B	35.0	A
	From I-805 NB Off-Ramps to Ruffner Street*	35.0	A	35.0	A	35.0	A	35.0	A
	From Ruffner Street to Convoy Street*	35.0	A	35.0	A	35.0	A	35.0	A
	From Convoy Street to Mercury Street*	35.0	A	35.0	A	35.0	A	35.0	A
	From Mercury Street to SR-163 SB Ramps*	35.0	A	35.0	A	35.0	A	35.0	A
	From SR-163 SB Ramps to SR-163 NB Ramps*	35.0	A	35.0	A	35.0	A	35.0	A
	From SR-163 NB Ramps to Complex Street*	40.0	A	40.0	A	40.0	A	40.0	A
	From Complex Street to Overland Avenue*	40.0	A	40.0	A	40.0	A	40.0	A
	From Overland Avenue to Ruffin Road*	40.0	A	40.0	A	40.0	A	40.0	A
	From Ruffin Road to Murphy Canyon Road*	40.0	A	40.0	A	40.0	A	40.0	A
	From Murphy Canyon Road to I-15 SB Ramps*	40.0	A	40.0	A	40.0	A	40.0	A
	From I-15 SB Ramps to I-15 NB Ramps	22.2	C	11.9	**F**	18.1	D	14.2	**F**
Balboa Avenue	From I-805 SB Ramps to I-805 NB Ramps	19.3	D	21.8	D	19.4	D	18.5	D
	From I-805 NB Ramps to Convoy Street*	35.0	A	35.0	A	35.0	A	35.0	A
	From Convoy Street to Mercury Street*	35.0	A	35.0	A	35.0	A	35.0	A
	From Mercury Street to Kearny Villa Road	12.5	**F**	11.8	**F**	14.8	**E**	12.5	**F**
	From Kearny Villa Road to Pennisi Driveway	24.0	C	14.0	**E**	22.6	C	13.0	**F**
	From Pennisi Driveway to Ponderosa Avenue	21.9	D	24.7	C	24.3	C	24.9	C
	From Ponderosa Avenue to Ruffin Road	19.6	D	25.3	C	14.3	**E**	22.6	C
	From Ruffin Road to I-15 SB Ramps	32.2	B	11.7	**F**	18.3	D	21.1	D
Aero Drive	From Convoy Street to Afton Road	16.8	**E**	15.2	**E**	10.4	**F**	18.5	D
	From Afton Road to Sandrock Road	12.2	**F**	15.0	**E**	9.7	**F**	16.9	**E**
	From Sandrock Road to Ruffin Road (South of Aero Drive)	25.9	C	21.1	D	29.6	B	23.3	C
	From Ruffin Road (South of Aero Drive) to Daley Center Drive	23.6	C	27.6	C	21.9	D	31.1	B
	From Daley Center Drive to I-15 NB Ramps	11.5	**F**	12.6	**F**	11.3	**F**	17.7	D

Table 5.8 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
Convoy Street	From SR-52 WB Ramps to Clairemont Mesa Blvd	17.3	D	8.1	**F**	15.8	D	8.8	**F**
	From Clairemont Mesa Blvd to Engineer Road	14.1	D	17.8	D	14.5	D	14.5	D
	From Engineer Road to Balboa Avenue	15.0	D	14.1	D	19.2	C	13.0	**E**
	From Balboa Avenue to Othello Avenue	9.1	**F**	15.8	D	5.8	**F**	11.7	**E**
	From Othello Avenue to Aero Drive	17.2	D	19.2	C	19.6	C	15.0	D
Ruffin Road	From Chesapeake Drive to Hazard Way	13.5	**E**	11.7	**F**	11.5	**F**	8.5	**F**
	From Hazard Way to Clairemont Mesa Blvd	18.1	D	14.6	**E**	17.8	D	8.8	**F**
	From Clairemont Mesa Blvd to Lightwave Avenue	10.3	**F**	13.9	**E**	11.9	**F**	12.3	**F**
	From Lightwave Avenue to Spectrum Center Blvd	16.7	**E**	18.8	D	17.6	D	13.0	**F**
	From Spectrum Center Blvd to Balboa Avenue	14.5	**E**	12.9	**F**	17.4	D	9.4	**F**
	From Balboa Avenue to Ridgehaven Court	12.3	**F**	12.0	**F**	11.2	**F**	17.2	D
	From Ridgehaven Court to Sky Park Court	20.0	D	18.6	D	11.3	**F**	14.9	**E**
	From Sky Park Court to Aero Drive	32.0	B	21.8	D	37.6	A	13.8	**E**

Source: Chen Ryan Associates (2019)

Note:
Bold letter indicates substandard LOS E or F.
*Free Flow Speed to account for transit priority on SMART Corridor.

5.4.3 Intersection Geometry and LOS Analysis

Proposed Plan intersection geometrics are presented in Figure 5-9, while forecast AM and PM peak hour turning movements are displayed in Figure 5-10, and midday turning movements in Figure 5-11. Note that on Figure 5-9, the bicycle figure shown on this figure are intended to show that there is a bicycle facility traversing the roadway segment.

Figure 5-12 presents AM and PM peak hour intersection LOS analysis results, while midday results are displayed in Figure 5-13. AM and PM peak hour and midday LOS analysis results are also provided in Table 5.9. Signal timing was assumed to be optimized under Proposed Plan conditions. Intersection LOS calculation worksheets are provided in Appendix K.

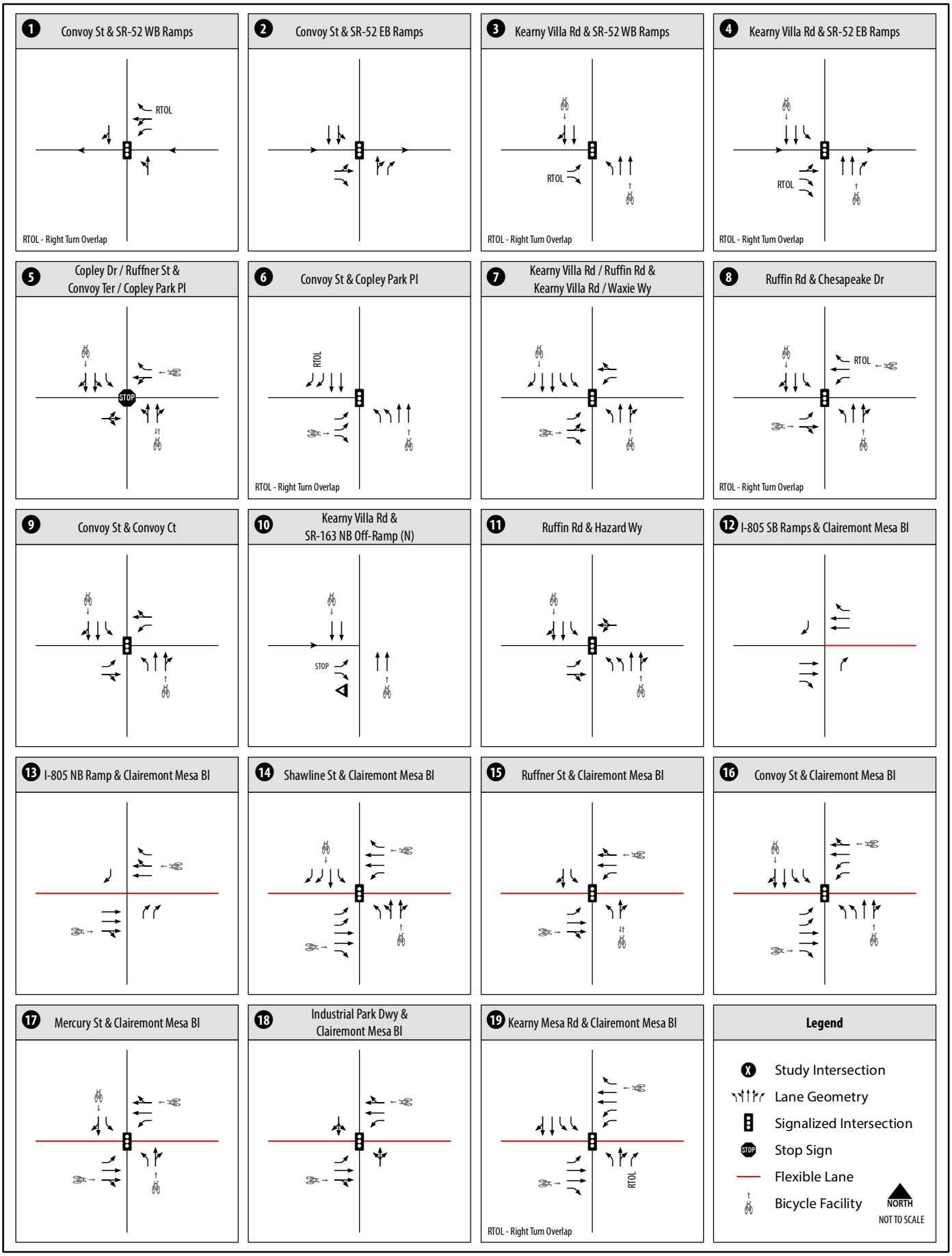

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Figure 5-9
Intersection Geometrics - Proposed Plan Conditions
(Intersections 1-19)

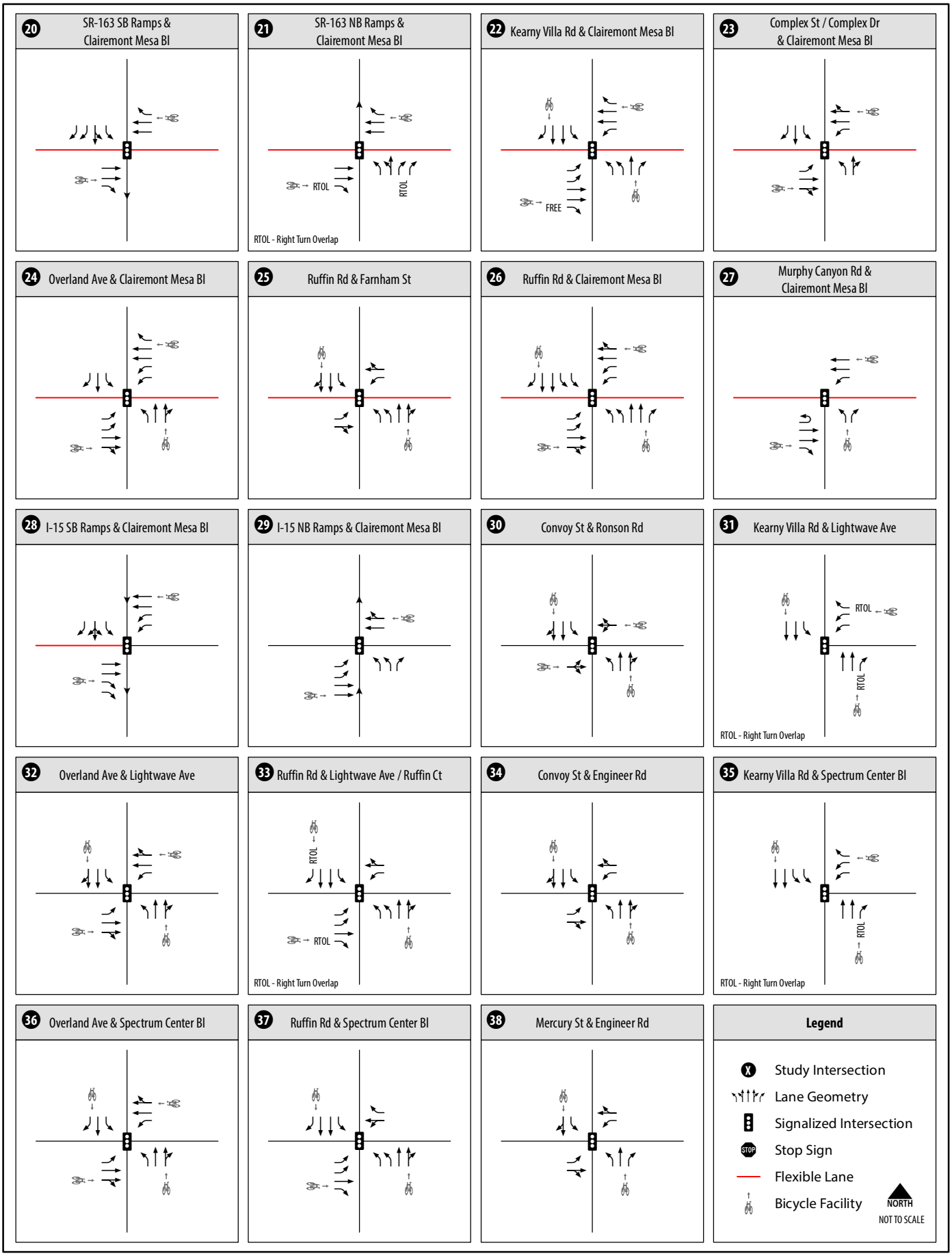

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Figure 5-9
Intersection Geometrics - Proposed Plan Conditions
(Intersections 20-38)

