LINSCOTT LAW & GREENSPAN engineers

TRAFFIC IMPACT ANALYSIS

SIERRA

San Diego County, California
May 12, 2017

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TRAFFIC IMPACT ANALYSIS

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1.0 INTRODUCTION

The proposed Newland Sierra Project development consists of single family, multi-family, and age qualified (senior) residential dwelling units, neighborhood serving retail uses, a school site, neighborhood and community parks, and other related development on the 1,985-acre site. The Project Site is bounded by I-15 on the east, Deer Springs Road (County Road S12) on the south, and Twin Oaks Valley Road on the west, with a small portion of the northwestern edge of the site traversed by Twin Oaks Valley Road. Gopher Canyon Road is located approximately 1.5 mile north of the northern site boundary.

Various intersections, segments, freeway mainline segments and ramp meters within the study area will be analyzed to determine Project related impacts, as set forth in the following sections.

- Project Description
- Project Study Area
- Existing Conditions
- Network Options, Analysis Scenarios and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Project Trip Generation / Distribution / Assignment
- Cumulative Projects
- Analysis of Near-Term Scenarios
- County of San Diego General Plan Consistency and Buildout Analysis
- City of San Marcos Horizon Year Analysis
- Access and Internal Circulation
- Transportation Demand Management Program
- Construction Analysis
- Significance of Impacts and Mitigation Measures
- Project Mitigation Options for Deer Springs Road

2.0 PROJECT DESCRIPTION

2.1 Project Location

The Newland Sierra Project (proposed Project) is located within the unincorporated portion of the County of San Diego within the North County Metropolitan Subregional Plan area. The North County Metropolitan Subregional Plan area is comprised of many non-contiguous "island" areas interspersed among the Cities of Escondido, San Diego, San Marcos, Vista, and Oceanside with the most easterly portion adjacent to Valley Center. The North County Metropolitan Subregional Plan area includes the communities of Hidden Meadows and Twin Oaks. The majority of the Project Site is located in the community of Twin Oaks. The Project Site is directly west of Interstate 15 (I-15), north of State Route 78 (SR 78), and south of State Route 76 (SR-76). The Cities of Escondido and San Marcos are approximately 1 mile south of the site.

The Project Site consists of approximately 1,985 acres and is bounded by I-15 on the east, Deer Springs Road on the south, and Twin Oaks Valley Road on the west, with a small portion of the northwestern edge of the site traversed by Twin Oaks Valley Road. Gopher Canyon Road is located approximately 1.5 miles north of the site's northern boundary, and approximately 2.5 miles north of the Project's proposed development areas.

Figure 2–1 depicts the Project Vicinity Map and ***Figure 2–2*** depicts the Conceptual Site Plan.

2.2 Existing Land Uses

The Project Site is primarily undeveloped. A number of dirt roads and trails that provide access to each parcel and service roads for existing water infrastructure traverse the Project Site. Portions of the site have been and continue to be used for various unauthorized land uses, including horseback riding, hiking, mountain biking, off-roading, motorcycling, shooting, and occasional dumping. An abandoned quarry is located in the northwest portion of the site fronting Twin Oaks Valley Road and an abandoned private landing strip is located in the north central portion of the site.

Land uses surrounding the Project Site include estate lot, ranchettes, and single-family residential development, small farms, open space, the community of Twin Oaks, the retirement community of Champagne Village, and the Lawrence Welk Resorts. Many of the prominent ridges and valleys surrounding the site are occupied by existing homes. Lawrence Welk Village and the community of Hidden Meadows are located to the east of the Project Site across I-15. South of the site is a mobile home park, the Golden Door Spa and Resort, agricultural uses and estate development along the border of the City of San Marcos and the unincorporated portion of the County of San Diego.

2.3 Project Description

The Sierra Project Site is composed of approximately 1,985 acres and would include seven distinct neighborhoods with a total of 2,135 residential units, including 875 single family units, 935 multi-family units, and 325 senior (age-qualified) units. The proposed Project would include a variety of housing types – some of which would be designed with grade-adaptive architecture – to meet the varied needs of the anticipated residents.

Park amenities have been planned throughout the Project Site to serve each neighborhood, community, and the public at large. The proposed Project includes approximately 12.1 acres of community parks and 23.8 acres of neighborhood parks. The proposed Project also includes a 6-acre school site. Open space for active recreation is included at the Project's parks and at the joint-use field. Several neighborhood-scale parks and pocket parks, both public and private, are proposed and include amenities such as open lawn areas, multi-use courts, picnic areas, children's play areas, pools, a community garden, and an equestrian staging area. The Project also would include 81,000 square feet of neighborhood serving retail space.

2.4 Access Points and Internal Circulation

The Project Site would have two main access roads along Deer Springs Road at Mesa Rock Road and Sarver Lane, with an additional access point at Camino Mayor off of Twin Oaks Valley Road to the north (***Figure 2–2***, Conceptual Site plan). The main access road at Mesa Rock Road would be a four-lane entry road with a raised median that transitions into a four-lane undivided road further into the Project Site. On-site roadways would be constructed within and between the different planning areas where development would occur. These roadways would consist primarily of: main roads with a pavement width of 34 feet that mostly travel between the developed planning areas; residential streets that are approximately 36 to 40 feet wide and generally traverse within a planning area; and, private paseo roads that typically end at smaller clusters of residential units within a planning area. The Project would also include an electric bike-share program with stations throughout the Project, linking the residential neighborhoods to one another and to the Town Center neighborhood supporting the school site and neighborhood serving retail uses. Additionally, the Project includes bicycle lanes, a system of pedestrian pathways, open space trails, and multi-use trails. The Project also includes shuttle services within and around its various neighborhoods and to the Escondido Transit Center. With incorporation of these internal circulation features, the Project will provide residents the opportunity to access employment, education, recreational, and commercial uses via multiple modes of transportation.

Figure 2–3 is the Project Internal Roadway Classification map indicating the roadway cross-sections. ***Appendix A*** contains the various proposed roadway cross-sections. ***Figure 2–4*** is the Parks and Trails plan depicting the proposed onsite parks and trails.

2.5 Off-Site Roadway Improvements

2.5.1 *Deer Springs Road*

The proposed Project includes two options for improving Deer Springs Road.

Option A would improve Deer Springs Road to meet County Public Road Standards as follows:

- Twin Oaks Valley Road to Sarver Lane: 4.1A Major Road with Raised Median
- Sarver Lane to Mesa Rock Road: 2.1B Community Collector with Continuous Turn Lane with transition areas where the road would widen to the 4.1A Major Road classification approaching Sarver Lane from the east and Mesa Rock Road from the west.

A centerline realignment would be applied to the existing Deer Springs Road alignment in order to ensure a minimum of 750-foot turning radii along the entire alignment. If this Option is chosen by the Board of Supervisors, Deer Springs Road would be reclassified in the County's General Plan based on the classifications described above.

Option B would improve Deer Springs Road to meet County Public Road Standards as follows:

- Twin Oaks Valley Road to Sarver Lane: 4.1A Major Road with Raised Median
- Sarver Lane to Mesa Rock Road: 4.1B Major Road with Continuous Turn Lane

Under this Option, no segment of Deer Springs Road would be reclassified in the County's General Plan.

2.5.2 *Twin Oaks Valley Road*

No improvements are planned for the segment of Twin Oaks Valley Road north of Deer Springs Road. South of Deer Springs Road, in the City of San Marcos, Twin Oaks Valley Road would be improved by the Project to four lanes for those portions of the road where the Project would have direct impacts.

2.5.3 *Sarver Lane*

The Sarver Lane intersection at Deer Springs Road will be signalized and is proposed to be 52 feet-wide at the intersection to provide one northbound lane and two southbound lanes, transitioning to a width of 40 feet of pavement, then transitioning to a width of 34 feet with no parking within the Project.

2.6 Area Improvements

2.6.1 *I-15 Interchange*

The project is proposing improvements to the I-15/Deer Springs Road interchange as mitigation for the project impacts to the existing interchange. The process of implementing the mitigation for the Interchange is subject to a three-phase process under the jurisdiction of Caltrans. The first phase involves the preparation of a Project Initiation Document (PID) consisting of a Project Study Report-Project Development Support (PSR-PDS) document. The purpose of the PSR-PDS document is to define the purpose and need for any proposed improvements, identify a reasonable range of alternatives (i.e., interchange configurations), and develop an action plan for implementation of the improvements. The interchange alternatives include a diamond interchange, roundabouts on Deer Springs Road at the two I-15 Ramp intersections and the two frontage roads, and a Diverging Diamond interchange configuration.

The project applicant initiated the PID process with Caltrans in 2014. While the final configuration chosen for the interchange not been determined at this time, the objectives of the PID process are an interchange design that achieves LOS D or better operations and results in optimal intersection spacing. The second and third phases of the Caltrans process involve a CEQA/NEPA environmental document for the proposed interchange improvements, a preliminary engineering document, and a set of final engineering and construction documents. All three phases are under the jurisdiction of Caltrans.