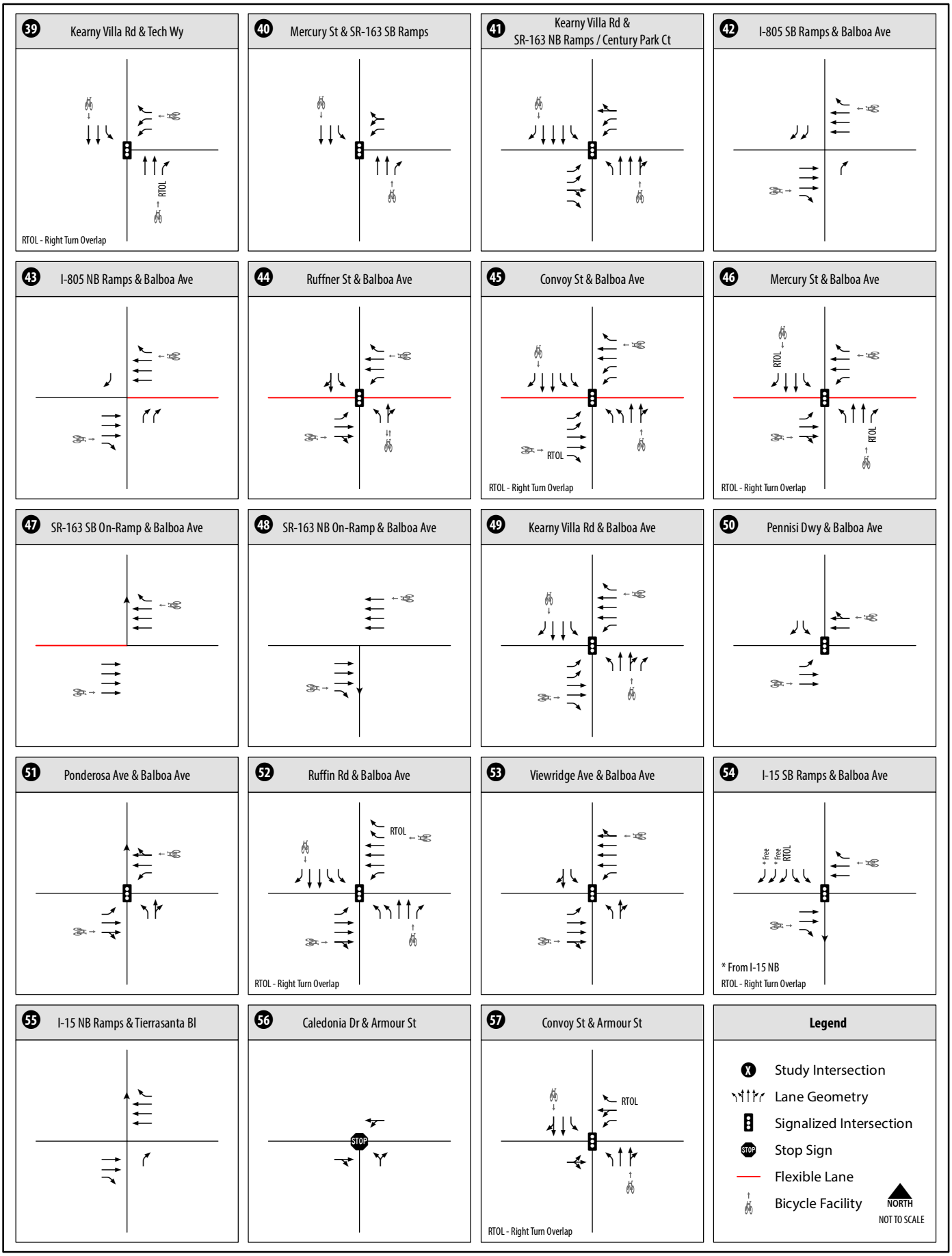

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Figure 5-9
Intersection Geometrics - Proposed Plan Conditions
(Intersections 39-57)

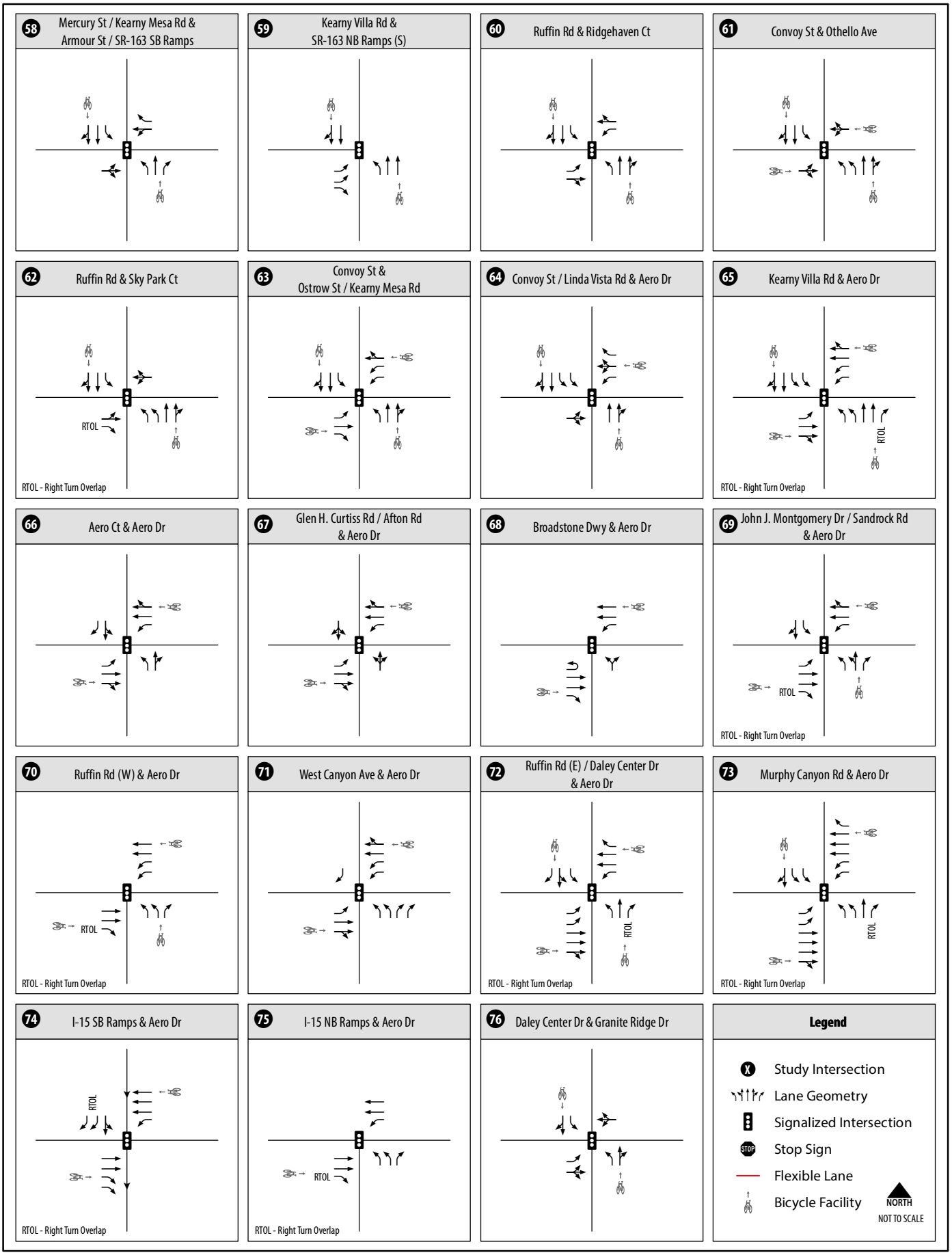

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Figure 5-9
Intersection Geometrics - Proposed Plan Conditions
(Intersections 58-76)

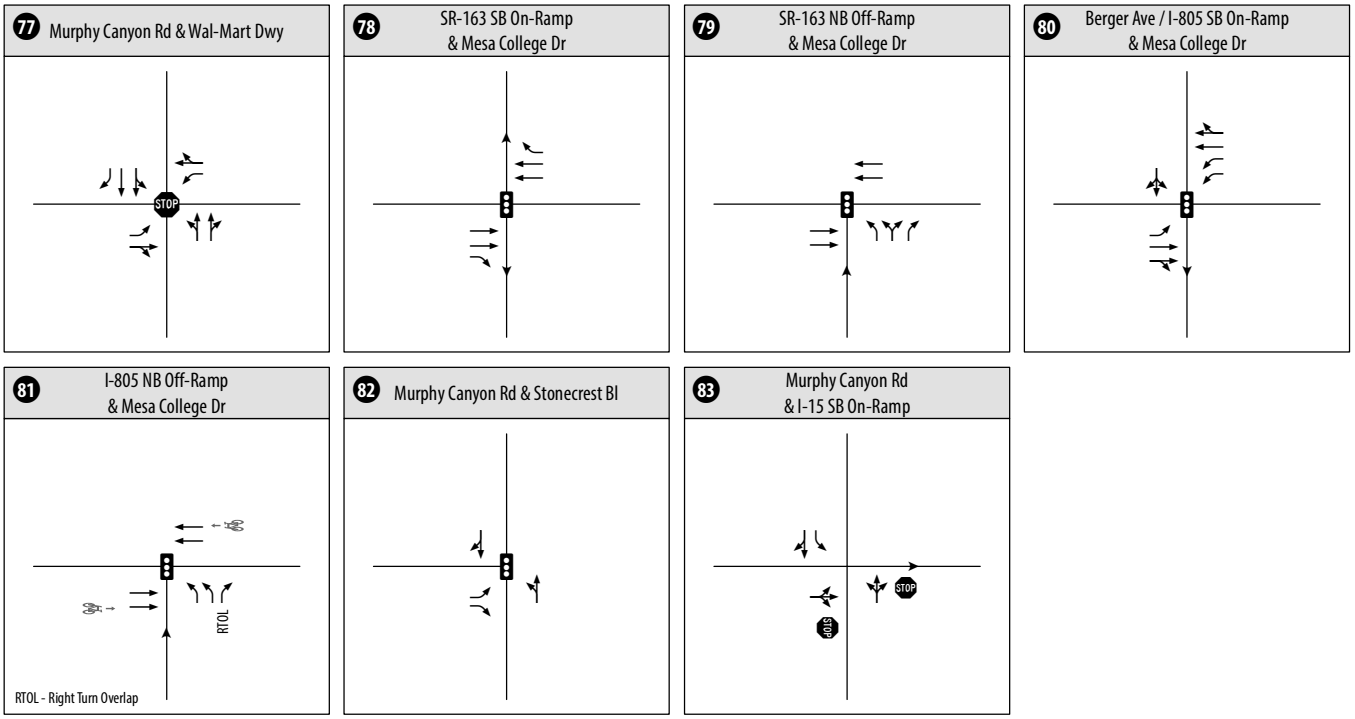

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Figure 5-9
Intersection Geometrics - Proposed Plan Conditions
(Intersections 77-83)

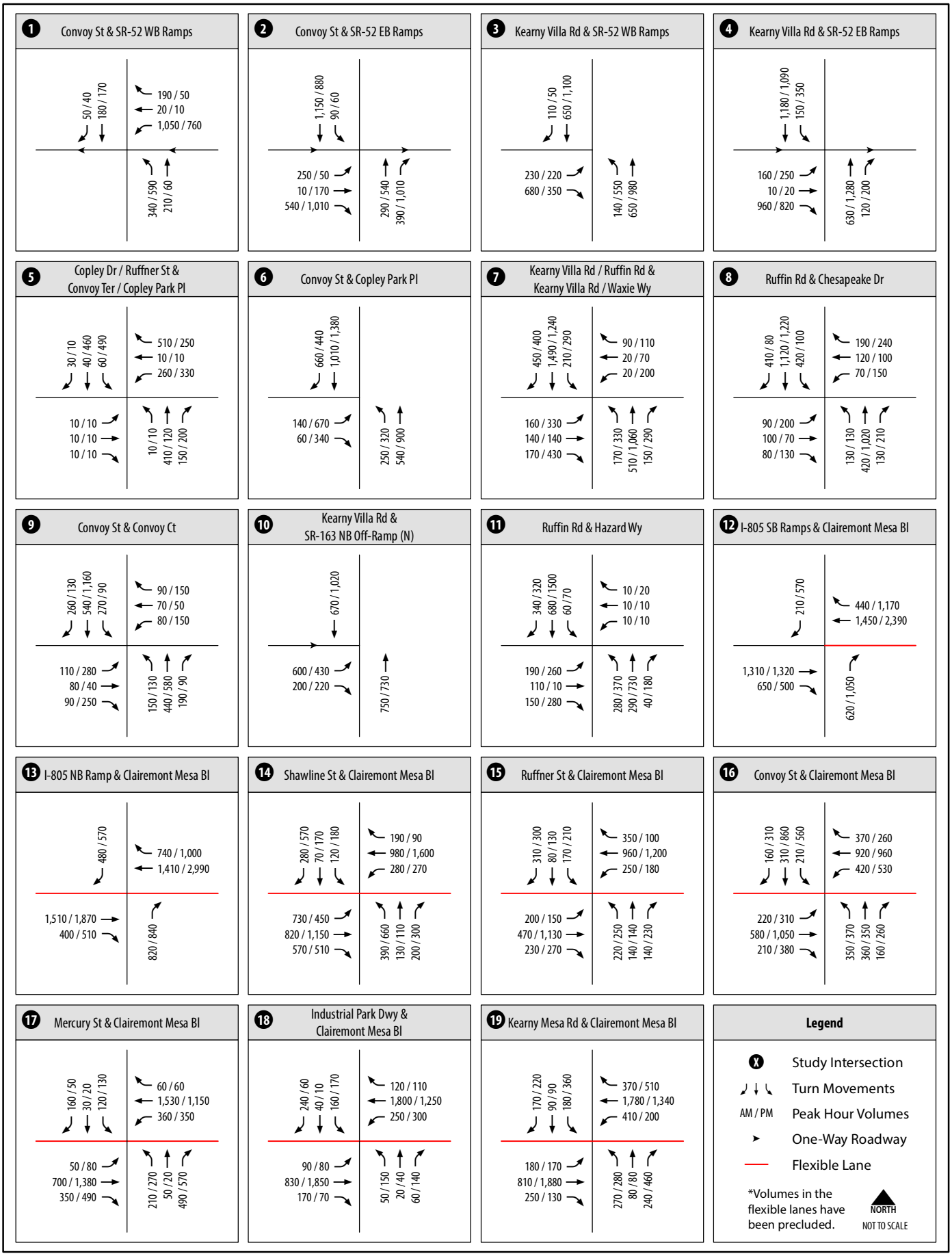

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Figure 5-10
AM/PM Intersection Volumes - Proposed Plan Conditions (Intersections 1-19)