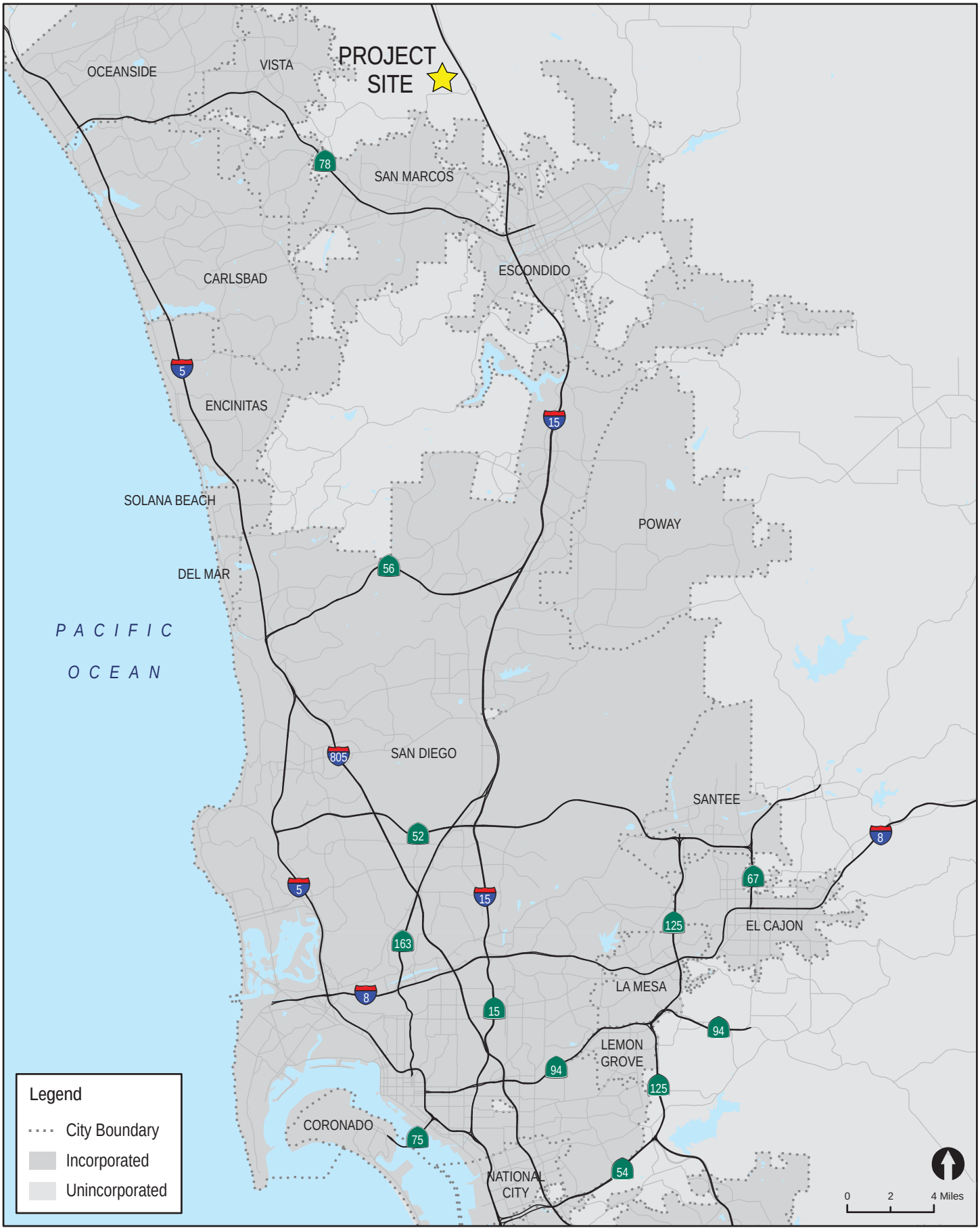

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Figure 2-1

Vicinity Map

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Figure 2-2

Conceptual Site Plan

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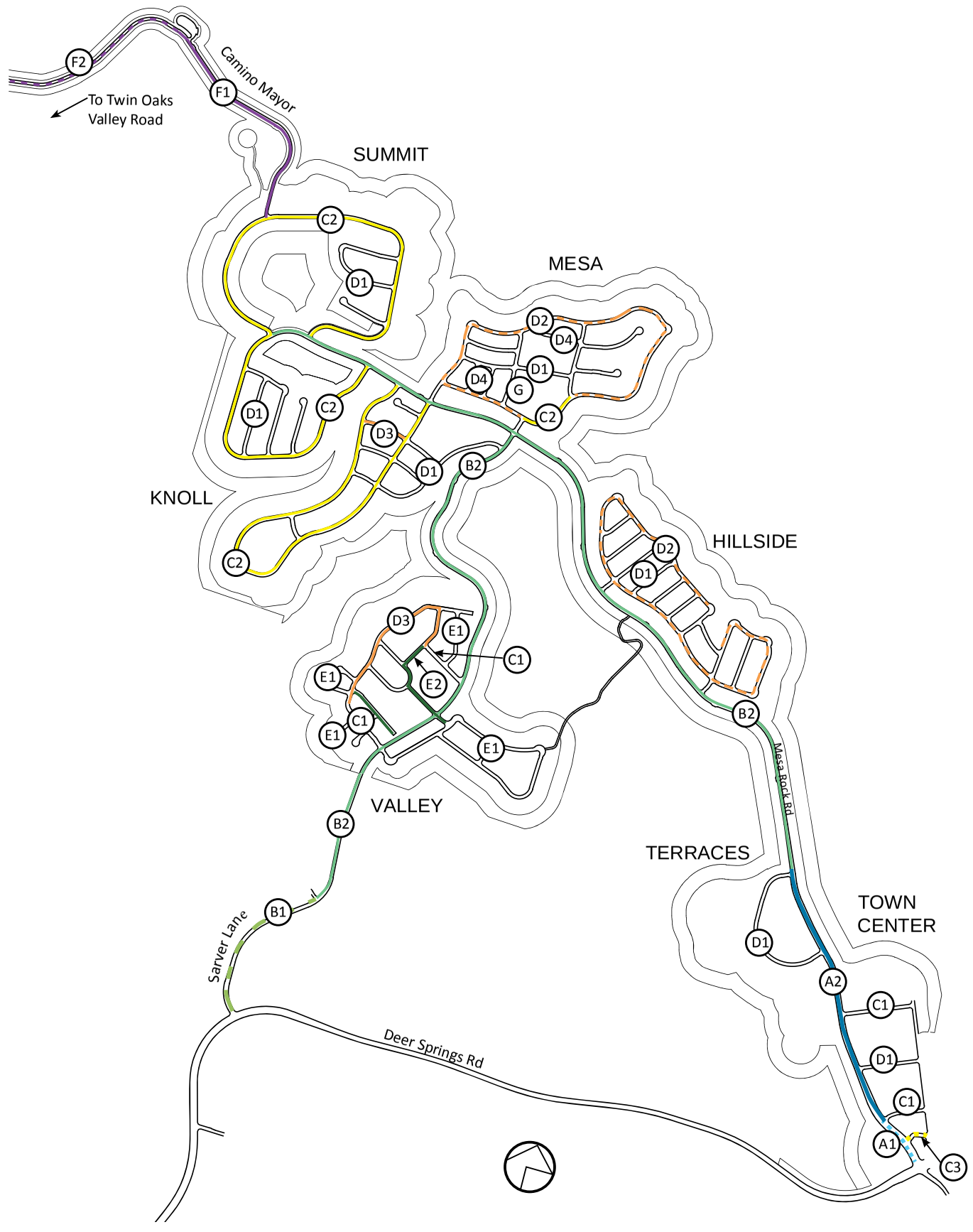

Road Section		Road Classification	Public/ Private	Proposed # Lanes / Lane Width	Proposed ROW
A1		Modified Boulevard w/ Raised Median	Public	6/varies	102'
A2		Modified Boulevard w/ Intermittent Turn Lane	Public	4/10.5'	89'
B1		Modified Light Collector w/ No Median	Public	2/11'	60'
B2		Modified Light Collector w/ Reduced Shoulder	Public	2/11'	66'
C1	no symbol	Residential Collector	Public	2/12'	60'
C2		Modified Residential Collector	Public	2/12'	69'-73'
C3		Modified Residential Collector	Public	2/12'	52'
D1	no symbol	Residential Road	Public	2/12'	56'
D2		Modified Residential Road	Public	2/12'	65'
D3		Modified Residential Road w/ Parkway	Public	2/12'	61'
D4	no symbol	Residential Loop	Public	2/12'	52'
E1	no symbol	Modified Residential Road	Public	2/12'	46'
E2		Modified Residential Road w/ Parkway	Public	2/12'	56'
F1		Camino Mayor - Modified Hillside Residential Street w/ Parkway	Public	2/14'	44'
F2		Camino Mayor - Modified Hillside Residential Street	Private	2/14'	40'
G	no symbol	Private Street	Private	2/12'	32'

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Figure 2-3

Internal Roadway Classification Map

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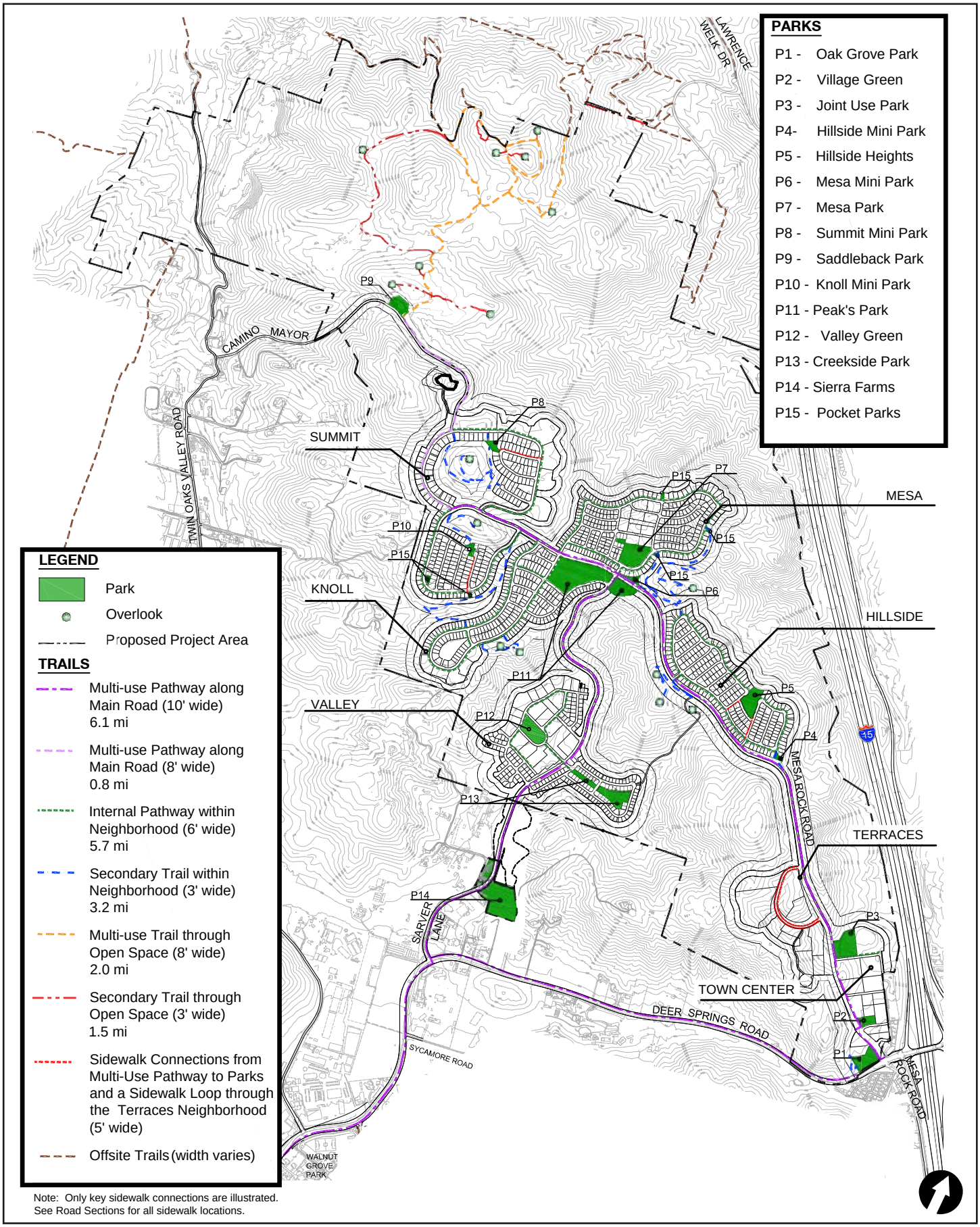

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Figure 2-4

Project Park & Trail Plan

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3.0 PROJECT STUDY AREA

3.1 Project Study Area

The Project study area was determined using the San Diego County criteria which require an analysis of transportation facilities that would receive 25 or more peak hour trips from the proposed Project. The 25 peak hour trip threshold is based on the combined two-way (i.e. both directions, 2-way peak hour total) traffic volume of the roadway segment for either the AM or PM peak period. Based on this criterion and the trip distribution developed using a Select Zone Assignment (SZA) plot obtained from SANDAG (explained in greater detail in Section 9.0 Project Trip Generation / Distribution and Assignment), the following intersections, street segments, freeway mainline segments and metered ramps were included in the study area (see *Figures 4–1*, *4–2* and *4–3*).

3.1.1 *Intersections*

1. Champagne Boulevard / Gopher Canyon Road (*Signalized*)
2. Champagne Boulevard / Old Castle Road (*Signalized*)
3. Champagne Boulevard / Lawrence Welk Drive (*Unsignalized*)
4. Mountain Meadow Road (Deer Springs Road) / Champagne Boulevard (N. Centre City Parkway (*Signalized*)
5. Deer Springs Road / I-15 NB Ramps (*Signalized*)
6. Deer Springs Road / I-15 SB Ramps (*Signalized*)
7. Deer Springs Road / Mesa Rock Road (Signalized)
9. Deer Springs Road / Sarver Lane (Unsignalized)
10. Deer Springs Road / Sycamore Road (Unsignalized)
11. Twin Oaks Valley Road / Camino Mayor (Unsignalized)
12. Twin Oaks Valley Road / Deer Springs Road (Signalized)
13. Twin Oaks Valley Road / Buena Creek Road (Signalized)
14. Twin Oaks Valley Road / Cassou Road (Signalized)
15. Twin Oaks Valley Road / La Cienega Road (Signalized)
16. Twin Oaks Valley Road / Del Roy Drive (Signalized)
17. Twin Oaks Valley Road / Windy Way (Signalized)
18. Twin Oaks Valley Road / Borden Road (Signalized)
19. Twin Oaks Valley Road / Richmar Avenue (Signalized)
20. Twin Oaks Valley Road / San Marcos Boulevard (Signalized)
21. Twin Oaks Valley Road / SR 78 WB Ramps (Signalized)
22. Twin Oaks Valley Road / SR 78 EB Ramps (Signalized)
23. Robelini Drive/South Santa Fe Avenue (Signalized)
24. Sycamore Avenue/SR78 WB Ramps (Signalized)
25. Sycamore Avenue/SR 78 EB Ramps (Signalized)
26. Buena Creek Road/South Santa Fe Avenue (Signalized)
27. Buena Creek Road/Monte Vista Drive (Unsignalized)

28. San Marcos Boulevard/Knoll Road/SR 78 WB Off Ramp (Signalized)
29. San Marcos Boulevard/SR 78 EB Off Ramp (Signalized)
30. Mission Road/Vineyard Road (Signalized)
31. North Centre City Parkway/Mesa Rock Road (Unsignalized)
32. North Centre City Parkway/Country Club Lane (Signalized)
33. Twin Oaks Valley Road / Barham Drive / Discovery Street (Signalized)

3.1.2 *Segments*

Deer Springs Road

- Twin Oaks Valley Road to Sarver Lane
- Sarver Lane to Mesa Rock Road
- Mesa Rock Road to I-15
- I-15 to Champagne Boulevard (N. Centre City Parkway)

Mountain Meadow Road

- East of Champagne Boulevard (N. Centre City Parkway)

Twin Oaks Valley Road

- Solar Lane to Deer Springs Road
- Deer Springs Road to Buena Creek Road
- Buena Creek Road to Cassou Road
- Cassou Road to La Cienega Road
- La Cienega Road to Windy Way
- Windy Way to Borden Road
- Borden Road to Richmar Avenue
- Richmar Avenue to San Marcos Boulevard
- San Marcos Boulevard to SR 78 WB Ramps
- SR 78 to Barham Drive/Discovery Street

Buena Creek Road

- S. Santa Fe Avenue to Monte Vista Drive
- Monte Vista Drive to Twin Oaks Valley Road

Monte Vista Drive

- Foothill Drive to Buena Creek Road

Mesa Rock Road

- Deer Springs Road to North Centre City Parkway

Gopher Canyon Road

- Little Gopher Canyon Road to I-15 SB Ramps
- I-15 NB Ramps to Champagne Boulevard

Champagne Boulevard

- Old Castle Road to Lawrence Welk Drive

- Lawrence Welk Drive to Mountain Meadow Road

North Centre City Parkway

- Mountain Meadow Road to I-15 Ramps
- I-15 Ramps to Country Club Lane

Robelini Drive

- Sycamore Avenue to South Santa Fe Avenue

South Santa Fe Avenue

- Robelini Drive to Buena Creek Road

Sycamore Avenue

- SR 78 WB Ramps to University Drive

3.1.3 *Freeway Mainline Segments*

I-15

– Riverside County Boundary to Old Highway 395
– Old Highway 395 to SR 76
– SR 76 to Old Highway 395
– Old Highway 395 to Gopher Canyon Road
– Gopher Canyon Road to Deer Springs Road
– Deer Springs Road to N. Centre City Parkway
– N. Centre City Parkway to El Norte Parkway
– El Norte Parkway to SR 78
– SR 78 to W. Valley Parkway
– W Valley Parkway to Auto Parkway
– Auto Parkway to W Citracado Parkway
– W Citracado Parkway to Via Rancho Parkway
– Via Rancho Parkway to Bernardo Drive
– Bernardo Drive to Rancho Bernardo Road
– Rancho Bernardo Road to Bernardo Center Drive
- Bernardo Center Drive to Camino Del Norte

SR 78

– Mar Vista Drive to Sycamore Drive
– Sycamore Drive to Rancho Santa Fe Drive
– Rancho Santa Fe Drive to Las Posas Road
– Las Posas Road to San Marcos Boulevard
- San Marcos Boulevard to Twin Oaks Valley Road

3.1.4 *Metered Freeway On-Ramps*

– Sycamore Avenue to WB SR 78
– WB San Marcos Boulevard to WB SR 78

4.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with a proposed Project requires an understanding of the existing transportation system within the Project area.

4.1 Existing Conditions

The segments included in the study area are briefly described below.

Gopher Canyon Road is classified as a 4.1B Major Road on the County's General Plan Mobility Element. Currently, it is built as a two-lane road with between 3 and 6-foot shoulders. The posted speed limit is 50 mph. No curb, gutters or sidewalks are provided.

Deer Springs Road is classified in the County's General Plan Mobility Element as a 6.2 Prime Arterial between the San Marcos City Limits and I-15 SB Ramps and as a 4.1B Major Road with Intermittent turn lanes between I-15 NB Ramps and Centre City Parkway/Champagne Blvd. (aka "Old Highway 395"). Deer Springs Road is currently constructed as a two-lane roadway within the Project study area. Parking is generally prohibited. The shoulders are unimproved. Deer Springs Road has both horizontal and vertical curves. The posted speed limit is 45 mph from Twin Oaks Valley Road to Sarver Lane and 55 mph from Sarver Lane to I-15. No bicycle lanes are currently provided, however the road is classified as a Class III bicycle route. The southern terminus of Deer Springs Road is at Twin Oaks Valley Road.

Mountain Meadow Road is classified 4.1B Major Road in the County's General Plan Mobility Element. It is currently built as a four-lane undivided road with a striped median between Champagne Boulevard (N. Centre City Parkway) and High Mountain Drive. East of High Mountain Drive, a two-way left-turn lane is provided up to Hidden Meadows Road. The posted speed limit is 50 mph. Paved shoulders are provided but no curb or sidewalks are provided. Parking is not permitted.

Twin Oaks Valley Road is classified as a Four-Lane (Rural) Arterial with Enhanced Bicycle/Pedestrian Facilities on the City of San Marcos Circulation Element north of Borden Road, and as a Four/Six-lane Arterial with Class II or III Bicycle Facilities and Sidewalks south of Borden Road. Within the City of San Marcos, Twin Oaks Valley Road is currently constructed as a two lane undivided roadway with a two-way left-turn lane from Deer Springs Road to Cassou Road. The configuration of the various segments of Twin Oaks Valley Road (TOVR) between Twin Oaks Crest Drive and San Marcos Boulevard are described below:

- From Twin Oaks Crest Drive to Deer Springs Road, TOVR is constructed as a two-lane roadway.
- From Deer Springs Road to Buena Creek Road, TOVR is constructed as a two-lane roadway with a Two-Way-Left-Turn (TWLT) lane. Curb, gutter and sidewalk are generally provided on the east side, and dirt shoulder on the west side of TVOR. The posted speed limit is 35 mph. Curbside parking is generally not permitted. Trucks over 7 tons are prohibited.

- From Buena Creek Road to Cassou Road, TOVR is constructed as a two-lane roadway with a TWLT lane. Curb, gutter and sidewalk are generally provided on the east side, and dirt shoulder on the west side of TOVR. The posted speed limit is 35 mph. Curbside parking is generally not permitted. Trucks over 7 tons are prohibited.
- The southern portion of TOVR between Cassou Road and La Cienega Road is constructed as a four-lane divided roadway with a TWLTL. Curb and gutter are generally provided. No sidewalks are provided. The posted speed limit is 45 mph. Curbside parking is generally not permitted. Trucks over 7 tons are prohibited.
- From La Cienega Road to Windy Way, TOVR is a Four-lane divided roadway with a raised median and a 50 mph speed limit. Curb and gutter are provided on the east side but not on the west side. Curbside parking is not permitted.
- From Windy Way to Borden Road, TOVR is a Four-Lane undivided roadway with a center TWLTL. Curb, gutter and sidewalk are provided on the west side but not on the east side. Curbside parking is not permitted. Bicycle lanes are provided.
- From Borden Road to Richmar Avenue, TOVR is a Four-Lane undivided roadway with a center TWLTL. Curb, gutter and sidewalk are provided on the west side but not on the east side. Curbside parking is not permitted. Bicycle lanes are provided.
- From Richmar Avenue to San Marcos Boulevard, Twin Oaks Valley Road is constructed as four-lane divided roadway with a raised median and a 45 mph speed limit. Bicycle lanes are provided.
- From San Marcos Boulevard to Barham Drive, Twin Oaks Valley Road is a six-lane divided roadway with a raised median and a 40 mph speed limit. Bicycle lanes are provided in both directions of travel on TOVR, and parking is generally prohibited. TOVR is grade-separated at Mission Road.

From north of Deer Springs Road to Gopher Canyon Road, TOVR is within the jurisdiction of San Diego County. TOVR is designated as a 2.2C Light Collector with intermittent turn lanes on the County's General Plan Mobility Element. Currently, TOVR north of the intersection with Deer Springs Road is a public road up to approximately 1,900 feet north of Par Valley Drive. A gate located at this point prevents through access on Twin Oaks Valley Road for a distance of approximately 7,000 feet. Further north, Twin Oaks Valley Road continues as a public Road to Gopher Canyon Road.

Buena Creek Road is classified as a 4.1B Major Road with intermittent turn lanes on the County's General Plan Mobility Element. Buena Creek Road is currently built as a rural two-lane roadway with fronting farmland and residential property and a 50 mph posted speed limit. Curb, gutter and sidewalks are generally not provided.

Monte Vista Drive is classified as a 4.1B Major Road with intermittent turn lanes on the County's General Plan Mobility Element between Foothill Drive and Buena Creek Road. Monte Vista Drive is currently built as a two-lane roadway. Curbside parking is generally not allowed, and the posted speed limit is 45 mph in the Project vicinity. Curb, gutter and sidewalks are generally not provided.

Champagne Boulevard is classified as a 4.1B Major Road with intermittent turn lanes on the County's General Plan Mobility Element within the Project area. Champagne Boulevard is currently

constructed as a two-lane roadway within the Project study area. Parking is generally prohibited. The shoulders are unimproved. The posted speed limit is 55 mph. Curb, gutter and sidewalks are generally not provided.

Mesa Rock Road is classified as a 2.2E Light Collector on the County's General Plan Mobility Element. It is currently constructed as a two-lane undivided roadway. Parking is generally prohibited. There is no posted speed limit. Curb, gutter and sidewalks are generally not provided.

North Centre City Parkway is classified as a 4.1B Major Road with intermittent turn lanes on the County's General Plan Mobility Element. North Centre City Parkway is currently constructed as a two-lane roadway within the Project study area. Parking is generally prohibited. The shoulders are unimproved. The posted speed limit is 55 mph. Curb, gutter and sidewalks are generally not provided.

Robelini Drive is an unclassified two-lane roadway. Curbside parking is not allowed. Robelini Drive provides access to residences and to South Santa Fe Avenue. The posted speed limit is 25 mph. Curb, gutter and sidewalks are generally not provided.

S. Santa Fe Avenue is classified as a 4.1A Major Road on the County's General Plan Mobility Element. South Santa Fe Avenue is currently constructed as a two-lane roadway with a center two-way left turn lane within the study area. Parking is generally prohibited. The posted speed limit is 45 mph. Curb, gutter and sidewalks are generally not provided.

Sycamore Avenue is classified as a 6.2 Prime Arterial on the County's General Plan Mobility Element. Sycamore Avenue is currently constructed as a six-lane divided roadway north of SR 78 and a four-lane divided roadway south of SR 78. Parking is generally prohibited. Curbs, gutters, and sidewalks are provided. Sycamore Avenue provides access to commercial land uses. The posted speed limit is 40 mph. Curb, gutter and sidewalks are generally provided. Bicycle lanes are also provided.

Interstate 15 is generally an eight-lane north/south freeway. Ramp interchanges are provided at Centre City Parkway, Deer Springs Road and Gopher Canyon Road within the Project study area.

State Route 78 is generally a six-lane east/west freeway connecting I-15 and I-5. Ramp interchanges are provided at Sycamore Avenue, San Marcos Boulevard and Twin Oaks Valley Road within the Project study area.

Figure 4–1 shows an existing conditions diagram, including signalized intersections and lane configurations.

4.2 Existing Bicycle Conditions

As described in Section 4.1, bicycle lanes are not provided along most of the study area roadways. Based on observation of existing conditions and a review of plans published by the City of San Marcos and County of San Diego, the following bicycle conditions in the Project study area are noted.

Deer Springs Road

Per the County's General Plan Mobility Element (North County Metro subarea), Deer Springs Road is designated a Class III Bicycle Route along its entire length from the San Marcos City Limits to Champagne Boulevard (N. Centre City Parkway). The portion of Deer Springs Road inside the City of San Marcos does not have an existing bicycle classification in the City's Mobility Element, however the road is designated as an arterial with enhanced bicycle/pedestrian facilities.

Twin Oaks Valley Road

On Twin Oaks Valley Road, bicycle infrastructure consisting of Class I and/or Class II facilities generally exist between Buena Creek Road all the way into the San Elijo Hills Community where Twin Oaks Valley Road becomes San Elijo Road. Beginning at Buena Creek Road and heading south, Class II Bicycle Lanes exist on both sides of the roadway all the way to the intersection with La Cienega Road. South of La Cienega, a Class I Bicycle Path exists along the east side of the roadway along the entire length of the Twin Oaks Golf Course to a point approximately 300 feet north of the intersection with Windy Way where it becomes a Class II Bicycle Lane. From approximately 300 feet north of Windy Way, Class II Bicycle Lanes generally exist all the way into the San Elijo Hills Community. Based on the City of San Marcos General Plan Mobility Element, Twin Oaks Valley Road is designated as an arterial with enhanced bicycle/pedestrian facilities with existing Class II Bicycle Lanes and a future Class I Bicycle Path. North of La Cienega, significantly more intersections exist along Twin Oaks Valley Road, making a Class I Bicycle Path potentially less ideal compared to Class II Bicycle Lanes.

Sycamore Avenue

Bicycle lanes are provided on both curbs along Sycamore Avenue between SR 78 and Robelini Drive.

4.3 Existing Pedestrian Conditions

Existing pedestrian conditions on the study area roads are described below. Most of the study area roadway segments are rural and sidewalks are not provided, other than those described below.

Deer Springs Road

There are no existing sidewalks on Deer Springs Road. However, in conjunction with the improvement of Deer Springs Road under either Option A or Option B, a ten-foot-wide multi-use pathway would be constructed along the north side of the road.

Mesa Rock Road

There is an existing sidewalk on the east side of the roadway beginning at the existing ARCO station and continuing north to the current terminus of the roadway.

Twin Oaks Valley Road

Sidewalk facilities exist along Twin Oaks Valley Road from approximately 300 feet south of its intersection with Deer Springs Road all the way into the San Elijo Hills Community where Twin Oaks Valley Road becomes San Elijo Road.