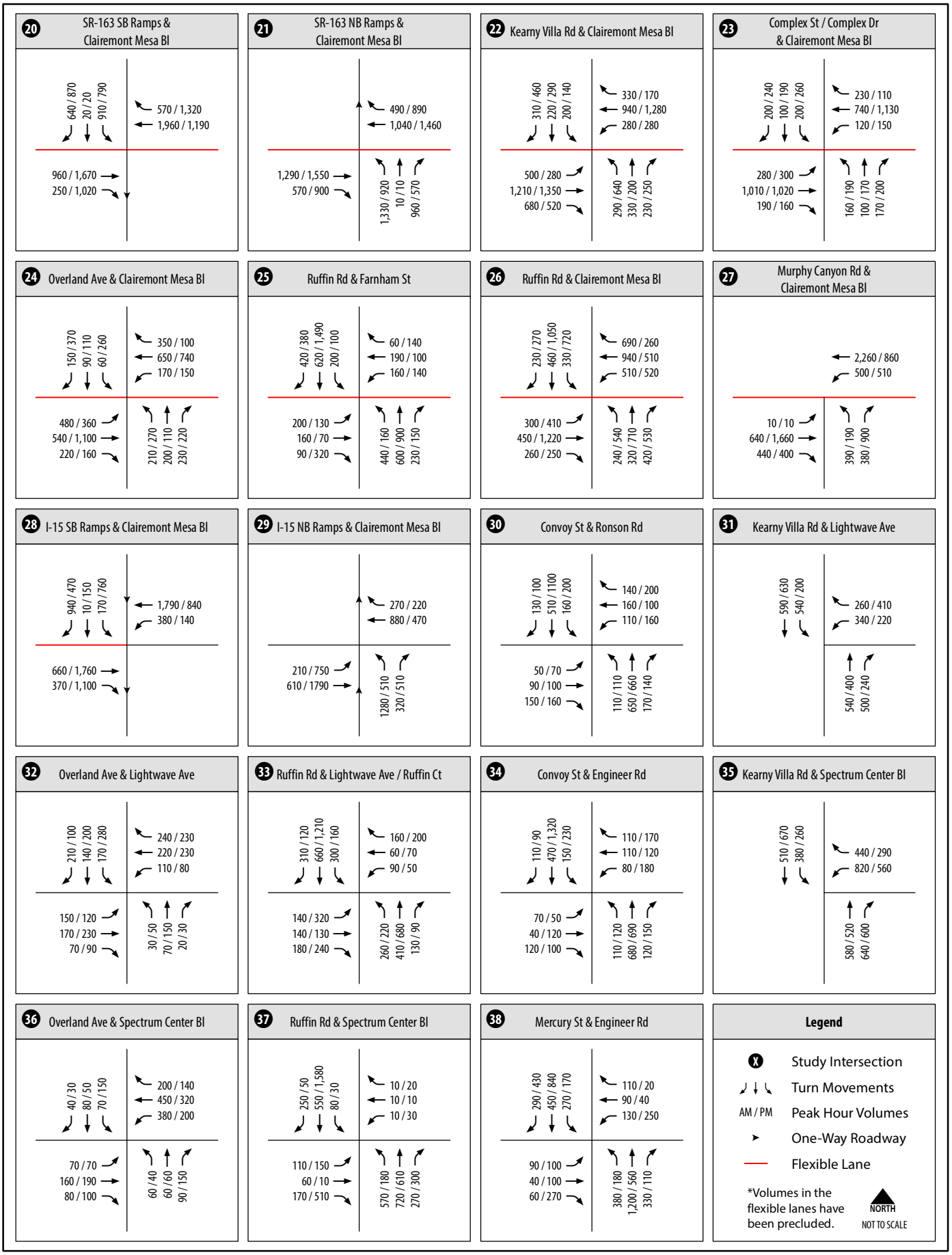

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Figure 5-10
AM/PM Intersection Volumes - Proposed Plan Conditions
(Intersections 20-38)

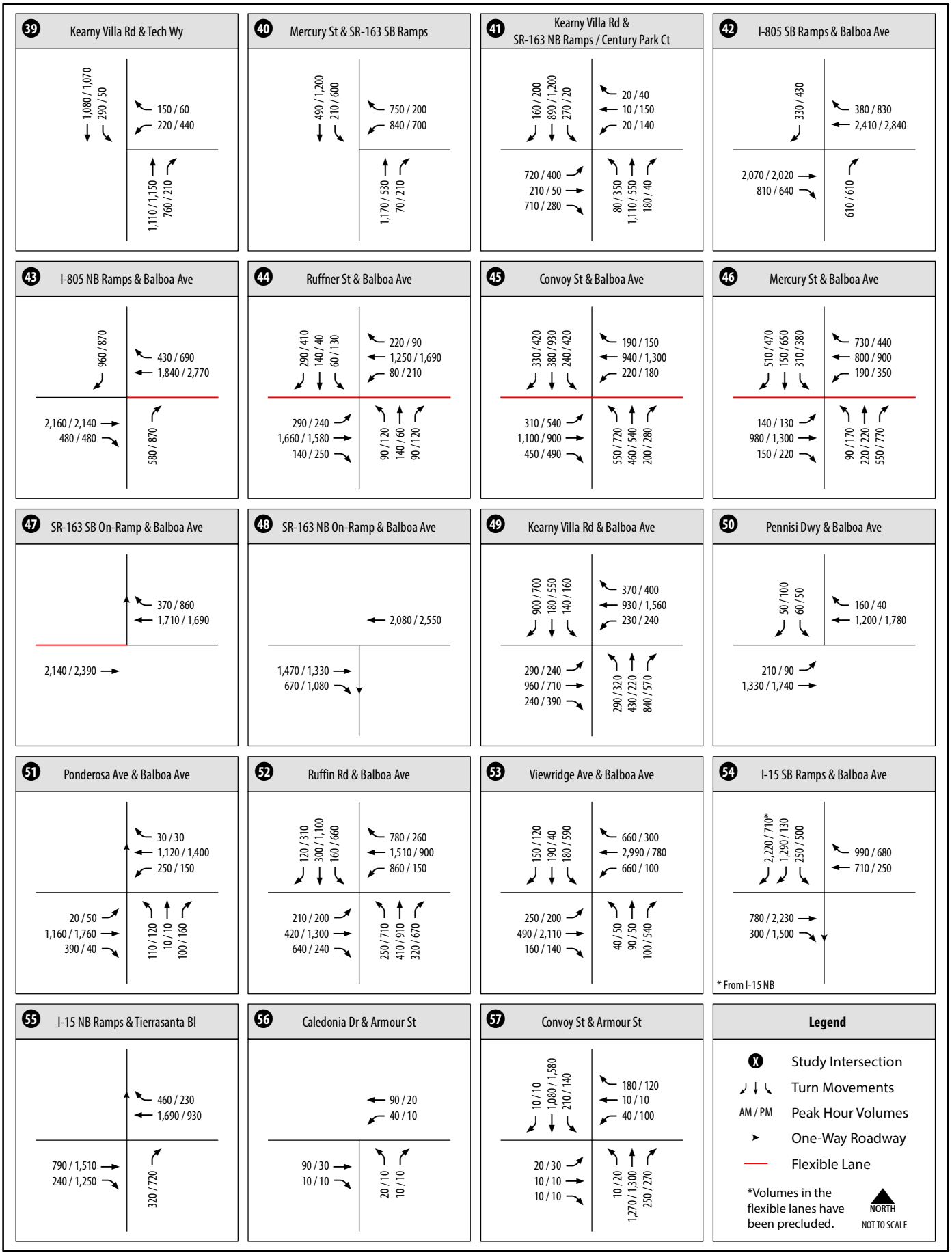

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Figure 5-10
AM/PM Intersection Volumes - Proposed Plan Conditions (Intersections 39-57)

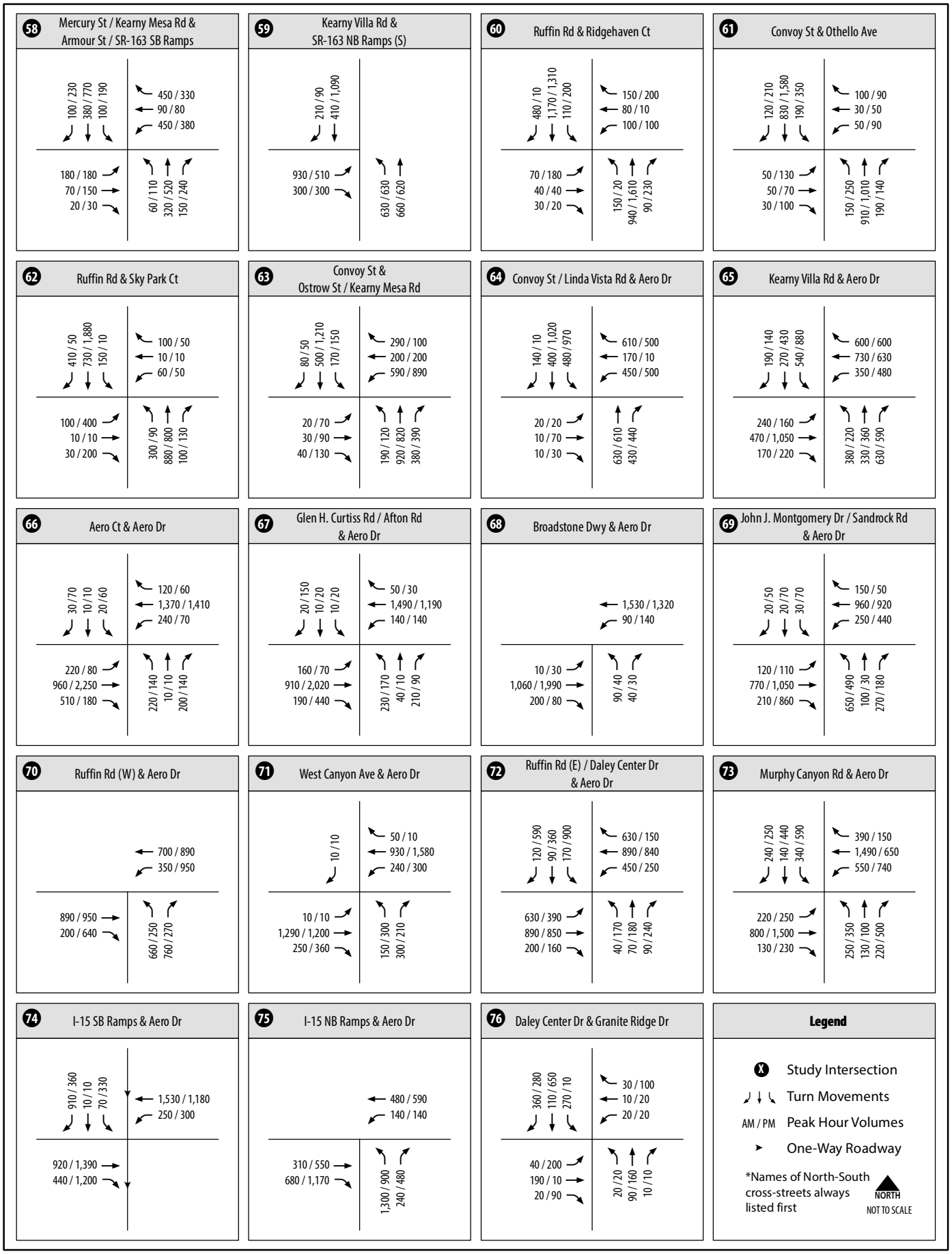

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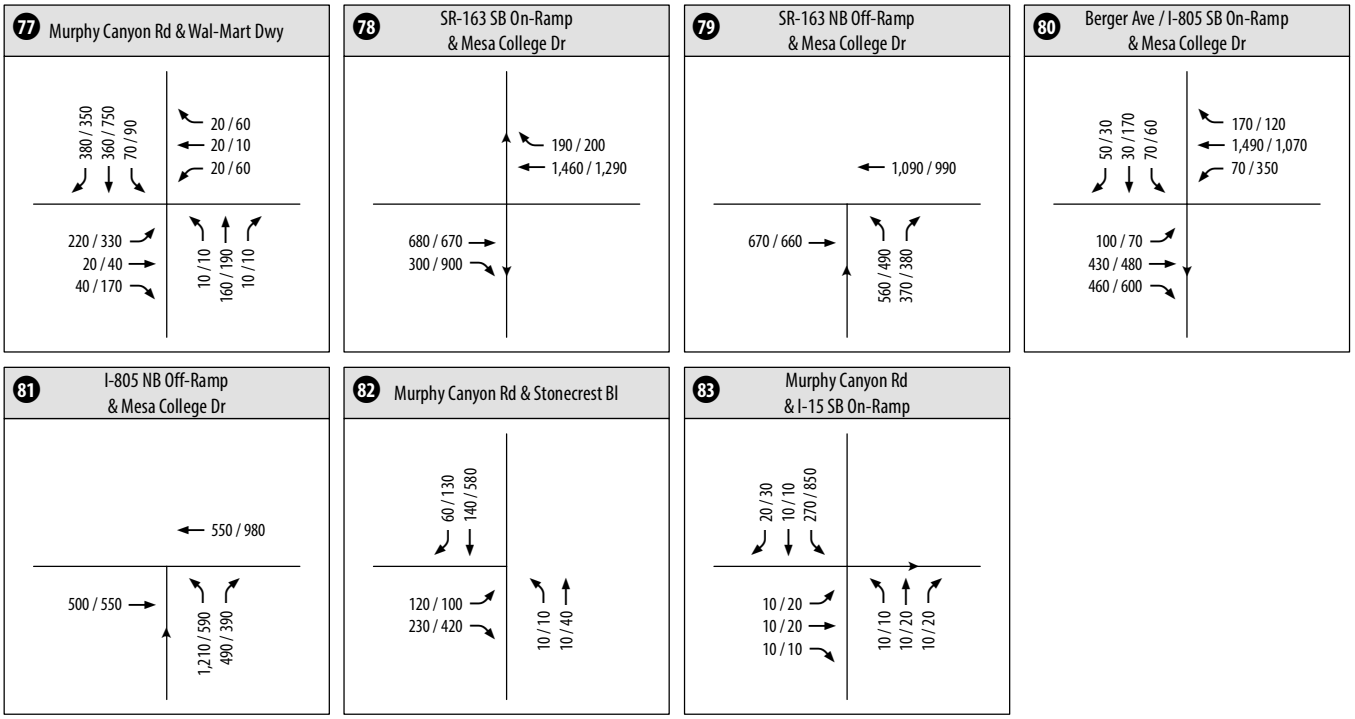
Figure 5-10
AM/PM Intersection Volumes - Proposed Plan Conditions
(Intersections 58-76)



Legend

- X — Study Intersection
- Turn Movements
- AM / PM — Peak Hour Volumes
- One-Way Roadway

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

NORTH
NOT TO SCALE

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Figure 5-10
AM/PM Intersection Volumes - Proposed Plan Conditions
(Intersections 77-83)