Beginning approximately 300 feet south of the Deer Springs Road intersection to its intersection with Olive Street, a concrete sidewalk exists along the east side of the road. Between Olive Street and Cassou Road, no defined sidewalk exists, however there is a dirt and gravel walking path along the east side of the road. Between Cassou Road to approximately 300 feet north of Windy Way, there is a multi-use pathway on the east side of the road that is physically separated from the road by wooden fencing. The multi-use pathway merges with a sidewalk approximately 300 feet north of Windy Way.

The pedestrian path continues as a standard sidewalk to Windy Way. Beginning approximately 1,000 feet south of the intersection with Del Roy Drive and exiting a small residential community across from Twin Oaks Golf Course, an elevated pathway exists along the west side of Twin Oaks Valley Road until it merges with a concrete sidewalk near the intersection with Legacy Drive. From Legacy Drive to Richmar Avenue, continuous sidewalks are provided on the west side of the roadway. From Richmar to the SR-78 ramps, sidewalks are provided on both sides of the roadway. South of SR-78 ramps, sidewalks or pedestrian pathways generally are provided on one or both sides of the roadway for the remaining portion of Twin Oaks Valley Road all the way into the San Elijo Hills Community.

4.4 Existing Transit Conditions

There are no public transit services which stop at or within the immediate vicinity of the project Site. Service could potentially be provided in the future by the North County Transit District (NCTD). It is also worth noting that the Riverside Transit Agency (RTA) currently operates a Commuter Link Express Route (Route 217) along the I-15 corridor with morning and evening service between Hemet, Murrieta, Temecula, and the Escondido Transit Center.

4.5 Existing Traffic Conditions

4.5.1 *Segment Volumes*

Table 4–1 provides a summary of the average daily traffic (ADT) volumes derived from traffic counts conducted by LLG during April 2015 for all segments except Sycamore Avenue, where counts were conducted in September 2014. ***Figure 4–2*** shows the Existing segment traffic volumes.

4.5.2 *Peak Hour Intersection Turning Movement Volumes*

Peak hour turning movement counts were conducted at the study area intersections during April 2015. ***Figure 4–3*** depicts the Existing AM / PM peak hour traffic volumes.

Appendix A contains the 24-hour segment tube and peak hour intersection turning movement count sheets. Signal timing plans from Caltrans for the I-15 and SR 78 ramp intersections and City of San Marcos signalized intersections are also included in *Appendix A.*

4.5.3 *Freeway Mainline Segment Volumes*

The daily freeway mainline segment volumes were obtained from the Year 2015 Freeway Volumes obtained from the Caltrans Performance Measurement System (PeMS). ***Figure 4–4*** depicts the daily freeway mainline segment volumes.

4.6 Study Area Aerial Photos

Images depicting existing conditions of the study area intersections, segments, freeway mainline segments and metered freeway on-ramps are included on the following pages.

TABLE 4–1
EXISTING TRAFFIC VOLUMES

Street Segment	Count Date	ADT[a]
Deer Springs Road		
Twin Oaks Valley Road to Sarver Lane	April 16, 2015	18,800
Sarver Lane to Mesa Rock Road	April 16, 2015	19,400
Mesa Rock Road to I-15	April 16, 2015	22,600
I-15 to Champagne Blvd	April 16, 2015	12,100
Mountain Meadow Road		
East of Champagne Blvd	April 16, 2015	8,000
Twin Oaks Valley Road		
Solar Lane to Deer Springs Road	April 16, 2015	3,000
Deer Springs Road to Buena Creek Road	April 15, 2015	20,700
Buena Creek Road to Cassou Road	April 15, 2015	18,400
Cassou Road to La Cienega Road	April 16, 2015	18,000
La Cienega Road to Windy Way	April 15, 2015	20,300
Windy Way to Borden Road	April 15, 2015	21,100
Borden Road to Richmar Avenue	April 16, 2015	29,000
Richmar Avenue to San Marcos Boulevard	April 15, 2015	31,000
San Marcos Boulevard to SR 78 WB Ramps	April 15, 2015	39,100
SR 78 to Barham Dr / Discovery St	December 3, 2015	46,800
Buena Creek Road		
S. Santa Fe Avenue to Monte Vista Drive	April 15, 2015	9,200
Monte Vista Drive to Twin Oaks Valley Rd.	April 15, 2015	10,400
Monte Vista Drive		
Foothill Drive to Buena Creek Road	April 15, 2015	9,100
Mesa Rock Road		
Deer Springs Road to N. Centre City Parkway	April 16, 2015	1,000

CONTINUED ON THE NEXT PAGE

TABLE 4–1 (CONTINUED)
EXISTING TRAFFIC VOLUMES

Street Segment	Count Date	ADT[a]
Gopher Canyon Road		
Little Gopher Canyon Road to I-15 Ramps	April 16, 2015	16,000
I-15 Ramps to Champagne Boulevard	April 16, 2015	14,400
Champagne Boulevard		
Old Castle Road to Lawrence Welk Drive	April 16, 2015	5,400
Lawrence Welk Drive to Mountain Meadow Road	April 16, 2015	7,400
North Centre City Parkway		
Mountain Meadow Rd to I-15 Ramps	April 16, 2015	5,800
I-15 Ramps Road Country Club Lane	April 15, 2015	10,900
Robelini Drive		
Sycamore Avenue to South Santa Fe Avenue	April 15, 2015	16,900
South Santa Fe Avenue		
Robelini Drive to Buena Creek Road	April 15, 2015	15,900
Sycamore Avenue		
University Drive to SR 78 WB Ramps	September 24, 2014	34,100

Footnote:

a. Average Daily Traffic Volumes.

General Note:

All counts were rounded to the nearest 100.

STUDY AREA INTERSECTIONS

1. Champagne Boulevard / Gopher Canyon Road

2. Champagne Boulevard / Old Castle Road

3. Champagne Boulevard / Lawrence Welk Road

4. Champagne Boulevard / Mountain Meadow Road

5. Deer Springs Road / I-15 NB Ramps

6. Deer Springs Road / I-15 SB Ramps

STUDY AREA INTERSECTIONS

7. Deer Springs Road / Mesa Rock Road

11. Twin Oaks Valley Road / Camino Mayor

9. Deer Springs Road / Sarver Lane

12. Deer Springs Road / Twin Oaks Valley Road

10. Deer Springs Road / Sycamore Road

13. Twin Oaks Valley Road / Buena Creek Road

STUDY AREA INTERSECTIONS

14. Twin Oaks Valley Road / Cassou Road

15. Twin Oaks Valley Road / La Cienega

16. Twin Oaks Valley Road / Del Roy Drive

17. Twin Oaks Valley Road / Windy Way

18. Twin Oaks Valley Road / Borden Road

19. Twin Oaks Valley Road / Richmar Avenue

STUDY AREA INTERSECTIONS

20. Twin Oaks Valley Road / San Marcos Boulevard

21. Twin Oaks Valley Road / SR 78 WB Ramps

22. Twin Oaks Valley Road / SR 78 EB Ramps

23. Robelini Drive / S. Santa Fe Avenue

24. Sycamore Avenue / SR 78 WB Ramps

25. Sycamore Avenue / SR 78 EB Ramps

STUDY AREA INTERSECTIONS

26. Buena Creek Road / South Santa Fe Avenue

27. Buena Creek Road / Monte Vista Road

28. SMB / Knoll Road / SR 78 WB Ramps

29. San Marcos Boulevard / SR 78 EB Ramps

30. Mission Road / Vineyard Road

31. N. Centre City Parkway / Mesa Rock Road

32. N. Centre City Parkway / Country Club Lane

33. Twin Oaks Valley Road / Barham Drive / Discovery Street

Index:

NB – Northbound
SB – Southbound
WB – Westbound
EB – Eastbound
SMB – San Marcos Boulevard

STUDY AREA SEGMENTS

1. DSR: Twin Oaks Valley Road to Sarver Lane

2. DSR: Sarver Lane to Mesa Rock Road

3. DSR: Mesa Rock Road to I-15

4. DSR: I-15 to Champagne Boulevard

5. MMR: E/O Champagne Boulevard

6. TOVR: Solar Lane to Deer Springs Road

7. TOVR: Deer Springs Road to Buena Creek Road

8. TOVR: Buena Creek Road to Cassou Road

9. TOVR: Cassou Road to La Cienega Road

10. TOVR: La Cienega Road to Windy Way

11. TOVR: Windy Way to Borden Road

12. TOVR: Borden Road to Richmar Avenue

13. TOVR: Richmar Avenue to San Marcos Boulevard

14. TOVR: San Marcos Boulevard to SR 78 WB Ramps

15. BCR: S Santa Fe Avenue to Monte Vista Drive

16. BCR: Monte Vista Drive to Twin Oaks Valley Road

17. MVD: Foothills Drive to Buena Creek Road

18. MRR: Deer Springs Road to N Centre City Parkwa

19. GCR: Little Gopher Canyon Road to I-15 Ramps

20. GCR: I-15 Ramps to Champagne Boulevard

21. CB: Old Castle Road to Lawrence Welk Drive

22. CB: Lawrence Welk Drive to MMR

23. NCCP: Mountain Meadow Road to I-15 Ramps

24. NCCP: I-15 Ramps to Country Club Drive

25. RD: Sycamore Avenue to S Santa Fe Avenue

26. SSFA: Woodland Drive to Buena Creek Road

27. SA: SR 78 Ramps to University Drive

Index:

DSR – Deer Springs Road
MMR – Mountain Meadow Road
E/O – East of
TOVR – Twin Oaks Valley Road
BCR – Buena Creek Road
MVD – Monte Vista Drive
MRR – Mesa Rock Road
GCR – Gopher Canyon Road
CB – Champagne Boulevard
NCCP – North Centre City Parkway
RD – Robelini Drive
SSFA – South Santa Fe Avenue
SA – Sycamore Avenue

STUDY AREA FREEWAY MAINLINE SEGMENTS

1. I-15: GOPHER CANYON ROAD TO DEER SPRINGS RD

2. I-15: DEER SPRINGS ROAD TO CENTRE CITY PKWY

3. I-15: CENTRE CITY PARKWAY TO EL NORTE PKWY

4. SR 78: MAR VISTA DRIVE TO SYCAMORE DRIVE

5. SR 78: SYCAMORE DRIVE TO RANCHO SANTA FE

6. SR 78: RANCHO SANTA FE TO LAS POSAS

7. SR 78: LAS POSAS TO SAN MARCOS BOULEVARD

8. SR 78: SAN MARCOS BLVD TO TWIN OAKS VALLEY RD

STUDY AREA METERED ON-RAMPS

1. Sycamore Avenue on-Ramp to WB SR 78
(Plan View)

(Street View)

2. San Marcos Boulevard on-Ramp to WB SR 78
(Plan View)

(Street View)

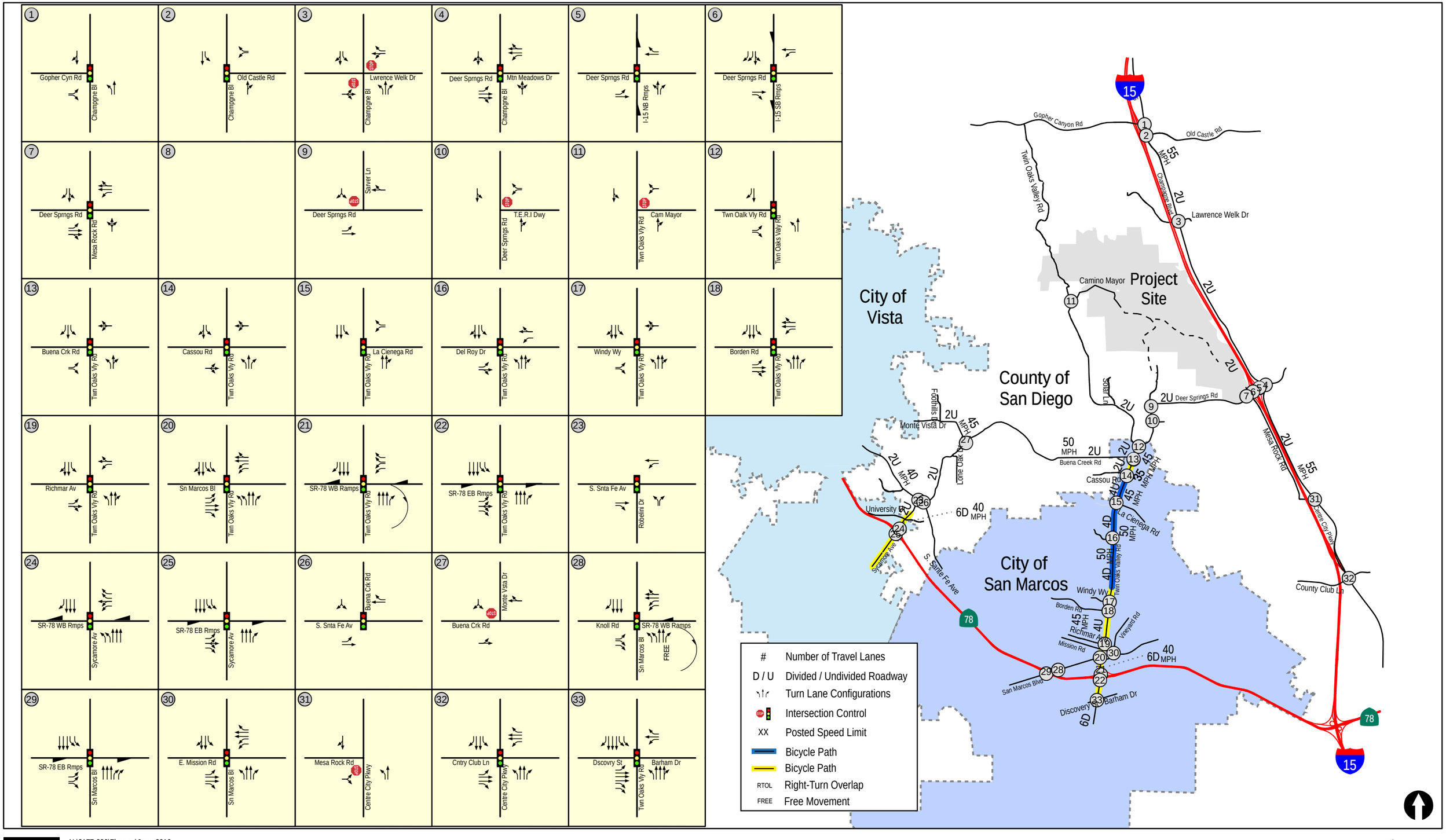

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Figure 4-1

Existing Conditions Diagram

SIERRA

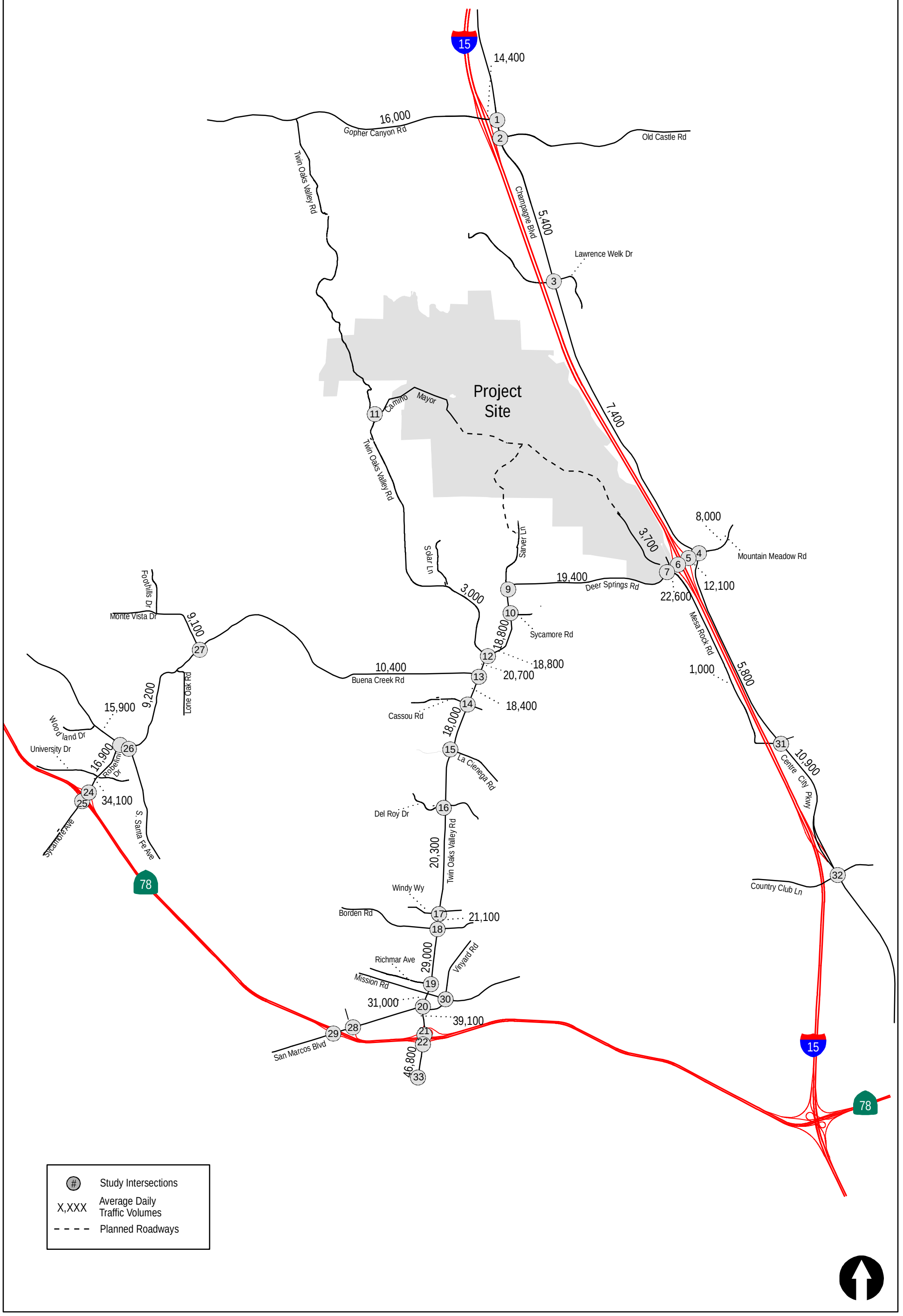

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Figure 4-2

Existing Segment Traffic Volumes

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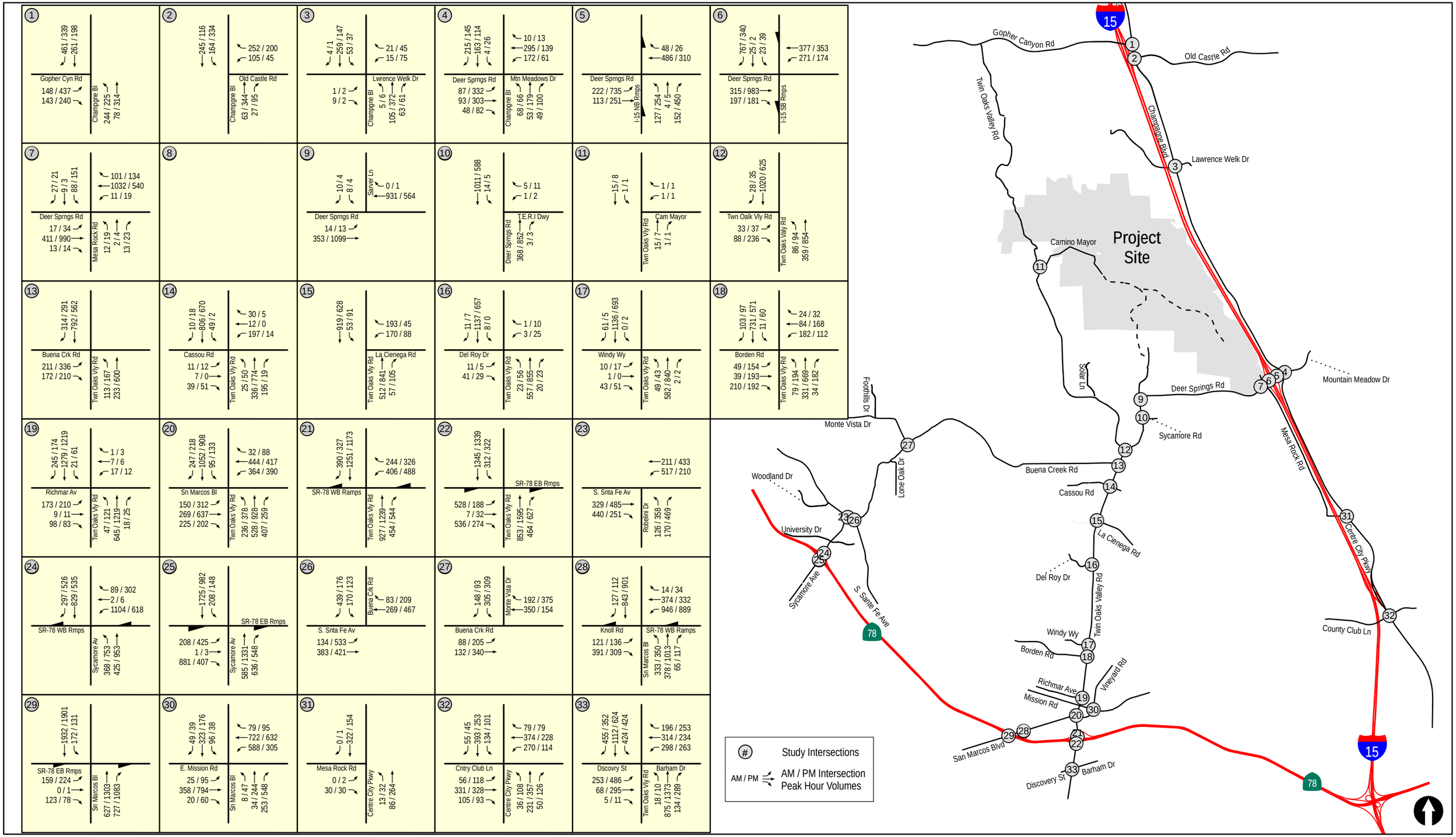

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Figure 4-3

Existing AM / PM Peak Hour Traffic Volumes

SIERRA

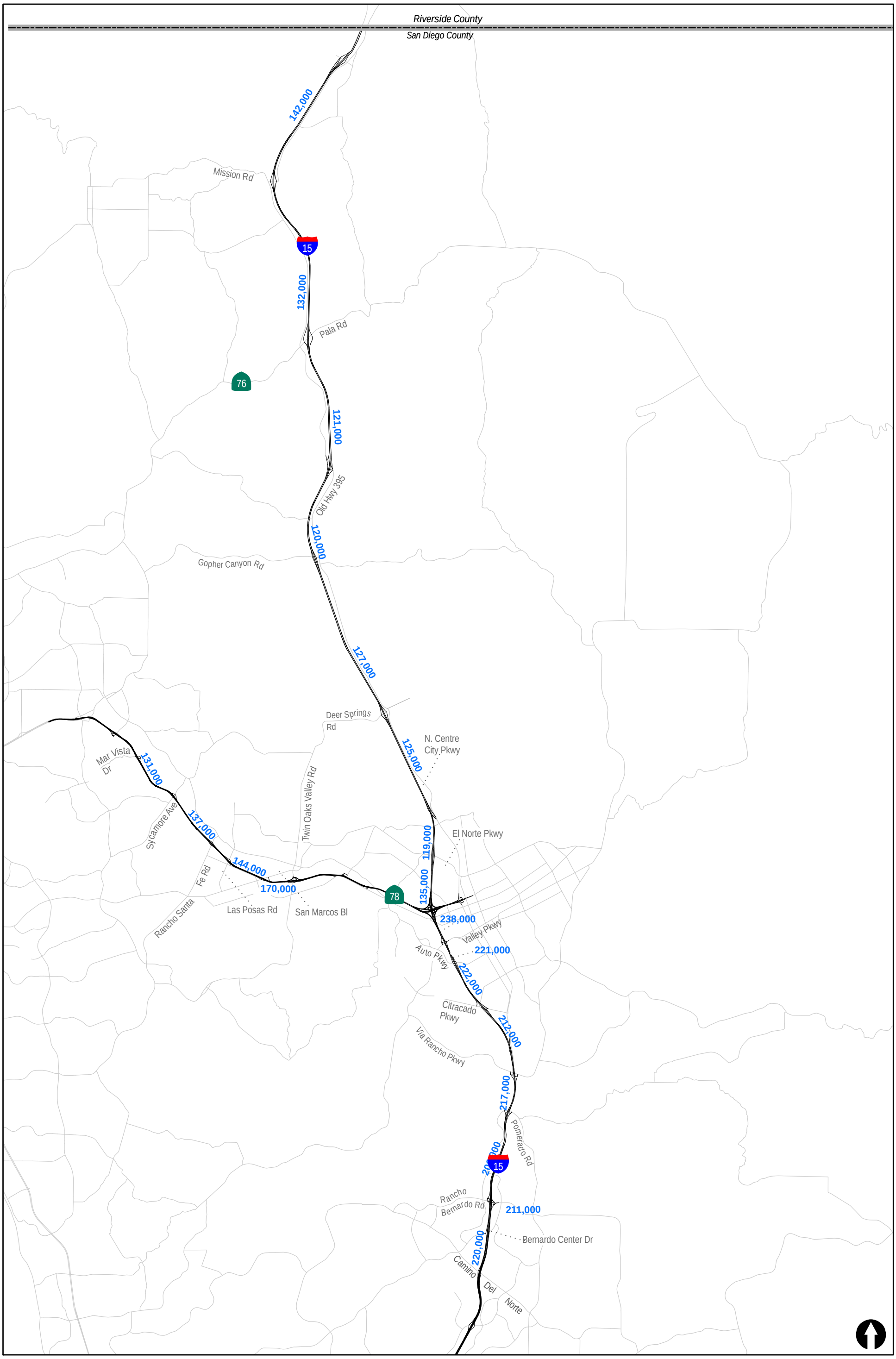

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Figure 4-4

Existing Freeway Mainline Daily Traffic Volumes

I-15 / Deer Springs Road Interchange - PSR

5.0 NETWORK OPTIONS, ANALYSIS SCENARIOS AND METHODOLOGY

This Traffic Impact Analysis includes a number of scenarios used to assess direct and cumulative impacts to the road network as well as buildout conditions in the County and the City of San Marcos. Some of these scenarios also include road network options that would affect the background traffic volumes along the roadways analyzed depending what portions of the road network are assumed to be complete.