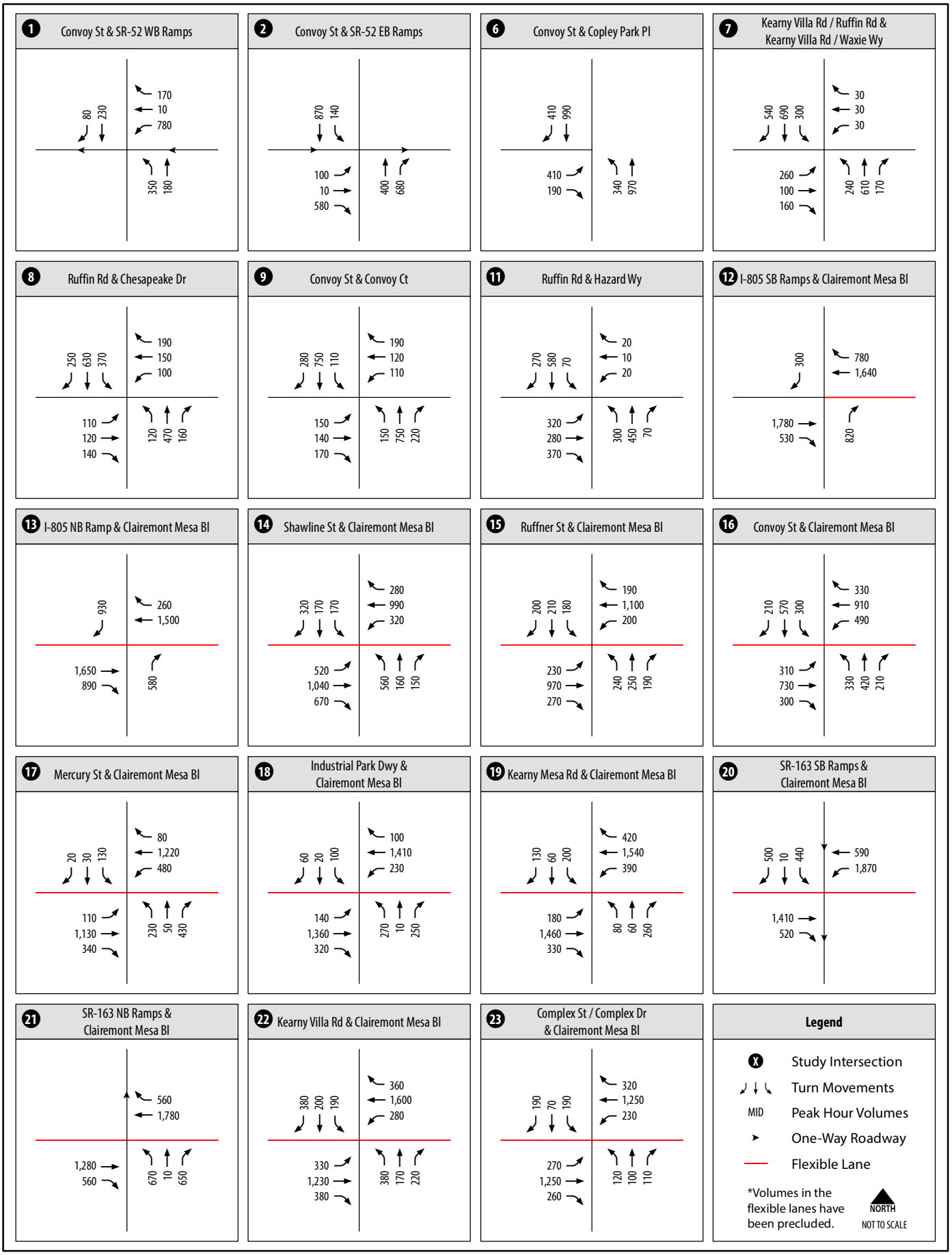

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Figure 5-11
Midday Peak Hour Intersection Volumes - Proposed Plan Conditions
(Intersections 1-2, 6-9, & 11-23)

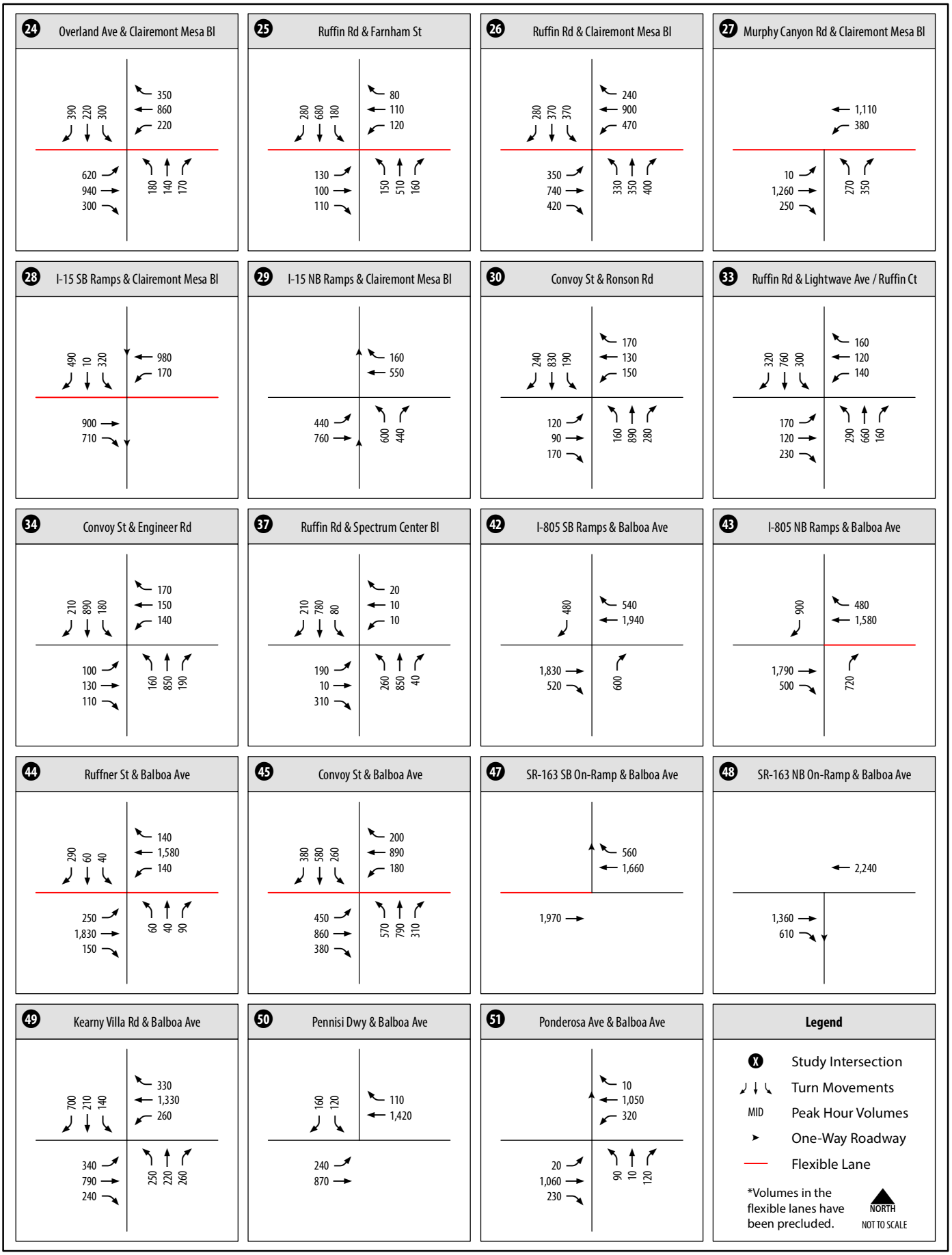

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Figure 5-11
Midday Peak Hour Intersection Volumes - Proposed Plan Conditions
(Intersections 24-30, 33-34, 37, 42-45, & 47-51)

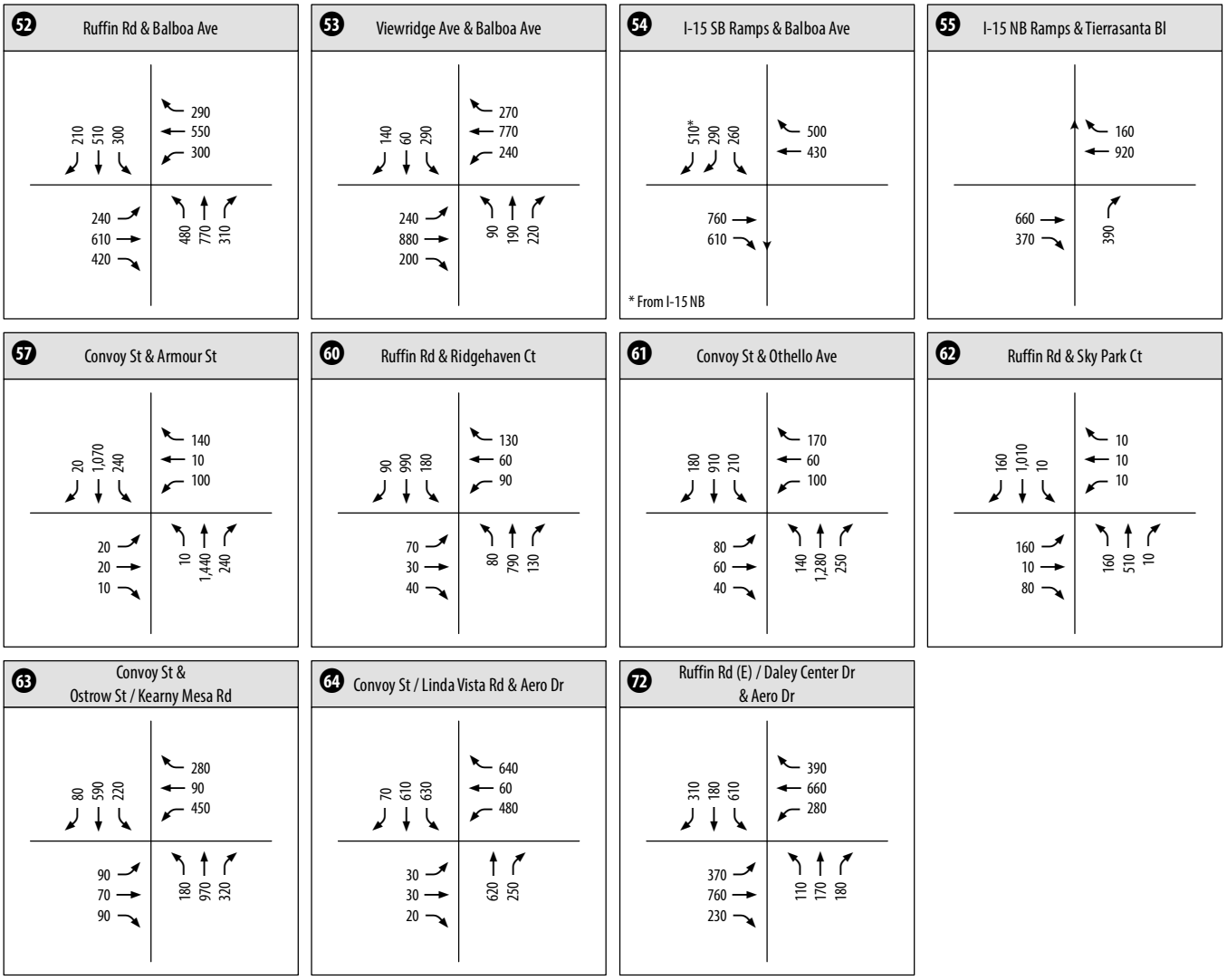

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Figure 5-11
Midday Peak Hour Intersection Volumes - Proposed Plan Conditions
(Intersections 52-55, 57, 60-64, & 72)

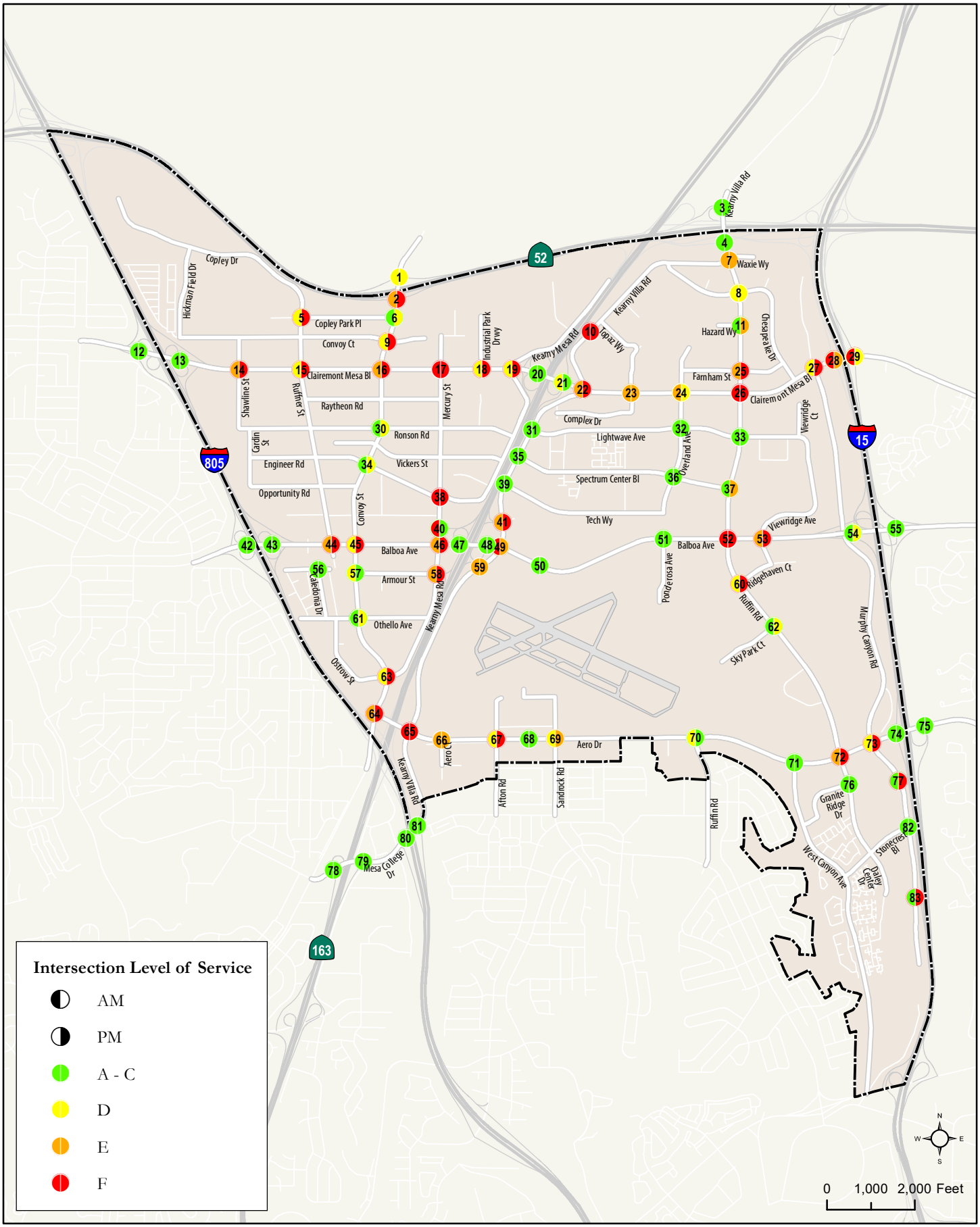

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Figure 5-12
AM/PM Peak Hour Intersection Level of Service - Proposed Plan Conditions