5.1 County Network Adjustments

5.1.1 *Sierra Project Option A General Plan Reclassifications*

As previously noted, *Option A* would reclassify Deer Springs Road in the County's General Plan to be a 4.1A Major Road between Twin Oaks Valley Road and Sarver Lane, to be a 2.1B Community Collector between Sarver Lane and Mesa Rock Road, and to be a 4.1B Major Road between Mesa Rock Road and the I-15 Northbound Ramps (along the east side of I-15) at the I-15/Deer Springs Road Interchange. For two of five County Long-Term GP 2030 scenarios described below, Deer Springs Road is modeled based on these reclassifications as proposed under Option A.

5.1.2 *Existing County General Plan Deer Springs Road Classifications*

For three of five County Long-Term GP 2030 scenarios and all four of the City of San Marcos Horizon Year scenarios described below, Deer Springs Road is modeled based on its existing General Plan Mobility Element Classifications, as a 6.2 Prime Arterial from its terminus at Twin Oaks Valley Road to the I-15 Southbound Ramps (along the west side of I-15) at the I-15/Deer Springs Road Interchange and as a 4.1B Major Road between the I-15 Southbound Ramps at the Interchange and the N. Centre City Parkway/Champagne Boulevard.

5.1.3 *Mountain Meadow Road Connection to Valley Center Road*

The County General Plan Mobility Element includes a connection of Mountain Meadow Road/Mirar de Valle Road (SC 990 2) between the current terminus of Mountain Meadow Road and Valley Center Road. This road connection would add a significant amount of traffic to Deer Springs Road although no funding or timetable has been identified to construct this road segment.

Although the Mountain Meadow Road extension does not currently exist, one of the two Existing Plus Project Plus Cumulative Projects scenarios and two of five County GP 2030 Long-Term scenarios were conducted without the connection of Mountain Meadow Road to the future Mirar de Valle, termed "Without Mountain Meadow Road Connection" in this report.

5.2 Analysis Scenarios

This traffic analysis assesses the study area intersections, street segments, freeway mainline segments and metered freeway On-Ramps, in the Project area. The study area locations were analyzed in each of the following scenarios to determine the potential impacts to the road network:

- **Existing:** This scenario contains the existing traffic volumes on the road network based on traffic counts performed for the Project and based on the existing condition of the road network. No improvements to the road network are assumed.
- **Existing + Project:** This scenario contains the existing traffic volumes plus the Project traffic volumes on the road network based on the existing condition of the road network and the distribution of Project traffic on the road network as generated by SANDAG Series 12 Year 2020 Model. No improvements to the road network are assumed.
- **Existing + Project + Cumulative:** This scenario contains the existing traffic volumes plus the Project traffic volumes plus the traffic volumes generated by cumulative projects (listed in *Table 9-1*) based on the existing road network.
- **Existing + Project + Cumulative Projects (With Mountain Meadow Road connection)**: This scenario contains the existing traffic volumes plus the Project traffic volumes plus the traffic volumes generated by cumulative projects (listed in *Table 9-1*) based on the existing road network with one exception, Mountain Meadow Road being connected to Valley Center Road. The connection of Mountain Meadow Road would result in increased background traffic along the road network analyzed by the Project.
- **Long-Term County GP Buildout with Existing General Plan Land Uses (Without Project):** This scenario contains the traffic volumes on the road network analyzed by the Project based on buildout of the County's General Plan Land Uses and the County's Mobility Element Road Network, assuming buildout of the Project Site consistent with the existing General Plan Land Uses for the Project Site.
- **Long-Term County GP Buildout With Project – Deer Springs Road Reclassified under Option A:** This scenario contains the traffic volumes on the road network analyzed by the Project based on buildout of the County's General Plan Land Uses and the County's Mobility Element Road Network, assuming buildout of the Project Site consistent with the Project's proposed Land Uses and Deer Springs Road is reclassified as proposed by the Project's Option A.
- **Long-Term County GP Buildout With Project – Deer Springs Road Reclassified under Option A, Without Mountain Meadow Road connection:** This scenario contains the traffic volumes on the road network analyzed by the Project based on buildout of the County's General Plan Land Uses and the County's Mobility Element Road Network, assuming buildout of the Project Site consistent with the Project's proposed Land Uses, Deer Springs Road is reclassified as proposed by the Project's Option A, and Mountain Meadow Road is not connected.
- **Long-Term County GP Buildout With Project – Deer Springs Road as a 6.2 Prime Arterial:** This scenario generates the traffic volumes on the road network analyzed by the Project based on buildout of the County's General Plan Land Uses and the County's Mobility Element Road Network, assuming buildout of the Project Site consistent with the

Project's proposed Land Uses and Deer Springs Road is built to its existing General Plan Mobility Element Classification as a 6.2 Prime Arterial.

- **Long-Term County GP Buildout With Project – Deer Springs Road as a 6.2 Prime Arterial Without Mountain Meadow Road connection:** This scenario generates the traffic volumes on the road network analyzed by the Project based on buildout of the County's General Plan and the County's Mobility Element Road Network, assuming buildout of the Project Site consistent with the Project's proposed Land Uses, Deer Springs Road is built to its existing General Plan Mobility Element Classification as a 6.2 Prime Arterial, and Mountain Meadow Road is not connected.
- **City of San Marcos Horizon Year 2035 Without Project, Full Road Network Buildout:** This scenario generates traffic volumes on the road network within the City of San Marcos analyzed by the Project based on buildout of the City's General Plan, buildout of the Project Site consistent with the Project Site's existing General Plan Land Uses, and full buildout of the road network.
- **City of San Marcos Horizon Year 2035 With Project, Full Road Network Buildout:** This scenario generates traffic volumes on the road network within the City of San Marcos analyzed by the Project based on buildout of the City's General Plan, buildout of the Project Site consistent with the Project's proposed General Plan Land Uses, and full buildout of the road network.
- **City of San Marcos Horizon Year 2035 Without Project, Modified Road Network Buildout:** This scenario generates traffic volumes on the road network within the City of San Marcos analyzed by the Project based on buildout of the City's General Plan, buildout of the Project Site consistent with the Project Site's existing General Plan Land Uses, and buildout of the road network with the following exceptions: Los Posas Road would not be connected to Buena Creek, Buena Creek would not be widened and improved to a 4.1A Major Road Classification, and the Richmar Bridge would not be built.
- **City of San Marcos Horizon Year 2035 With Project, Modified Road Network Buildout:** This scenario generates traffic volumes on the road network within the City of San Marcos analyzed by the Project based on buildout of the City's General Plan, buildout of the Project Site consistent with the Project's proposed General Plan Land Uses, and buildout of the road network with the following exceptions: Los Posas Road would not be connected to Buena Creek, Buena Creek would not be widened and improved to a 4.1A Major Road Classification, and the Richmar Bridge would not be built.

5.3 Analysis Methodology

There are various methodologies used to analyze signalized intersections, unsignalized intersections, and street segments. The measure of effectiveness for intersection and segment operations is level of service (LOS), which denotes the operating conditions which occur at a given intersection or on a given roadway segment under various traffic volume loads.

LOS is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Levels of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments. In the 2000 Highway Capacity Manual (HCM), Level of Service for signalized intersections is defined in terms of delay. The level of service analysis results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

Table 5–1 summarizes the signalized intersections levels of service descriptions. ***Table 5–2*** depicts the intersection LOS and corresponding delay ranges, which are based on overall intersection delay (signalized intersections) and the average control delay for any particular minor movement (unsignalized intersections), respectively. LOS relative to signalized and unsignalized intersection is further described below.

5.3.1 *Signalized Intersections*

For signalized intersections, level of service criteria is stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of service B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of Average delay.

Level of service C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of service D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher volume (demand) / capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are frequent.

TABLE 5–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

Level of Service	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 5–2
INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: 2000 Highway Capacity Manual

Level of service E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of service F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

5.3.2 *Unsignalized Intersections*

For unsignalized intersections, level of service is determined by the computed or measured control delay and is defined for each minor movement: level of service is not defined for the intersection as a whole. Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

5.3.3 *Street Segments*

San Diego County

Street segment analysis for streets within the San Diego County is based upon the comparison of daily traffic volumes (ADTs) to the County of San Diego's *Roadway Classification, Level of Service, and ADT Table*. ***Table 5–3*** is the County of San Diego's *Average Daily Vehicle Trips* table. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics.

TABLE 5–3
AVERAGE DAILY VEHICLE TRIPS – COUNTY OF SAN DIEGO

MOBILITY ELEMENT ROADS			LEVELS OF SERVICE				
Roadway Classification		**#of Travel Lanes**	**A**	**B**	**C**	**D**	**E**
Expressway (6.1)		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median (4.1A)	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000	<28,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous Left-Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lanes (2.1C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Continuous Left-Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lanes (2.2C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	W/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700	<9,700
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ Intermittent (Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000	<8,000
NON-MOBILITY ELEMENT ROADS **			LEVELS OF SERVICE				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector ***		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road ***		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

The values shown may be subject to adjustment based on the geometry of the roadway side frictions, and other relevant factors as determined by the Director, Department of Public Works.
**Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.
***Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.
****See Tables 2A and 28 for roadway surfacing and right-of-way widths.

City of Escondido

Street segment analysis for streets within the City of Escondido is based upon the comparison of daily traffic volumes (ADTs) to the City of Escondido's *Proposed ADT Thresholds for Roadway Segments*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics.

Table 5–4 is the City of Escondido's *Proposed Level of Service Standards* table.

TABLE 5-4
CITY OF ESCONDIDO PROPOSED LEVEL OF SERVICE STANDARDS
STREET SEGMENT AVERAGE DAILY VEHICLE TRIP THRESHOLDS

Street Classification	Lanes	Cross Sections	Level of Service				
			A	B	C	D	E
Prime Arterial	(8 lanes)	116/136 (NP)	23,800	37,800	51,800	56,700	70,000
	(6 lanes)	106/126 (NP)	20,400	32,400	44,400	48,600	60,000
Major Road	(6 lanes)	90/110 (NP)	17,000	27000	37,000	40,500	50,000
	(4 lanes)	82/102 (NP)	12,600	20,000	27,400	30,000	37,000
Collector	(4 lanes)	64/84 (NP)	11,600	18,500	25,300	27,700	34,200
	(4 lanes)	(WP)	6,800	10,800	14,800	16,200	20,000
Local Collector	(2 lanes)	42/66 (NP)	5,100	8,100	11,100	12,200	15,000
Rural Collector	(2 lanes)	(WP)	3,400	5,400	7,400	8,100	10,000

(NP) - No Parking

(WP) - With Parking

1) Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

2) This table is not applicable for street networks where two intersecting streets both operate at or below LOS C or where one street operates at or below LOS D. In those cases detailed peak hour capacity analyses are necessary.

City of San Marcos

Street segment analysis for streets within the City of San Marcos is based upon the comparison of daily traffic volumes (ADTs) to the City of San Marcos' *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics.

Table 5–5 is the City of San Marcos' *Daily Roadway Segment Capacity* table.