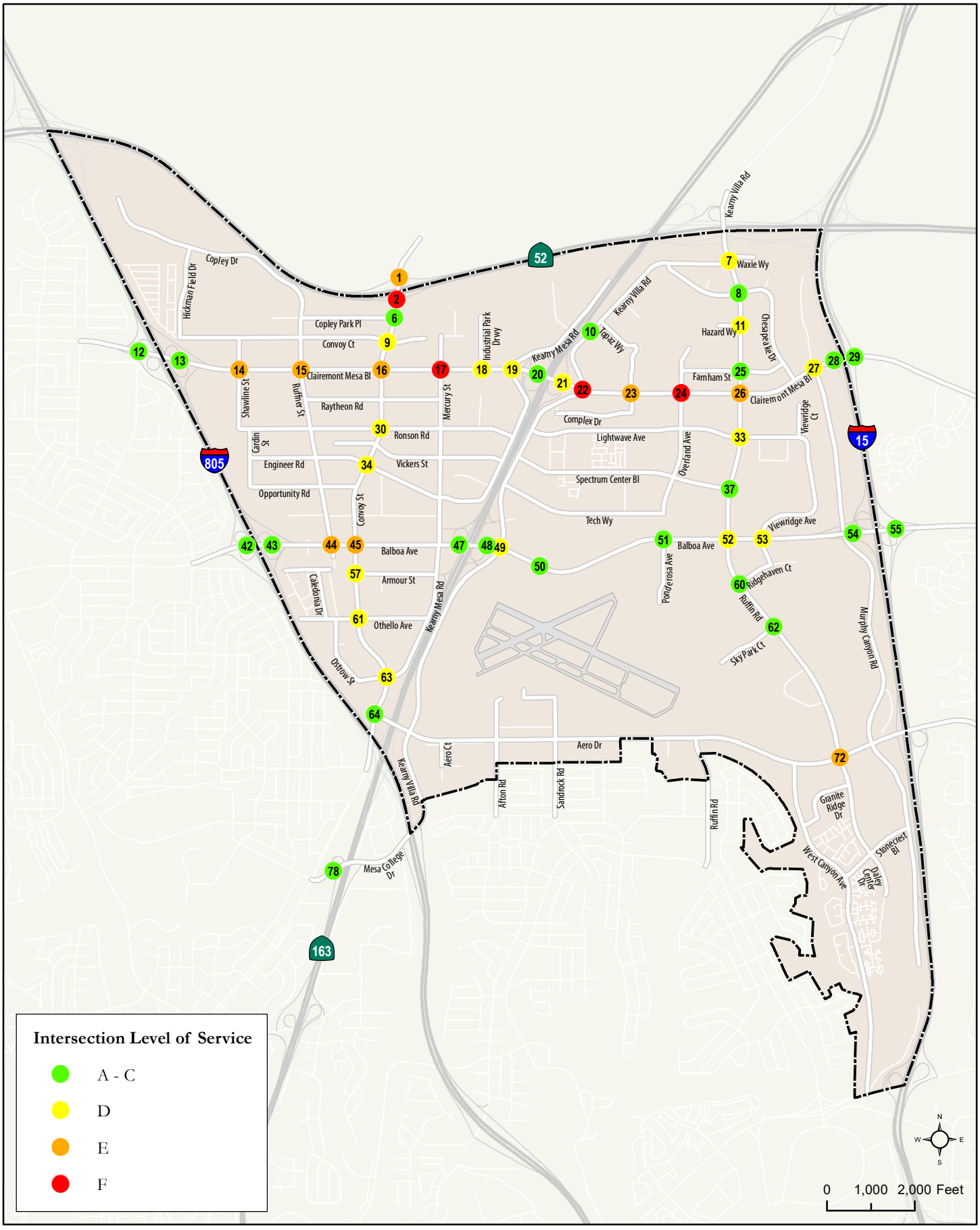

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Figure 5-13
Midday Peak Hour Intersection Level of Service - Proposed Plan Conditions

Table 5.9 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: Convoy Street & SR-52 WB Ramps	Signal	51.9	D	52.1	D	56.3	**E**
2: Convoy Street & SR-52 EB Ramps	Signal	75.6	**E**	292.7	**F**	115.9	**F**
3: Kearny Villa Road & SR-52 WB Ramps	Signal	21.7	C	14.0	B	-	-
4: Ruffin Road/Kearny Villa Road & SR-52 EB Off-Ramp/SR-52 EB On-Ramp	Signal	18.0	B	34.0	C	-	-
5: Ruffner Street/Copley Drive & Convoy Terrace/Copley Park Place	AWSC	34.4	D	51.3	**F**	-	-
6: Convoy Street & Copley Park Place	Signal	10.0	A	48.8	D	13.7	B
7: Ruffin Road & Kearny Villa Road/Waxie Way	Signal	56.6	**E**	71.8	**E**	46.0	D
8: Ruffin Road & Chesapeake Drive	Signal	41.2	D	35.8	D	31.3	C
9: Convoy Street & Convoy Court	Signal	42.9	D	80.1	**F**	43.6	D
10: Kearny Villa Road & SR-163 NB Off-Ramp	SSSC	> 240.0	**F**	> 240.0	**F**	-	-
11: Ruffin Road & Hazard Way	Signal	23.4	C	61.6	**E**	41.9	D
12: I-805 SB Off-Ramp & Clairemont Mesa Boulevard	Uncontrolled/ Free	-	-	-	-	-	-
13: I-805 NB Off-Ramp & Clairemont Mesa Boulevard	Signal	30.3	C	25.9	C	19.0	B
14: Shawline Street & Clairemont Mesa Boulevard	Signal	61.4	**E**	128.5	**F**	69.4	**E**
15: Ruffner Street & Clairemont Mesa Boulevard	Signal	54.2	D	94.4	**F**	79.1	**E**
16: Convoy Street & Clairemont Mesa Boulevard	Signal	63.3	**E**	139.3	**F**	65.6	**E**
17: Mercury Street & Clairemont Mesa Boulevard	Signal	87.1	**F**	205.5	**F**	150.4	**F**
18: Industrial Park Driveway & Clairemont Mesa Boulevard	Signal	38.8	D	85.5	**F**	46.7	D
19: Kearny Mesa Road & Clairemont Mesa Boulevard	Signal	53.8	D	103.5	**F**	46.7	D
20: SR-163 SB On-Ramp/SR-163 SB Off-Ramp & Clairemont Mesa Boulevard	Signal	30.8	C	29.8	C	10.5	B
21: SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Boulevard	Signal	37.0	D	14.9	B	39.9	D

Table 5.9 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
22: Kearny Villa Road & Clairemont Mesa Boulevard	Signal	79.3	**E**	87.4	**F**	103.3	**F**
23: Complex Street & Clairemont Mesa Boulevard	Signal	61.7	**E**	63.9	**E**	76.0	**E**
24: Overland Avenue & Clairemont Mesa Boulevard	Signal	57.5	**E**	50.7	D	109.6	**F**
25: Ruffin Road & Farnham Street	Signal	59.5	**E**	86.1	**F**	31.3	C
26: Ruffin Road & Clairemont Mesa Boulevard	Signal	83.5	**F**	173.6	**F**	57.8	**E**
27: Murphy Canyon Road & Clairemont Mesa Boulevard	Signal	50.8	D	165.6	**F**	36.8	D
28: Clairemont Mesa Boulevard & I-15 SB Off-Ramps	Signal	171.5	**F**	59.6	**E**	13.6	B
29: I-15 NB Ramps & Clairemont Mesa Boulevard	Signal	82.0	**F**	39.9	D	28.8	C
30: Convoy Street & Ronson Road	Signal	24.2	C	52.6	D	52.8	D
31: Kearny Villa Road & Lightwave Avenue	Signal	31.2	C	16.7	B	-	-
32: Overland Avenue & Lightwave Avenue	Signal	34.0	C	24.9	C	-	-
33: Ruffin Road & Lightwave Avenue/Ruffin Court	Signal	29.6	C	35.0	C	43.5	D
34: Convoy Street & Engineer Road	Signal	34.2	C	37.8	D	52.9	D
35: Kearny Villa Road & Spectrum Center Boulevard	Signal	28.0	C	16.7	B	-	-
36: Overland Avenue & Spectrum Center Boulevard	Signal	30.7	C	18.8	B	-	-
37: Ruffin Road & Spectrum Center Boulevard	Signal	26.3	C	55.2	**E**	33.8	C
38: Mercury Street & Engineer Road	Signal	97.5	**F**	167.2	**F**	-	-
39: Kearny Villa Road & Tech Way	Signal	22.8	C	16.0	B	-	-
40: Mercury Street & SR-163 SB On-Off Ramps	Signal	83.7	**F**	31.5	C	-	-
41: Kearny Villa Road & SR-163 NB On-Off Ramps/Century Park Court	Signal	66.9	**E**	118.7	**F**	-	-
42: I-805 SB On-Off Ramps/I-805 SB Off-Ramp & Balboa Avenue	Signal	10.2	B	16.9	B	10.2	B
43: I-805 NB Off-Ramp & Balboa Avenue	Signal	15.5	B	27.3	C	15.6	B
44: Ruffner Street & Balboa Avenue	Signal	59.6	**E**	89.9	**F**	55.4	**E**

Table 5.9 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
45: Convoy Street & Balboa Avenue	Signal	53.9	D	156.8	**F**	64.6	**E**
46: Mercury Street & Balboa Avenue	Signal	62.9	**E**	190.3	**F**	-	-
47: Balboa Avenue & SR-163 SB On-Ramp	Signal	-	-	-	-	-	-
48: SR-163 NB On-Ramp & Balboa Avenue	Signal	-	-	-	-	-	-
49: Kearny Villa Road & Balboa Avenue	Uncontrolled/ Free	83.8	**F**	59.5	**E**	44.4	D
50: Balboa Avenue & Pennisi Driveway	Uncontrolled/ Free	13.9	B	10.3	B	25.2	C
51: Ponderosa Avenue & Balboa Avenue	Signal	17.5	B	20.5	C	17.9	B
52: Ruffin Road & Balboa Avenue	Signal	127.7	**F**	136.2	**F**	54.2	D
53: Viewridge Avenue & Balboa Avenue	Signal	77.1	**E**	146.7	**F**	46.8	D
54: Balboa Avenue & I-15 SB Off-Ramp	Signal	14.2	B	37.0	D	14.1	B
55: I-15 NB Off-Ramp & Balboa Avenue	Signal	-	-	-	-	-	-
56: Caledonia Drive & Armour Street	Signal	10.0	A	8.8	A		
57: Convoy Street & Armour Street	Uncontrolled/ Free	46.7	D	34.8	C	52.9	D
58: Mercury Street & Armour Street	SSSC	60.3	**E**	161.0	**F**	-	-
59: Kearny Villa Road & SR-163 On-Off Ramps	Signal	59.9	**E**	68.6	**E**	-	-
60: Ruffin Road & Ridgehaven Court	Signal	39.6	D	102.7	**F**	27.2	C
61: Convoy Street & Othello Avenue	Signal	25.8	C	54.7	D	46.5	D
62: Ruffin Road & Sky Park Court	Signal	28.9	C	54.2	D	26.7	C
63: Convoy Street & Ostrow Street/Kearny Mesa Road	Signal	50.8	D	96.3	**F**	48.8	D
64: Convoy Street & Aero Drive	Signal	69.6	**E**	95.8	**F**	34.2	C
65: Kearny Villa Road & Aero Drive	Signal	102.4	**F**	179.8	**F**	-	-

Table 5.9 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
66: Aero Court & Aero Drive	Signal	63.0	**E**	75.7	**E**	-	-
67: Afton Road/Glenn H Curtiss Road & Aero Drive	Signal	52.3	D	143.2	**F**	-	-
68: Broadstone Driveway & Aero Drive	Signal	13.9	B	18.9	B	-	-
69: Sandrock Road/John J Montgomery Drive & Aero Drive	Signal	45.8	D	77.3	**E**	-	-
70: Ruffin Road & Aero Drive	Signal	38.6	D	31.1	C	-	-
71: West Canyon Avenue & Aero Drive	Signal	18.4	B	18.7	B	-	-
72: Daley Center Drive/Ruffin Road & Aero Drive	Signal	56.3	**E**	87.9	**F**	68.0	**E**
73: Murphy Canyon Road & Aero Drive	Signal	42.3	D	143.2	**F**	-	-
74: I-15 SB On-Ramp/I-15 SB Off-Ramp & Aero Drive	Signal	31.6	C	32.8	C	-	-
75: I-15 NB On-Off Ramp & Aero Drive	Signal	24.9	C	17.9	B	-	-
76: Daley Center Drive & Granite Ridge Drive	Signal	16.0	B	25.4	C	-	-
77: Murphy Canyon Road & Shopping Center Driveway	AWSC	16.4	C	71.7	**F**	-	-
78: Mesa College Drive & SR-163 SB On-Ramps	Uncontrolled/ Free	-	-	-	-	-	-
79: SR-163 NB Off-Ramp & Mesa College Drive	Signal	9.9	A	8.1	A	-	-
80: Mesa College Drive/Kearny Villa Road & Berger Avenue	Signal	22.1	C	28.1	C	-	-
81: I-805 NB Off-Ramp & Kearny Villa Road	Signal	19.4	B	20.1	C	-	-
82: Murphy Canyon Road & Stonecrest Boulevard	Signal	10.6	B	18.7	B	-	-
83: Murphy Canyon Road & Golf Center Driveway/I-15 SB On-Ramp	SSSC	12.1	B	273.9	**F**	-	-

Source: Chen Ryan Associates (2019)

Note:
Bold letter indicates substandard LOS E or F

A total of 81 intersection analysis results are provided, consisting of 31 intersections analyzed during the AM and PM peak hours only, and 50 during the mid-day peak hour. The following 44 unique intersections (73 peak hour periods) were found to operate at a substandard LOS E or F during the AM, mid-day (where analyzed), or PM peak hour under Proposed Plan conditions:

- 1: Convoy Street & SR-52 WB Ramps – Mid-day (LOS E)
- 2: Convoy Street & SR-52 EB Ramps – AM (LOS E); Mid-day (LOS F); PM (LOS F)
- 5: Ruffner Street/Copley Drive & Convoy Terrace/Copley Park Place – PM (LOS F)
- 7: Ruffin Road & Kearny Villa Road/Waxie Way – AM (LOS E); PM (LOS E)
- 9: Convoy Street & Convoy Court – PM (LOS F)
- 10: Kearny Villa Road & SR-163 NB Off-Ramp – AM (LOS F); PM (LOS F)
- 11: Ruffin Road & Hazard Way – PM (LOS E)
- 14: Shawline Street & Clairemont Mesa Boulevard – AM (LOS E); Mid-day (LOS E); PM (LOS F)
- 15: Ruffner Street & Clairemont Mesa Boulevard – Mid-day (LOS E); PM (LOS F)
- 16: Convoy Street & Clairemont Mesa Boulevard – AM (LOS E); Mid-day (LOS E); PM (LOS F)
- 17: Mercury Street & Clairemont Mesa Boulevard – AM (LOS F); Mid-day (LOS F); PM (LOS F)
- 18: Industrial Park Driveway & Clairemont Mesa Boulevard - PM(LOS F)
- 19: Kearny Mesa Road & Clairemont Mesa Boulevard – PM (LOS F)
- 22: Kearny Villa Road & Clairemont Mesa Boulevard – AM (LOS E); Mid-day (LOS F); PM (LOS F)
- 23: Complex Street & Clairemont Mesa Boulevard – AM (LOS E); Mid-day (LOS E); PM (LOS E)
- 24: Overland Avenue & Clairemont Mesa Boulevard – AM (LOS E); Mid-day (LOS F)
- 25: Ruffin Road & Farnham Street – AM (LOS E); PM (LOS F)
- 26: Ruffin Road & Clairemont Mesa Boulevard – AM (LOS F); Mid-day (LOS E); PM (LOS F)
- 27: Murphy Canyon Road & Clairemont Mesa Blvd – PM (LOS F)
- 28: Clairemont Mesa Boulevard & I-15 SB Off-Ramps – - AM (LOS F); PM (LOS E)
- 29: I-15 NB Ramps & Clairemont Mesa Blvd – AM (LOS F)
- 37: Ruffin Road & Spectrum Center Boulevard – PM (LOS E)
- 38: Mercury Street & Engineer Road – AM (LOS F); PM (LOS F)
- 40: Mercury Street & SR-163 SB On-Off Ramps – AM (LOS F)
- 41: Kearny Villa Road & SR-163 NB On-Off Ramps/Century Park Court – AM (LOS E); PM (LOS F)
- 44: Balboa Avenue & Ruffner Street – AM (LOS E); Mid-day (LOS E); PM (LOS F)
- 45: Convoy Street & Balboa Avenue – Mid-day (LOS E); PM (LOS F)
- 46: Mercury Street & Balboa Avenue – AM (LOS E); PM (LOS F)
- 49: Kearny Villa Road & Balboa Avenue – AM (LOS F); PM (LOS E)
- 52: Ruffin Road & Balboa Avenue – AM (LOS F); PM (LOS F)
- 53: Viewridge Avenue & Balboa Avenue – AM (LOS E); PM (LOS F)
- 58: Mercury Street & Armour Street – AM (LOS E); PM (LOS F)
- 59: Kearny Villa Road & SR-163 On-Off Ramps – AM (LOS E); PM (LOS E)
- 60: Ruffin Road & Ridgehaven Court – PM (LOS F)
- 63: Convoy Street & Ostrow Street/Kearny Mesa Road – PM (LOS F)

- 64: Convoy Street & Aero Drive – AM (LOS E); PM (LOS F)
- 65: Kearny Villa Road & Aero Drive – AM (LOS F); PM (LOS F)
- 66: Aero Court & Aero Drive – AM (LOS E); PM (LOS E)
- 67: Afton Road/Glenn H Curtiss Road & Aero Drive – PM (LOS F)
- 69: Sandrock Road/John J Montgomery Drive & Aero Drive – PM (LOS E)
- 72: Daley Center Drive/Ruffin Road & Aero Drive – AM (LOS E); Mid-day (LOS E); PM (LOS F)
- 73: Murphy Canyon Road & Aero Drive – PM (LOS F)
- 77: Murphy Canyon Road & Shopping Center Driveway – PM (LOS F)
- 83: Murphy Canyon Road & Golf Center Driveway/I-15 SB On-Ramp – 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 space intersections could negatively affect upstream intersection operations.

Table 5.10 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, 104 movements at 26 intersections are forecast to operate with potential queuing issues during either the AM, Midday, or PM peak hour under Proposed Plan conditions.

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
1	Convoy Street & SR-52 WB Off-Ramp	Signalized	WBL	230	624 / 464 / 437	394 / 234 / 207
			WBT	515	620 / 451 / 429	105 / 0 / 0
			WBR	230	54 / 51 / 16	0 / 0 / 0
			NBT	460	363 / 222 / 82	0 / 0 / 0
			SBT	170	310 / 403 / 277	140 / 233 / 107
2	Convoy Street & SR-52 EB Off-Ramp	Signalized	EBT	525	337 / 134 / 325	0 / 0 / 0
			EBR	110	322 / 193 / 880	212 / 83 / 770
			NBT	285	470 / 694 / 1017	185 / 409 / 732
			NBR	285	76 / 77 / 191	0 / 0 / 0
			SBT	460	582 / 561 / 387	122 / 101 / 0
3	Kearny Villa Road & SR-52 WB Ramps	Signalized	EBL	280	283 / - / 367	3 / - / 87
			EBR	45	537 / - / 274	492 / - / 229
			NBL	95	196 / - / 606	101 / - / 511
			NBT	725	170 / - / 217	0 / - / 0
			SBT	320	396 / - / 684	76 / - / 364
4	Ruffin Road/Kearny Villa Road & SR-52 Ramps	Signalized	EBT	395	150 / - / 327	0 / - / 0
			EBR	200	497 / - / 526	297 / - / 326
			NBT	335	301 / - / 645	0 / - / 310
			NBR	100	90 / - / 101	0 / - / 1
			SBL	280	185 / - / 512	0 / - / 232
			SBT	725	478 / - / 283	0 / - / 0
6	Convoy Street & Copley Park Place	Signalized	EBL	190	46 / 123 / 438	0 / 0 / 248
			EBR	2085	27 / 84 / 382	0 / 0 / 0
			NBL	90	139 / 157 / 344	49 / 67 / 254
			NBT	450	105 / 221 / 379	0 / 0 / 0
			SBT	285	322 / 377 / 602	37 / 92 / 317
			SBR	180	46 / 35 / 35	0 / 0 / 0
7	Ruffin Road & Kearny Villa Road/Waxie Way	Signalized	EBL	190	184 / 225 / 332	0 / 35 / 142
			EBT	135	197 / 231 / 341	62 / 96 / 206
			EBR	135	60 / 58 / 396	0 / 0 / 261
			WBL	100	47 / 62 / 401	0 / 0 / 301
			WBT	200	118 / 78 / 287	0 / 0 / 87
			NBL	170	350 / 304 / 587	180 / 134 / 417
			NBT	730	254 / 348 / 874	0 / 0 / 144

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
7	Ruffin Road & Kearny Villa Road/Waxie Way	Signalized	SBL	180	130 / 182 / 215	0 / 2 / 35
			SBT	335	854 / 339 / 891	519 / 4 / 556
			SBR	140	281 / 268 / 247	141 / 128 / 107
8	Ruffin Road & Chesapeake Drive	Signalized	EBL	120	150 / 157 / 260	30 / 37 / 140
			EBT	495	142 / 220 / 124	0 / 0 / 0
			WBL	130	117 / 140 / 199	0 / 10 / 69
			WBT	480	114 / 138 / 98	0 / 0 / 0
			WBR	250	62 / 69 / 151	0 / 0 / 0
			NBL	90	195 / 152 / 195	105 / 62 / 105
			NBT	640	201 / 238 / 527	0 / 0 / 0
			SBL	90	440 / 387 / 164	350 / 297 / 74
			SBT	730	672 / 282 / 594	0 / 0 / 0
9	Convoy Street & Convoy Court	Signalized	EBT	470	193 / 376 / 191	0 / 0 / 0
			EBR	470	0 / 0 / 0	0 / 0 / 0
			WBL	100	117 / 160 / 211	17 / 60 / 111
			WBT	240	181 / 374 / 188	0 / 134 / 0
			NBL	70	274 / 322 / 195	204 / 252 / 125
			NBT	650	337 / 698 / 356	0 / 48 / 0
			SBL	100	630 / 268 / 121	530 / 168 / 21
			SBT	450	524 / 800 / 1050	74 / 350 / 600
10	Kearny Villa Road & SR-163 NB Off-Ramp	SSSC[1]	EBL	700	1450 / - / 1178	750 / - / 478
			EBR	700	25 / - / 25	0 / - / 0
12	I-805 SB Ramps & Clairemont Mesa Boulevard	Yield	NBR	800	0 / 0 / 0	0 / 0 / 0
			SBR	900	0 / 0 / 0	0 / 0 / 0
13	I-805 NB Off-Ramp & Clairemont Mesa Boulevard	Signalized	EBT	1580	283 / 334 / 489	0 / 0 / 0
			EBR	1580	43 / 57 / 49	0 / 0 / 0
			WBT	735	0 / 0 / 0	0 / 0 / 0
			WBR	480	0 / 0 / 0	0 / 0 / 0
			NBR	1250	387 / 233 / 611	0 / 0 / 0
19	Kearny Mesa Road & Clairemont Mesa Boulevard	Signalized	EBL	170	388 / 175 / 178	218 / 5 / 8
			EBT	535	491 / 836 / 1126	0 / 301 / 591
			EBR	535	0 / 0 / 0	0 / 0 / 0
			WBL	120	230 / 346 / 188	110 / 226 / 68
			WBT	160	1292 / 964 / 770	1132 / 804 / 610

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
19	Kearny Mesa Road & Clairemont Mesa Boulevard	Signalized	NBL	90	538 / 205 / 580	448 / 115 / 490
			NBT	135	198 / 200 / 365	63 / 65 / 230
			NBR	135	110 / 137 / 288	0 / 2 / 153
			SBL	90	134 / 145 / 284	44 / 55 / 194
			SBT	385	91 / 61 / 155	0 / 0 / 0
20	SR-163 Ramps SB On-Ramp/SR-163 SB Off Ramp & Clairemont Mesa Boulevard	Signalized	EBT	160	40 / 281 / 637	0 / 121 / 477
			EBR	160	0 / 22 / 347	0 / 0 / 187
			WBL	910	0 / 0 / 0	0 / 0 / 0
			WBT	910	1008 / 1018 / 325	98 / 108 / 0
			SBL	120	792 / 321 / 653	672 / 201 / 533
			SBT	120	796 / 321 / 662	676 / 201 / 542
			SBR	120	459 / 330 / 644	339 / 210 / 524
21	SR-163 NB Off-Ramp/SR-163 NB On-Ramp & Clairemont Mesa Blvd	Signalized	EBT	910	530 / 831 / 766	0 / 0 / 0
			EBR	440	67 / 37 / 0	0 / 0 / 0
			WBT	330	317 / 1040 / 377	0 / 710 / 47
			WBR	220	129 / 380 / 45	0 / 160 / 0
			NBL	525	942 / 353 / 605	417 / 0 / 80
			NBT	245	963 / 348 / 627	718 / 103 / 382
			NBR	545	562 / 326 / 322	17 / 0 / 0
22	Kearny Villa Road & Clairemont Mesa Blvd	Signalized	EBL	275	352 / 321 / 204	77 / 46 / 0
			EBT	330	886 / 901 / 1012	556 / 571 / 682
			EBR	185	0 / 0 / 350	0 / 0 / 165
			WBL	200	443 / 410 / 396	243 / 210 / 196
			WBT	1060	584 / 925 / 464	0 / 0 / 0
			WBR	100	298 / 140 / 34	198 / 40 / 0
			NBL	200	200 / 302 / 548	0 / 102 / 348
			NBT	925	433 / 221 / 257	0 / 0 / 0
			NBR	925	71 / 125 / 131	0 / 0 / 0
			SBL	140	389 / 405 / 309	249 / 265 / 169
			SBT	255	290 / 268 / 476	35 / 13 / 221
			SBR	340	121 / 416 / 615	0 / 76 / 275
25	Ruffin Road & Farnham Street	Signalized	EBL	130	329 / 185 / 275	199 / 55 / 145
			EBT	630	246 / 121 / 541	0 / 0 / 0
			WBL	660	263 / 168 / 284	0 / 0 / 0

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
25	Ruffin Road & Farnham Street	Signalized	WBT	70	257 / 118 / 273	187 / 48 / 203
			NBL	130	291 / 103 / 167	161 / 0 / 37
			NBT	430	360 / 302 / 445	0 / 0 / 15
			SBL	130	394 / 256 / 276	264 / 126 / 146
			SBT	935	564 / 450 / 1258	0 / 0 / 323
26	Ruffin Road & Clairemont Mesa Blvd	Signalized	EBL	250	263 / 263 / 261	13 / 13 / 11
			EBT	1245	383 / 711 / 1093	0 / 0 / 0
			WBL	285	240 / 352 / 521	0 / 67 / 236
			WBT	1710	493 / 686 / 478	0 / 0 / 0
			NBL	230	215 / 256 / 595	0 / 26 / 365
			NBT	910	193 / 198 / 467	0 / 0 / 0
			NBR	910	126 / 265 / 618	0 / 0 / 0
			SBL	175	345 / 288 / 667	170 / 113 / 492
			SBT	430	281 / 206 / 711	0 / 0 / 281
			SBR	100	134 / 120 / 164	34 / 20 / 64
28	Clairemont Mesa Blvd & I-15 SB Ramps	Signalized	EBT	495	350 / 465 / 1154	0 / 0 / 659
			EBR	495	151 / 225 / 347	0 / 0 / 0
			WBL	100	94 / 69 / 158	0 / 0 / 58
			WBT	320	265 / 198 / 247	0 / 0 / 0
			SBL	260	193 / 266 / 761	0 / 6 / 501
			SBT	370	660 / 201 / 810	290 / 0 / 440
			SBR	350	469 / 118 / 456	119 / 0 / 106
29	Clairemont Mesa Blvd & I-15 NB Ramps	Signalized	EBL	150	132 / 197 / 334	0 / 47 / 184
			EBT	320	193 / 141 / 506	0 / 0 / 186
			WBT	590	441 / 196 / 327	0 / 0 / 0
			NBL	350	541 / 235 / 302	191 / 0 / 0
			NBR	290	122 / 319 / 761	0 / 29 / 471
40	Mercury Street & SR-163 SB On-Off Ramps	Signalized	WBL	245	1070 / - / 598	825 / - / 353
			NBT	370	806 / - / 306	436 / - / 0
			NBR	370	56 / - / 66	0 / - / 0
			SBL	50	436 / - / 838	386 / - / 788
			SBT	590	193 / - / 365	0 / - / 0
42	I-805 SB On-Off Ramps/I-805 SB Off-Ramp & Balboa Avenue	Signalized	EBT	1205	0 / 0 / 0	0 / 0 / 0
			EBR	1205	0 / 0 / 0	0 / 0 / 0

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
42	I-805 SB On-Off Ramps/I-805 SB Off-Ramp & Balboa Avenue	Signalized	WBT	1065	408 / 242 / 597	0 / 0 / 0
			WBR	475	35 / 42 / 43	0 / 0 / 0
			NBR	700	0 / 0 / 0	0 / 0 / 0
			SBR	1000	68 / 105 / 137	0 / 0 / 0
43	I-805 NB Off-Ramp & Balboa Avenue	Signalized	EBT	1065	341 / 264 / 432	0 / 0 / 0
			EBR	1065	38 / 43 / 42	0 / 0 / 0
			WBT	970	0 / 0 / 0	0 / 0 / 0
			WBR	970	0 / 0 / 0	0 / 0 / 0
			NBR	550	152 / 205 / 325	0 / 0 / 0
46	Mercury Street & Balboa Avenue	Signalized	EBL	180	257 / - / 228	77 / - / 48
			EBT	1735	852 / - / 1121	0 / - / 0
			WBL	320	471 / - / 824	151 / - / 504
			WBT	460	528 / - / 524	68 / - / 64
			WBR	145	568 / - / 333	423 / - / 188
			NBL	155	154 / - / 269	0 / - / 114
			NBT	540	130 / - / 126	0 / - / 0
			NBR	540	623 / - / 1138	83 / - / 598
			SBL	155	520 / - / 809	365 / - / 654
			SBT	370	80 / - / 391	0 / - / 21
			SBR	370	428 / - / 502	58 / - / 132
54	Balboa Avenue & I-15 SB Off-Ramp	Signalized	EBT	1960	117 / 98 / 870	0 / 0 / 0
			WBT	1455	483 / 83 / 55	0 / 0 / 0
			WBR	1455	562 / 48 / 50	0 / 0 / 0
			SBL	650	178 / 76 / 198	0 / 0 / 0
			SBR	175	1926 / 44 / 38	1751 / 0 / 0
58	Mercury Street & Armour Street	Signalized	EBT	1705	399 / - / 510	0 / - / 0
			WBT	165	873 / - / 761	708 / - / 596
			WBR	120	479 / - / 286	359 / - / 166
			NBL	115	120 / - / 178	5 / - / 63
			NBT	480	515 / - / 821	35 / - / 341
			NBR	90	107 / - / 182	17 / - / 92
			SBL	240	236 / - / 469	0 / - / 229
			SBT	540	334 / - / 841	0 / - / 301

Table 5.10 Peak Hour Intersection Queuing Analysis – Proposed Plan Conditions

ID	Intersection	Traffic Control	Turning Movement	Pocket Length	AM / MD / PM 95% Queue Length (ft)	AM / MD / PM Excess Queue (ft)
59	Kearny Villa Road & SR-163 On-Off Ramps	Signalized	EBL	195	643 / - / 297	448 / - / 102
			EBR	20	349 / - / 333	329 / - / 313
			NBL	200	900 / - / 983	700 / - / 783
			NBT	735	187 / - / 148	0 / - / 0
			SBT	530	403 / - / 834	0 / - / 304
74	I-15 SB On-Ramp/I-15 SB Off-Ramp & Aero Drive	Signalized	EBT	480	352 / - / 373	0 / - / 0
			EBR	480	107 / - / 76	0 / - / 0
			WBL	550	107 / - / 334	0 / - / 0
			WBT	685	314 / - / 181	0 / - / 0
			SBT	400	72 / - / 300	0 / - / 0
			SBR	245	251 / - / 82	6 / - / 0
75	I-15 NB On-Off Ramp & Aero Drive	Signalized	EBT	685	110 / - / 152	0 / - / 0
			EBR	170	109 / - / 242	0 / - / 72
			WBL	170	163 / - / 163	0 / - / 0
			WBT	700	124 / - / 144	0 / - / 0
			NBL	430	330 / - / 226	0 / - / 0
			NBR	170	33 / - / 119	0 / - / 0
79	SR-163 NB Off-Ramp & Mesa College Drive	Signalized	EBT	245	110 / - / 103	0 / - / 0
			WBT	330	205 / - / 171	0 / - / 0
			NBL	410	163 / - / 104	0 / - / 0
			NBR	410	104 / - / 91	0 / - / 0
80	SR-163 NB Off-Ramp & Mesa College Drive	Signalized	EBL	50	147 / - / 105	97 / - / 55
			EBT	360	207 / - / 386	0 / - / 26
			WBL	330	54 / - / 189	0 / - / 0
			WBT	540	917 / - / 498	377 / - / 0
			SBT	110	147 / - / 267	37 / - / 157
81	I-805 NB Off-Ramp & Kearny Villa Road	Signalized	EBT	540	171 / - / 185	0 / - / 0
			WBT	2080	146 / - / 266	0 / - / 0
			NBL	1000	508 / - / 193	0 / - / 0
			NBR	40	232 / - / 173	192 / - / 133
83	Murphy Canyon Road & Golf Center Driveway/I-15 SB On-Ramp	SSSC[1]	NB	1500	25 / - / 25	0 / - / 0

Source: Chen Ryan Associates (2019)

Note:
[1]SSSC = Side Street Stop Control

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 by 2050. Forecast freeway volumes were obtained through the modeling process described in Chapter 4. Table 5.11a and 5.11b 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:

- WB SR-52, Convoy Street to SR-163 Interchange (AM – LOS F)
- EB SR-52, Convoy Street to SR-163 Interchange (PM – LOS E)
- EB SR-52, I-15 Interchange to Santo Road (PM – LOS E)
- NB I-805, Governor Drive to SR-52 Interchange (AM - LOS F)
- SB I-805, Governor Drive to SR-52 Interchange (PM - LOS E)
- NB I-805, SR-52 Interchange to Clairemont Mesa Boulevard (AM - LOS F)
- SB I-805, SR-52 Interchange to Clairemont Mesa Boulevard (PM - LOS F)
- NB I-805, Clairemont Mesa Boulevard to Balboa Avenue (AM - LOS F)
- SB I-805, Clairemont Mesa Boulevard to Balboa Avenue (PM - LOS F)
- NB I-805, Balboa Avenue to SR-163 Interchange (AM - LOS F)
- SB I-805, Balboa Avenue to SR-163 Interchange (PM - LOS E)
- NB I-805, SR-163 Interchange to Kearny Villa Road/Mesa College Drive (AM - LOS F)
- SB I-805, SR-163 Interchange to Kearny Villa Road/Mesa College Drive (PM - LOS E)
- NB I-805, Kearny Villa Road/Mesa College Drive to Phyllis Place (AM - LOS F)
- SB I-805, Kearny Villa Road/Mesa College Drive to Phyllis Place (PM - LOS F)
- SB SR-163, SR-52 Interchange to Kearny Villa Road (b/t Monel Avenue and Topaz Way) (AM/PM - LOS F)
- SB SR-163, Kearny Villa Road (b/t Monel Avenue and Topaz Way) to Clairemont Mesa Boulevard (AM/PM - LOS E)
- NB SR-163, Clairemont Mesa Boulevard to Balboa Avenue/Kearny Villa Road/Mercury Street (PM - LOS E)
- SB SR-163, Clairemont Mesa Boulevard to Balboa Avenue/Kearny Villa Road/Mercury Street (AM/PM - LOS F)
- SB SR-163, Balboa Avenue/Kearny Villa Road/Mercury Street to I-805 Interchange (AM - LOS E/PM - LOS E)
- NB I-15, Clairemont Mesa Boulevard to Balboa Avenue/Tierrasanta Boulevard (AM - LOS F)
- SB I-15, Clairemont Mesa Boulevard to Balboa Avenue/Tierrasanta Boulevard (PM - LOS F)
- NB I-15, Balboa Avenue/Tierrasanta Boulevard to Aero Drive (AM - LOS E)
- SB I-15, Balboa Avenue/Tierrasanta Boulevard to Aero Drive (PM - LOS F)
- NB I-15, Aero Drive to Murphy Canyon On-Ramp (AM - LOS F/PM - LOS E)
- SB I-15, Aero Drive to Murphy Canyon On-Ramp (PM - LOS F)

- NB I-15, Murphy Canyon Road On-Ramp to Friars Road (AM - LOS F/PM - LOS E)
- SB I-15, Murphy Canyon Road On-Ramp to Friars Road (PM - LOS E)
- NB I-15, Friars Road to I-8 Interchange (AM - LOS E)
- SB I-15, Friars Road to I-8 Interchange (PM - LOS E)

Table 5.11a 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
SR-52	Genesee Avenue to I-805 Interchange	EB	2M+1A	55%	7.81%	0.985	110,819	4,787	67.0	25.4	C
		WB	2M	45%	7.81%	0.985	110,819	3,868	61.3	33.7	D
	I-805 Interchange to Convoy Street	EB	3M+1A	55%	7.81%	0.985	134,234	5,799	68.6	22.6	C
		WB	2M+1A	45%	7.81%	0.985	134,234	4,685	67.4	24.7	C
	Convoy Street to SR-163 Interchange	EB	4M	37%	8.46%	0.985	158,707	4,991	69.8	19.1	C
		WB	3M+1A	63%	8.46%	0.985	158,707	8,436	32.2	93.2	**F**
	SR-163 Interchange to Kearny Villa Road/Ruffin Road	EB	2M	37%	8.46%	0.985	53,576	1,685	70.0	6.4	A
		WB	2M	63%	8.46%	0.985	53,576	2,848	68.8	22.1	C
	Kearny Villa Road/Ruffin Road to I-15 interchange	EB	3M	37%	8.46%	0.985	73,422	2,309	70.0	8.8	A
		WB	2M+1A	63%	8.46%	0.985	73,422	3,903	69.6	20.0	C
	I-15 Interchange to Santo Road	EB	3M	37%	8.46%	0.985	128,138	4,029	69.4	20.7	C
		WB	3M+1A	63%	8.46%	0.958	128,138	6,811	65.6	27.7	D
I-805	Governor Drive to SR-52 Interchange	NB	4M+1A	76%	6.84%	0.971	258,882	13,433	34.5	84.5	**F**
		SB	5M+1A	24%	6.84%	0.971	258,882	4,275	75.0	10.3	A
	SR-52 Interchange to Clairemont Mesa Boulevard	NB	4M+1A	76%	6.84%	0.966	214,464	11,128	52.5	46.2	**F**
		SB	4M+1A	24%	6.84%	0.966	214,464	3,541	75.0	12.9	B
	Clairemont Mesa Boulevard to Balboa Avenue	NB	4M+1A	76%	6.84%	0.966	211,348	10,966	31.3	95.5	**F**
		SB	4M+1A	24%	6.84%	0.966	211,348	3,490	75.0	12.7	B
	Balboa Avenue to SR-163 Interchange	NB	4M+1A	76%	6.84%	0.966	213,220	11,064	30.1	100.0	**F**
		SB	4M+2A	24%	6.84%	0.966	213,220	3,521	75.0	10.2	A
	SR-163 Interchange to Kearny Villa Road/Mesa College Drive	NB	4M+1A	76%	6.84%	0.966	214,373	11,123	52.6	46.1	**F**
		SB	4M+1A	24%	6.84%	0.966	214,373	3,540	70.0	11.0	B
I-805		NB	5M	76%	6.84%	0.971	250,832	13,015	39.5	71.5	**F**

Table 5.11a 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
	Kearny Villa Road/Mesa College Drive to Phyllis Place	SB	5M	24%	6.84%	0.971	250,832	4,142	70.0	12.8	B
SR-163	Kearny Villa Road to SR-52 Interchange	NB	4M	39%	9.04%	0.985	165,639	5,873	68.4	22.9	C
		SB	4M+1A	61%	9.04%	0.985	165,639	9,101	65.1	29.9	D
	SR-52 Interchange to Kearny Villa Road (b/t Monel Avenue and Topaz Way)	NB	4M+1A	39%	9.04%	0.985	177,172	6,282	73.7	18.2	C
		SB	4M+1A	61%	9.04%	0.985	177,172	9,735	46.7	55.7	**F**
	Kearny Villa Road (b/t Monel Avenue and Topaz Way) to Clairemont Mesa Boulevard	NB	4M	39%	9.04%	0.985	153,211	5,432	72.7	19.9	C
		SB	4M	61%	9.04%	0.985	153,211	8,418	57.8	38.9	**E**
	Clairemont Mesa Boulevard to Balboa Avenue/Kearny Villa Road/Mercury Street	NB	4M+1A	39%	9.04%	0.985	197,323	6,996	66.6	28.0	D
		SB	4M+1A	61%	9.04%	0.985	197,323	10,842	35.2	82.3	**F**
	Balboa Avenue/Kearny Villa Road/Mercury Street to I-805 Interchange	NB	4M+2A	39%	9.04%	0.976	200,173	7,097	71.9	21.3	C
		SB	4M+1A	61%	9.04%	0.976	200,173	10,999	54.1	43.8	**E**
	I-805 Interchange to Mesa College Drive	NB	4M+2A	56%	8.89%	0.98	198,056	9,911	68.4	25.9	C
		SB	4M+1A	44%	8.89%	0.98	198,056	7,696	70.0	23.8	C
I-15	SR-163 Interchange to SR-52 Interchange	NB	4M	30%	9.21%	0.971	214,211	6,011	70.6	23.1	C
		SB	6M+1A	70%	9.21%	0.971	214,211	13,717	61.0	34.8	D
	SR-52 Interchange to Clairemont Mesa Boulevard	NB	4M	58%	7.66%	0.971	149,382	6,661	67.8	26.6	D
		SB	4M	42%	7.66%	0.971	149,382	4,782	69.9	18.5	C
	Clairemont Mesa Boulevard to Balboa Avenue/Tierrasanta Boulevard	NB	4M+1A	58%	7.66%	0.971	209,806	9,355	48.9	51.9	**F**
		SB	4M+1A	42%	7.66%	0.971	209,806	6,716	67.6	26.9	D
	Balboa Avenue/Tierrasanta Boulevard to Aero Drive	NB	4M+1A	58%	7.66%	0.976	234,341	10,449	57.6	39.2	**E**
		SB	4M+1A	42%	7.66%	0.976	234,341	7,502	63.4	31.9	D