TABLE 5–5
CITY OF SAN MARCOS
DAILY ROADWAY SEGMENT CAPACITY

Street Typology	Typical Lane Configuration	Vehicular Level of Service				
		LOS A	LOS B	LOS C	LOS D	LOS E
Existing Roadway Classifications / Standards						
Prime Arterial	7 to 8 lanes	29,200	40,800	58,300	64,200	70,000
Prime Arterial	6 lanes	25,000	35,000	50,000	55,000	60,000
Major Arterial	5 lanes	18,000	25,000	35,000	40,000	45,000
Major Arterial	4 lanes	15,000	21,000	30,000	35,000	40,000
Secondary Arterial	5 lanes	12,500	17,500	25,000	31,300	37,500
Secondary Arterial	4 lanes	10,000	14,000	20,000	25,000	30,000
Secondary Arterial	3 lanes	7,500	10,500	15,000	18,000	22,500
Collector	2 lanes plus TWLTL	5,000	7,000	10,000	13,000	15,000
Collector	2 lanes	2,500	3,500	5,000	6,500	8,000
General Plan Complete Street Typology Standards						
Arterial	8 lanes	29,200	40,800	58,300	64,200	70,000
Arterial	6 lanes	25,000	35,000	50,000	55,000	60,000
Arterial with Class II or Class III Bicycle Lanes	4 lanes	15,000	21,000	30,000	35,000	40,000
Arterial with enhanced Bicycle facilities	4 lanes	15,000	21,000	30,000	35,000	40,000
Multi-Way Boulevard	4 lanes for through trips, two lanes for local serving trips [1]	16,800	25,200	31,500	37,800	42,000
Industrial Collector	4 lanes	10,000	14,000	20,000	25,000	30,000
Collector & Main Street	2 lanes plus TWLTL	5,000	7,000	10,000	13,000	15,000
Collector & Main Street	2 lanes [2]	2,500	3,000	5,000	6,500	8,000
Freeway	Mixed-Flow Lane [3]	-	-	1,760	1,980	2,200
Freeway	HOV Lanes [3]	-	-	1,440	1,620	1,800

Note:
These are general capacities for planning purposes. Specific operational characteristics, such as signal coordination, can enhance operations significantly.

1. LOS thresholds were calculated based on V/C ratios of the daily threshold volumes for the corresponding roadway classification. Multi-way Boulevard
2. Capacity assumes a similar capacity as a 4-lane arterial plus an additional 1,000 ADT capacity per lane for the local service roadway.
3. With fronting commercial or residential property
4. Per lane capacities presented.

Source: SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region, 2000.

5.3.4 *Freeway Mainline Operations*

Freeway segments were analyzed for all analysis scenarios. Freeway segment LOS is based on the volume to capacity ratio on the freeway. The analysis of freeway segment LOS is based on the procedure developed by CALTRANS District 11 based on methods described in the *Highway Capacity Manual*. The procedure involves comparing the peak hour volume of the mainline segment to the theoretical capacity of the roadway (V/C).

Table 5–5 summarizes the Freeway Segment level of service definitions.

TABLE 5–5
CALTRANS DISTRICT 11 - FREEWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LOS	V/C	Congestion / Delay	Traffic Description
USED FOR FREEWAYS, EXPRESSWAYS AND CONVENTIONAL HIGHWAYS			
A	<0.41	None	Free flow
B	0.42-0.62	None	Free to stable flow, light to moderate volumes.
C	0.63-0.80	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.81-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
E	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
USED FOR FREEWAYS AND EXPRESSWAYS			
F(0)	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
F(l)	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
F(2)	1.36-1.45	Very Severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
F(3)	>1.46	Extremely Severe : 3+ hours of delay	Gridlock

The procedure for calculating freeway LOS involves the estimation of volume to capacity (V/C) ratio using the following equation:

$$V/C = \frac{\text{(Daily Volume * Peak Hour Percent * Directional Factor * Truck Factor)}}{\text{Capacity}}$$

Notes:

a. Daily Volume = Annual Average Daily Traffic (AADT)
b. Peak Hour Percent = Percentage of ADT occurring during the peak hour.
c. Directional Factor = Percentage of peak hour traffic occurring in peak direction.
d. Truck Factor = Truck/terrain factor to represent influence of heavy vehicles & grades.
e. Capacity = 2,000 vehicles/lane/hour/lane for mainline, and 1,200 for auxiliary lanes.

The resulting V/C is then compared to accepted ranges of V/C values corresponding to the various Levels of Service for each facility classification, as shown in *Table 5–5*. The corresponding Level of Service represents an approximation of existing or anticipated future freeway operating conditions in the peak direction of travel during the peak hour.

The Year 2015 Freeway Volumes obtained from the Caltrans Performance Measurement System (PeMS) and the most current available Truck Factors are included in *Appendix A*.

5.3.5 *Metered Freeway Ramps*

A ramp meter analysis was conducted at the metered ramps in the study area to which the Project would add the specified amount of traffic. The following two metered on-ramps to SR 78 are analyzed since the Project would add more than 20 peak hour trips to the on-ramps.

- Sycamore Avenue to WB SR 78
- WB San Marcos Boulevard to WB SR 78

BACKGROUND

The measure of effectiveness (MOE) for the metered freeway ramp analysis is delay in minutes. Ramp meter flow rates characteristically vary throughout the peak hour based on the performance of the freeway mainline. As the mainline becomes more congested, the ramp meter rates decline, allowing fewer vehicles onto the freeway in the same time period.

ANALYSIS METHODOLOGY

The ramp meters were analyzed using the Fixed Rate Method. With the Fixed Rate Method, using the most restrictive flow rate during the peak hour, the total discharge and delay (in minutes) are calculated and the corresponding queue lengths are calculated.

The metering information was obtained from Caltrans for the ramps listed above and is included in *Appendix A*.

6.0 SIGNIFICANCE CRITERIA

The Project study area includes transportation facilities primarily within the jurisdiction of San Diego County. However, some facilities analyzed in this study area are located within neighboring jurisdictions. Per the *County of San Diego Report Format & Content Requirements, Transportation and Traffic*, August 2011:

> "If road segments, intersections, or other facilities (e.g. freeway ramps) will be affected by project traffic that are located in another jurisdiction or under the jurisdiction of Caltrans, identify the location and jurisdiction of these facilities and different significance guideline/methodology that will be used. In determining the significance of impacts for road segments and intersections outside of the County of San Diego's jurisdiction, the level of service standards and significance guidelines used by the applicable jurisdiction or agency shall be used."

Thus, the significance criteria of the jurisdiction within which a transportation facility is located was used to determine significance. Hence, the significance criteria for the following jurisdictions are included in this section:

- San Diego County
- City of San Marcos
- City of Escondido

6.1 San Diego County Criteria

The following criterion was utilized to evaluate potential significant impacts, based on the County's document: "*Guidelines for Determining Significance*" updated on August 24, 2011.

6.1.1 *Road Segments*

Pursuant to the County's General Plan Mobility Element Policy M2.1, new development must provide improvements or other measures to mitigate traffic impacts to avoid:

a. Reduction in Level of Service (LOS) below "C" for on-site Mobility Element roads;

b. Reduction in LOS below "D" for off-site and on-site abutting Mobility Element roads; and

c. "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project cannot be approved unless a statement of overriding considerations is made pursuant to the State CEQA Guidelines. However, the General Plan Mobility Element does not include specific guidelines for determining the amount of additional traffic that would "significantly impact congestion" on such roads.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in ***Table 6–1***. The thresholds in *Table 6–1* are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

TABLE 6–1
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO MOBILITY ELEMENT ROAD SEGMENTS
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS

Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

General Notes:

1. By adding proposed Project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

On-site Mobility Element Roads—The Mobility Element states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Mobility Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours.

Off-Site Mobility Element Roads— The Mobility Element also addresses offsite Mobility Element roads. It states that "new development shall provide off-site improvements designed to contribute to the overall achievement of a Level of Service D on Mobility Element Roads." Implementation Measure 1.1.3 addresses projects that would significantly impact congestion on roads operating at LOS E or F. It states: "new development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to attain a LOS to D or better or appropriate mitigation is provided." The following significance guidelines define a method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service impact on a road segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Mobility Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Mobility Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in *Table 6–1*, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

6.1.2 *Intersections*

This section provides guidance for evaluating adverse effects a project may have on signalized and unsignalized intersections. ***Table 6–2*** was obtained from the County guidelines and summarizes the allowable increases in delay or traffic volumes at signalized and unsignalized intersections. Exceeding the thresholds in *Table 6–2* would result in a significant impact.

TABLE 6–2
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO INTERSECTIONS
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS

Level of service	Signalized	Unsignalized
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement

General Notes:

1. A critical movement is an intersection movement (right-turn, left-turn and through-movement) that experiences excessive queues, which typically operate at LOS F.
2. By adding proposed Project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
4. For determining significance at signalized intersections with LOS F conditions, the analysis must evaluate both the delay ***and*** the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

Signalized Intersections—Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in *Table 6–2*.
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.

Unsignalized Intersections—The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic impact on an unsignalized intersection as listed in *Table 5–2* and described as text below:

- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.

6.2 City of San Marcos

A project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds shown in ***Table 6–3*** below for freeway segments, roadway segments, intersections, and ramp meter facilities are based on published San Diego Traffic Engineers' Council (SANTEC) guidelines. If the project exceeds the thresholds in *Table 6–3*, then the project may be considered to have a significant direct or cumulative impact. A significant impact can also occur if a project causes the Level of Service to degrade from D to E, even if the allowable increases in *Table 6–3* are not exceeded. Feasible mitigation measures would need to be identified to reduce the impact to fall below the identified thresholds (pre-project + allowable increase) or the impact would be considered significant and unavoidable.

The impact is designated either a "direct" or "cumulative" impact.

> "*Direct* traffic impacts are those projected to occur at the time a proposed development becomes operational, including other developments not presently operational but which are anticipated to be operational at that time (near term)."

"*Cumulative* traffic impacts are those projected to occur at some point after a proposed development becomes operational, such as during subsequent phases of a project and when additional proposed developments in the area become operational (short-term cumulative) or when affected community plan area reaches full planned buildout (long-term cumulative)."

For intersections and roadway segments affected by a project, level of service (LOS) D or better is considered acceptable under both direct and cumulative conditions."

TABLE 6–3
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project[a]	Allowable Increase Due to Project Impacts[b]					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E & F (*or ramp meter delays above 15 minutes*)	0.01	1	0.02	1	2	2[c]

Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

c. The impact is only considered significant if the total delay exceeds 15 minutes.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
4. LOS = Level of Service

6.3 City of Escondido

The following is a summary of the City of Escondido's published significance criteria.

In accordance with "SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region", the following thresholds shall be used to identify if a project is of significant traffic impact under any scenario. Based on SANTEC/ITE guidelines, if now or in the future, the project's traffic impact causes the values in ***Table 6–4*** below to be exceeded in a roadway segment or an intersection that is operating at LOS D or worse, it is determined to be a significant impact and the project shall identify mitigation measures.

TABLE 6–4
CITY OF ESCONDIDO TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service With Project	**Allowable Change due to Project Impact**		
	Roadway Segments		**Intersections**
	V/C	**Speed Reduction (mph)**	**Delay (sec.)**
D, E, or F	0.02	1	2

7.0 ANALYSIS OF EXISTING CONDITIONS

7.1 Peak Hour Intersection Levels of Service

Table 7–1 summarizes the existing peak hour intersection operations. As shown in *Table 7–1*, the following intersections operate at LOSE or worse. The remaining study area intersections are currently calculated to operate at LOS D or better.

- Deer Springs Road / I-15 SB Ramps (LOS E during the PM peak hour)
- Robelini Drive / South Santa Fe Avenue (LOS E during the AM peak hour)
- Buena Creek Road / South Santa Fe Avenue (LOS F during the AM peak hour and LOS E during the PM peak hour)
- Buena Creek Road/Monte Vista Drive (LOS F during the PM peak hour)

Appendix B contains the existing peak hour Synchro Analysis worksheets.

7.2 Daily Street Segment Levels of Service

Table 7–2 summarizes the existing segment operations. As shown in *Table 7–2*, the following segments currently operate at LOS E or worse. The remaining study area segments are calculated to currently operate at LOS D or better.