Table 5.11a 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	Aero Drive to Murphy Canyon Road On-Ramp	NB	4M+1A	58%	7.66%	0.976	250,660	11,177	30.1	100.3	**F**
		SB	5M	42%	7.66%	0.976	250,660	8,024	69.1	25.1	C
	Murphy Canyon Road On-Ramp to Friars Road	NB	4M+1A	58%	7.66%	0.976	259,332	11,563	25.3	123.3	**F**
		SB	5M+1A	42%	7.66%	0.976	259,332	8,302	72.3	20.6	C
	Friars Road to I-8 Interchange	NB	4M+2A	58%	7.66%	0.976	270,574	12,065	59.8	36.3	**E**
		SB	3M+3A	42%	7.66%	0.976	270,574	8,661	71.6	21.8	C

Source: SANDAG (2019); Chen Ryan Associates (2019)

Notes:
Bold letter indicates substandard LOS E or F.
[1] M = Mainline; A = Auxiliary Lane
[2] Directional Split
[3] Peak Hour Percentage
[4] Heavy Vehicle Factor

Table 5.11b 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
SR-52	Genesee Avenue to I-805 Interchange	EB	2M+1A	59%	8.35%	0.985	110,819	5,496	63.4	30.9	D
		WB	2M	41%	8.35%	0.985	110,819	3,758	62.4	32.2	D
	I-805 Interchange to Convoy Street	EB	3M+1A	59%	8.35%	0.985	134,234	6,657	66.1	26.9	D
		WB	2M+1A	41%	8.35%	0.985	134,234	4,552	67.9	23.9	C
	Convoy Street to SR-163 Interchange	EB	4M	62%	8.48%	0.985	158,707	8,324	57.9	38.4	**E**
		WB	3M+1A	38%	8.48%	0.985	158,707	5,134	65.4	27.9	D
	SR-163 Interchange to Kearny Villa Road/Ruffin Road	EB	2M	62%	8.48%	0.985	53,576	2,810	70.0	10.7	A
		WB	2M	38%	8.48%	0.985	53,576	1,733	70.0	13.2	B
	Kearny Villa Road/Ruffin Road to I-15 interchange	EB	3M	62%	8.48%	0.985	73,422	3,851	70.0	14.7	B
		WB	2M+1A	38%	8.48%	0.985	73,422	2,375	70.0	12.1	B
	I-15 Interchange to Santo Road	EB	3M	62%	8.48%	0.985	128,138	6,721	52.5	44.8	**E**
		WB	3M+1A	38%	8.48%	0.985	128,138	4,145	70.0	15.8	B
I-805	Governor Drive to SR-52 Interchange	NB	4M+1A	32%	7.41%	0.971	258,882	6,171	73.7	18.1	C
		SB	5M+1A	68%	7.41%	0.971	258,882	13,012	54.8	42.9	**E**
	SR-52 Interchange to Clairemont Mesa Boulevard	NB	4M+1A	32%	7.41%	0.966	214,464	5,112	74.9	14.9	B
		SB	4M+1A	68%	7.41%	0.966	214,464	10,779	33.5	87.6	**F**
	Clairemont Mesa Boulevard to Balboa Avenue	NB	4M+1A	32%	7.41%	0.966	211,348	5,038	73.5	18.7	C
		SB	4M+1A	68%	7.41%	0.966	211,348	10,623	35.3	81.9	**F**
	Balboa Avenue to SR-163 Interchange	NB	4M+1A	32%	7.41%	0.966	213,220	5,083	73.4	18.9	C
		SB	4M+2A	68%	7.41%	0.966	213,220	10,717	55.3	42.2	**E**
	SR-163 Interchange to Kearny Villa Road/Mesa College Drive	NB	4M+1A	32%	7.41%	0.966	214,373	5,110	70.0	15.9	B
		SB	4M+1A	68%	7.41%	0.966	214,373	10,775	54.7	42.9	**E**

Table 5.11b 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-805	Kearny Villa Road/Mesa College Drive to Phyllis Place	NB	5M	32%	7.41%	0.971	250,832	5,979	69.9	18.5	C
		SB	5M	68%	7.41%	0.971	250,832	12,607	42.7	64.0	**F**
SR-163	Kearny Villa Road to SR-52 Interchange	NB	4M	44%	9.65%	0.985	165,639	7,062	64.5	29.2	D
		SB	4M+1A	56%	9.65%	0.985	165,639	8,922	65.9	28.9	D
	SR-52 Interchange to Kearny Villa Road (b/t Monel Avenue and Topaz Way)	NB	4M+1A	44%	9.65%	0.985	177,172	7,553	70.8	22.8	C
		SB	4M+1A	56%	9.65%	0.985	177,172	9,544	48.4	52.6	**F**
	Kearny Villa Road (b/t Monel Avenue and Topaz Way) to Clairemont Mesa Boulevard	NB	4M	44%	9.65%	0.985	153,211	6,532	68.9	25.3	C
		SB	4M	56%	9.65%	0.985	153,211	8,253	59.0	37.4	**E**
	Clairemont Mesa Boulevard to Balboa Avenue/Kearny Villa Road/Mercury Street	NB	4M+1A	44%	9.65%	0.985	197,323	8,413	57.8	38.9	**E**
		SB	4M+1A	56%	9.65%	0.985	197,323	10,629	37.6	75.6	**F**
	Balboa Avenue/Kearny Villa Road/Mercury Street to I-805 Interchange	NB	4M+2A	44%	9.65%	0.976	200,173	8,534	67.2	27.4	D
		SB	4M+1A	56%	9.65%	0.976	200,173	10,783	55.5	41.9	**E**
	I-805 Interchange to Mesa College Drive	NB	4M+2A	49%	8.09%	0.98	198,056	7,774	73.3	19.0	C
		SB	4M+1A	51%	8.09%	0.98	198,056	8,249	68.4	25.9	C
I-15	SR-163 Interchange to SR-52 Interchange	NB	4M	41%	7.90%	0.971	214,211	6,908	66.6	28.1	D
		SB	6M+1A	59%	7.90%	0.971	214,211	10,015	71.6	21.7	C
	SR-52 Interchange to Clairemont Mesa Boulevard	NB	4M	41%	7.90%	0.971	149,382	4,817	74.0	17.7	B
		SB	4M	59%	7.90%	0.971	149,382	6,984	64.4	29.4	D
	Clairemont Mesa Boulevard to Balboa Avenue/Tierrasanta Boulevard	NB	4M+1A	41%	7.90%	0.971	209,806	6,766	67.3	27.3	D
		SB	4M+1A	59%	7.90%	0.971	209,806	9,809	44.5	59.7	**F**
	Balboa Avenue/Tierrasanta Boulevard to Aero Drive	NB	4M+1A	41%	7.90%	0.976	234,341	7,557	70.6	23.1	C
		SB	4M+1A	59%	7.90%	0.976	234,341	10,956	32.7	90.4	**F**

Table 5.11b 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	Aero Drive to Murphy Canyon Road On-Ramp	NB	4M+1A	41%	7.90%	0.976	250,660	8,083	59.6	36.6	**E**
		SB	5M	59%	7.90%	0.976	250,660	11,719	49.1	51.5	**F**
	Murphy Canyon Road On-Ramp to Friars Road	NB	4M+1A	41%	7.90%	0.976	259,332	8,363	57.5	39.2	**E**
		SB	5M+1A	59%	7.90%	0.976	259,332	12,124	59.6	36.6	**E**
	Friars Road to I-8 Interchange	NB	4M+2A	41%	7.90%	0.976	270,574	8,725	71.4	22.0	C
		SB	3M+3A	59%	7.90%	0.976	270,574	12,650	57.0	39.9	**E**

Source: SANDAG (2019); Chen Ryan Associates (2019)

Notes:
Bold letter indicates substandard 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 5.12 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 5.12 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-805 NB On-Ramp (westbound approach) @ Clairemont Mesa Blvd	AM	740	585	585	478	107	13.43	2,675
	PM	1,000	1,000	1000	N/A[7]	0	0	0
I-805 NB On-Ramp (eastbound approach) @ Clairemont Mesa Blvd	AM	400	380	380	440	0	0	0
	PM	510	510	510	N/A[7]	0	0	0
I-805 SB On-Ramp (westbound approach) @ Clairemont Mesa Blvd	AM	440	440	220	N/A[7]	0	0	0
	PM	1,170	1,170	585	453	132	17.48	3,300
I-805 SB On-Ramp (eastbound approach) @ Clairemont Mesa Blvd	AM	650	590	590	N/A[7]	0	0	0
	PM	500	454	454	461	0	0	0
I-805 SB On-Ramp (westbound approach) @ Balboa Avenue	AM	380	380	380	N/A[7]	0	0	0
	PM	830	830	830	819	11	0.81	275
I-805 SB On-Ramp (eastbound approach) @ Balboa Avenue	AM	810	810	810	N/A[7]	0	0	0
	PM	640	397	397	381	16	2.52	400
I-805 NB On-Ramp (westbound approach) @ Balboa Avenue	AM	430	390	390	480	0	0	0
	PM	690	627	627	N/A[7]	0	0	0
I-805 NB On-Ramp (eastbound approach) @ Balboa Avenue	AM	480	436	436	478	0	0	0
	PM	480	436	436	N/A[7]	0	0	0
I-805 SB On-Ramp @ Mesa College Drive	AM	560	560	560	N/A[7]	0	0	0
	PM	1,120	750	750	900	0	0	0
SR-163 SB On-Ramp (westbound approach) @ Clairemont Mesa Blvd	AM	570	570	285	N/A[7]	0	0	0
	PM	1,320	1,320	660	707	0	0	0
SR-163 SB On-Ramp (eastbound approach) @ Clairemont Mesa Blvd	AM	250	250	125	N/A[7]	0	0	0
	PM	1,020	1,020	510	793	0	0	0
SR-163 NB On-Ramp (eastbound approach) @ Clairemont Mesa Blvd	AM	570	570	570	N/A[7]	0	0	0
	PM	900	765	765	853	0	0	0
SR-163 NB On-Ramp (westbound approach) @ Clairemont Mesa Blvd	AM	490	490	490	N/A[7]	0	0	0
	PM	890	765	765	795	0	0	0

Table 5.12 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)
SR-163 NB On-Ramp @ Kearny Villa Road	AM	840	840	840	N/A[7]	0	0	0
	PM	720	720	720	457	263	34.53	6,575
SR-163 SB On-Ramp (westbound approach) @ Balboa Avenue	AM	650	590	295	N/A[7]	0	0	0
	PM	1,670	1,516	758	525	233	26.63	5,825
SR-163 NB On-Ramp (eastbound approach) @ Balboa Avenue	AM	670	670	335	N/A[7]	0	0	0
	PM	1,080	1,080	540	769	0	0	0
I-15 NB On-Ramp @ Clairemont Mesa Blvd	AM	480	480	240	N/A[7]	0	0	0
	PM	970	970	485	368	117	19.08	2,925
I-15 SB On-Ramp @ Clairemont Mesa Blvd	AM	760	760	380	N/A[7]	0	0	0
	PM	1,390	1,056	528	396	132	20	3,300
I-15 SB On-Ramp (westbound approach) @ Balboa Avenue	AM	990	990	990	N/A[7]	0	0	0
	PM	680	524	524	744	0	0	0
I-15 SB On-Ramp @ Balboa Avenue	AM	300	300	150	N/A[7]	0	0	0
	PM	1,500	1,170	585	540	45	5.00	1,125
I-15 NB On-Ramp @ Balboa Avenue	AM	460	460	460	N/A[7]	0	0	0
	PM	230	230	230	444	0	0	0
I-15 NB On-Ramp (eastbound approach) @ Balboa Avenue	AM	240	240	240	N/A[7]	0	0	0
	PM	1,250	1,250	1250	828	422	30.58	10,550
I-15 SB On-Ramp @ Aero Drive	AM	700	636	318	N/A[7]	0	0	0
	PM	1,510	1,371	686	561	125	13.37	3,125
I-15 NB On-Ramp @ Aero Drive	AM	820	820	820	N/A[7]	0	0	0
	PM	1,310	1,140	1140	744	396	31.94	9,900
I-15 SB On-Ramp @ Murphy Canyon Road	AM	290	290	290	N/A[7]	0	0	0
	PM	890	721	721	862	0	0	0
SR-163 NB On-Ramp @ Kearny Villa Road/Century Park Ct	AM	250	250	250	N/A[7]	0	0	0
	PM	700	665	665	744	0	0	0
SR-163 SB On-Ramp @ Mercury/Armour	AM	320	320	320	N/A[7]	0	0	0
	PM	580	580	580	803	0	0	0

Source: Chen Ryan Associates (2019)

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 25 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-805 NB On-Ramp (westbound approach) @ Clairemont Mesa Boulevard (AM)
- I-805 SB On-Ramp (westbound approach) @ Clairemont Mesa Boulevard (PM)
- I-805 SB On-Ramp (westbound approach) @ Balboa Avenue (PM)
- I-805 SB On-Ramp (eastbound approach) @ Balboa Avenue (PM)
- SR-163 NB On-Ramp @ Kearny Villa Road (PM)
- SR-163 SB On-Ramp (westbound approach) @ Balboa Avenue (PM)
- I-15 NB On-Ramp @ Clairemont Mesa Boulevard (PM)
- I-15 SB On-Ramp @ Clairemont Mesa Boulevard (PM)
- I-15 SB On-Ramp @ Balboa Avenue (PM)
- I-15 NB On-Ramp (eastbound approach) @ Balboa Avenue (PM)
- I-15 SB On-Ramp @ Aero Drive (PM)
- I-15 NB On-Ramp @ Aero Drive (PM)