- **Deer Springs Road:** Twin Oaks Valley Road to Sarver Lane (LOS F)
- **Deer Springs Road:** Sarver Lane to Mesa Rock Road (LOS F)
- **Deer Springs Road:** Mesa Rock Road to I-15 (LOS F)
- **Twin Oaks Valley Road:** Deer Springs Road to Buena Creek Road (LOS F)
- **Twin Oaks Valley Road:** Buena Creek Road to Cassou Road (LOS F)
- **Gopher Canyon Road:** Little Gopher Canyon Road to I-15 Ramps (LOS E)
- **Robelini Drive: S**ycamore Avenue to South Santa Fe Avenue (LOS F)
- **South Santa Fe Avenue:** Robelini Drive to Buena Creek Road (LOS E)

7.3 Freeway Mainline Analysis

Table 7–3 summarizes the existing freeway mainline levels of service along the subject segments within the Project study area. As shown in *Table 7–3*, the following freeway segments are currently calculated to operate at LOS E or worse:

- I-15: Riverside County Boundary to Old Highway 395
- I-15: Gopher Canyon Road to Pomerado Road
- SR 78: Mar Vista Road to Rancho Santa Fe Avenue
- SR 78: Las Posas Road to Twin Oaks Valley Road

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

	Intersection	Jurisdiction	Traffic Control	Peak Hour	Delay [a]	LOS [b]
1.	Champagne Blvd / Gopher Canyon Rd	County	Signal	AM	32.9	C
				PM	33.6	C
2.	Champagne Blvd / Old Castle Rd	County	Signal	AM	11.4	B
				PM	23.5	C
3.	Champagne Blvd / Lawrence Welk Dr	County	MSSC [c]	AM	11.3	B
				PM	16.8	C
4.	Mtn Meadow Rd / Champagne Blvd	County	Signal	AM	16.1	B
				PM	20.5	C
5.	Deer Springs Rd / I-15 NB Ramps	Caltrans	Signal	AM	28.6	C
				PM	35.1	D
6.	Deer Springs Rd / I-15 SB Ramps	Caltrans	Signal	AM	27.5	C
				PM	**60.8**	**E**
7.	Deer Springs Rd / Mesa Rock Rd	County	Signal	AM	23.3	C
				PM	22.5	C
9.	Deer Springs Rd / Sarver Ln	County	MSSC	AM	23.1	C
				PM	30.1	D
10.	Deer Springs Rd / Sycamore Rd	County	MSSC	AM	14.4	B
				PM	22.6	C
11.	Twin Oaks Valley Rd / Camino Mayor	County	MSSC	AM	8.6	A
				PM	8.5	A
12.	Twin Oaks Valley Rd / Deer Springs Rd	San Marcos	Signal	AM	44.1	D
				PM	18.6	B
13.	Twin Oaks Valley Rd / Buena Creek Rd	San Marcos	Signal	AM	24.1	C
				PM	26.2	C

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TABLE 7–1 (CONTINUED)
EXISTING INTERSECTION OPERATIONS

	Intersection	Jurisdiction	Traffic Control	Peak Hour	Delay [a]	LOS [b]
14.	Twin Oaks Valley Rd / Cassou Rd	San Marcos	Signal	AM	29.9	C
				PM	15.6	B
15.	Twin Oaks Valley Rd / La Cienega Rd	San Marcos	Signal	AM	13.2	B
				PM	11.7	B
16.	Twin Oaks Valley Rd / Del Roy Dr	San Marcos	Signal	AM	12.7	B
				PM	9.3	A
17.	Twin Oaks Valley Rd / Windy Wy	San Marcos	Signal	AM	7.0	A
				PM	6.9	A
18.	Twin Oaks Valley Rd / Borden Rd	San Marcos	Signal	AM	26.1	C
				PM	29.3	C
19.	Twin Oaks Valley Rd / Richmar Ave	San Marcos	Signal	AM	22.4	C
				PM	28.5	C
20.	Twin Oaks Valley Rd / San Marcos Blvd	San Marcos	Signal	AM	34.8	C
				PM	50.8	D
21.	Twin Oaks Valley Rd / SR 78 WB Ramps	Caltrans	Signal	AM	12.2	B
				PM	12.6	B
22.	Twin Oaks Valley Rd / SR 78 EB Ramps	Caltrans	Signal	AM	26.6	C
				PM	19.5	B
23.	Robelini Dr /South Santa Fe Ave	County	Signal	AM	**65.3**	**E**
				PM	28.0	C
24.	Sycamore Ave / SR78 WB Ramps	Caltrans	Signal	AM	37.1	D
				PM	32.7	C

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TABLE 7–1 (CONTINUED)
EXISTING INTERSECTION OPERATIONS

	Intersection	Jurisdiction	Traffic Control	Peak Hour	Delay [a]	LOS [b]
25.	Sycamore Ave / SR 78 EB Ramps	Caltrans	Signal	AM	31.2	C
				PM	23.3	C
26.	Buena Creek Rd / South Santa Fe Ave	County	Signal	AM	**93.3**	**F**
				PM	**72.5**	**E**
27.	Buena Creek Rd / Monte Vista Dr	County	AWSC [d]	AM	34.2	D
				PM	**70.2**	**F**
28.	San Marcos Blvd/ Knoll Rd / SR 78 WB Off Ramp	Caltrans	Signal	AM	35.7	D
				PM	33.5	C
29.	San Marcos Blvd / SR 78 EB Off Ramp	Caltrans	Signal	AM	10.8	B
				PM	12.5	B
30.	Mission Rd / Vineyard Rd	County	Signal	AM	27.4	C
				PM	32.7	C
31.	North Centre City Pkwy / Mesa Rock Rd	County	Signal	AM	10.6	B
				PM	9.5	A
32.	North Centre City Pkwy / Country Club Ln	Escondido	Signal	AM	24.4	C
				PM	21.0	C
33.	Twin Oaks Valley Rd / Barham Dr / Discovery St	San Marcos	Signal	AM	38.0	D
				PM	51.7	D

Footnotes:

a. Average delay per vehicle in seconds
b. Level of service
c. MSSC - Minor Street Stop-Controlled intersection. Minor street delay and LOS are reported.
d. AWSC – All Way Stop-Controlled intersection. Overall delay and LOS are reported.

General Note:

Bold indicates LOS E or worse operations.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 7–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Volume [c]	LOS [d]	V/C [e]
Deer Springs Road						
Twin Oaks Valley Rd to Sarver Ln	County	2.2E Lt Col	16,200	**18,800**	**F**	**1.160**
Sarver Lane to Mesa Rock Road	County	2.2E Lt Col	16,200	**19,400**	**F**	**1.198**
Mesa Rock Road to I-15SB Ramps	County	2.2E Lt Col	16,200	**22,600**	**F**	**1.395**
I-15 NB Ramps to Champagne Blvd (N. Centre City Pkwy)	County	4.1B Major Rd	34,200	12,100	A	0.354
Mountain Meadow Road						
East of Champagne Blvd	County	4.1B Major Rd	34,200	8,000	A	0.234
Twin Oaks Valley Road						
Solar Ln to Deer Springs Rd	County	2.2E Lt Col	16,200	3,000	B	0.185
Deer Springs Rd to Buena Creek Rd	San Marcos	2 Ln Col	15,000	**20,700**	**F**	**1.380**
Buena Creek Rd to Cassou Rd	San Marcos	2 Ln Col	15,000	**18,400**	**F**	**1.227**
Cassou Rd to La Cienega Rd	San Marcos	4 Ln Sec Art	30,000	18,000	C	0.600
La Cienega Rd to Windy Wy	San Marcos	4 Ln Major Art	40,000	20,300	B	0.508
Windy Wy to Borden Rd	San Marcos	4 Ln Major Art	40,000	21,100	C	0.528
Borden Rd to Richmar Ave	San Marcos	4 Ln Major Art	40,000	29,000	C	0.725
Richmar Ave to San Marcos Blvd	San Marcos	4 Ln Major Art	40,000	31,000	D	0.775
San Marcos Blvd to SR 78	San Marcos	Prime Art	60,000	39,100	C	0.652
SR 78 to Barham Dr / Discovery St	San Marcos	Prime Art	70,000	46,800	C	0.669
Buena Creek Road						
S. Santa Fe Ave to Monte Vista Dr	County	2.2E Lt Col	16,200	9,200	D	0.568
Monte Vista Dr to Twin Oaks Valley Rd.	County	2.2E Lt Col	16,200	10,400	D	0.642
Monte Vista Drive						
Foothill Dr to Buena Creek Rd	County	2.2E Lt Col	16,200	9,100	D	0.562
Mesa Rock Road						
Deer Springs Rd to N. Centre City Pkwy	County	2.2E Lt Col	16,200	1,000	A	0.062

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TABLE 7–2 (CONTINUED)
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Volume [c]	LOS [d]	V/C [e]
Gopher Canyon Road						
Little Gopher Canyon Rd to I-15 Ramps	County	2.2E Lt Col	16,200	**16,000**	**E**	**0.988**
I-15 Ramps to Champagne Blvd	County	4.2B Blvd	28,000	14,400	A	0.514
Champagne Boulevard						
Old Castle Rd to Lawrence Welk Dr	County	2.2E Lt Col	16,200	5,400	C	0.333
Lawrence Welk Dr to Mtn Meadow Rd	County	2.2E Lt Col	16,200	7,400	D	0.457
North Centre City Parkway						
Mountain Meadow Rd to I-15 Ramps	County	2.2E Lt Col	16,200	5,800	C	0.358
I-15 Ramps to Country Club Ln	Escondido	4 Ln Col	34,200	10,900	A	0.319
Robelini Drive						
Sycamore Ave to South Santa Fe Ave	County	2.2E Lt Col	16,200	**16,900**	**F**	**1.043**
South Santa Fe Avenue						
Robelini Dr to Buena Creek Rd	County	2.1B Com Col	19,000	**15,900**	**E**	**0.837**
Sycamore Avenue						
SR 78 WB Ramps to University Dr	County	6.2 Prime Art	57,000	34,100	B	0.598

Footnote:
a. The existing roadway class.
b. Capacity of the existing roadway per the County, City of San Marcos, City of Escondido capacity tables as appropriate from Section 5.0.
c. Existing Average Daily Traffic (ADT) volumes.
d. Level of Service.
e. Volume / Capacity ratio.

General Note:
Bold indicates LOS E or worse operations.

TABLE 7–3
EXISTING FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	AADT [b]	Peak Hour Volume [c]		Truck Factor [d]	Peak Hour Volumes Factored for Trucks [e]		V/C [f]		LOS	
					AM	PM		AM	PM	AM	PM	AM	PM
Interstate 15													
Riverside County Boundary to Mission Rd	NB	4M	8,000	142,000	2,066	6,795	0.9325	2,216	7,287	0.277	0.911	A	D
	SB				7,916	3,344		8,489	3,586	**1.061**	0.448	**F(0)**	B
Mission Rd to SR-76	NB	4M	8,000	132,000	2,129	6,638	0.9186	2,318	7,226	0.290	0.903	A	D
	SB				7,454	3,354		8,114	3,652	**1.014**	0.456	**F(0)**	B
SR-76 to Old Highway 395	NB	4M	8,000	121,000	1,952	6,085	0.9168	2,129	6,637	0.266	0.830	A	D
	SB				6,833	3,075		7,453	3,354	**0.932**	0.419	**E**	B
Old Highway 395 to Gopher Cyn Rd	NB	4M	8,000	120,000	2,205	6,472	0.8977	2,456	7,209	0.307	0.901	A	D
	SB				6,471	3,272		7,209	3,645	0.901	0.456	D	B
Gopher Canyon Rd to Deer Springs Rd	NB	4M	8,000	127,000	2,333	6,849	0.8680	2,688	7,891	0.336	**0.986**	A	**E**
	SB				6,849	3,463		7,890	3,990	**0.986**	0.499	**E**	B
Deer Springs Rd to N. Centre City Pkwy	NB	4M	8,000	125,000	2,296	6,742	0.8680	2,646	7,767	0.331	**0.971**	A	**E**
	SB				6,741	3,408		7,766	3,927	**0.971**	0.491	**E**	B
N. Centre Pkwy to El Norte Pkwy	NB	4M	8,000	119,000	1,703	6,374	0.8680	1,962	7,344	0.245	0.918	A	D
	SB				6,389	3,217		7,360	3,706	**0.920**	0.463	**E**	B
El Norte Pkwy to SR 78	NB	4M	8,000	135,000	1,932	7,232	0.8990	2,149	8,044	0.269	**1.005**	A	**F(0)**
	SB				7,248	3,649		8,062	4,059	**1.008**	0.507	**F(0)**	B
SR 78 to W. Valley Pkwy	NB	4M+2A	10,400	238,000	5,320	11,734	0.9290	5,727	12,630	0.551	**1.214**	B	**F(0)**
	SB	5M+1A	11,200		10,935	7,521		11,771	8,095	**1.051**	0.723	**F(0)**	C

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7–3 (CONTINUED)
EXISTING FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	AADT [b]	Peak Hour Volume		Truck Factor [c]	Peak Hour Volumes Factored for Trucks [d]		V/C [e]		LOS	
					AM	PM		AM	PM	AM	PM	AM	PM
Interstate 15													
W. Valley Pkwy to Auto Park Way	NB	5M+2ML	12,400	221,000	4,940	10,895	0.9290	5,318	11,728	0.429	**0.946**	B	**E**
	SB				10,154	6,983		10,930	7,517	0.881	0.606	D	B
Auto Park Way to W. Citracado Pkwy	NB	5M+2ML	12,400	222,000	4,963	10,945	0.9290	5,342	11,781	0.431	**0.950**	B	**E**
	SB	4M+1A+2ML	11,600		10,200	7,015		10,979	7,551	**0.947**	0.651	**E**	C
W. Citracado Pkwy to Via Rancho Pkwy	NB	5M+2ML	12,400	212,000	4,163	10,629	0.9290	4,481	11,441	0.361	**0.923**	A	**E**
	SB	4M+1A+2ML	11,600		10,635	6,861		11,448	7,386	**0.987**	0.637	**E**	C
Via Rancho Pkwy to Pomerado Rd	NB	4M+1A+2ML	11,600	217,000	6,309	10,067	0.9290	6,791	10,837	0.585	**0.934**	B	**E**
	SB	5+2ML	12,400		9,880	6,642		10,635	7,149	0.858	0.577	D	B
Pomerado Rd to Rancho Bernardo Rd	NB	5M+2 ML	12,400	206,000	4,311	9,327	0.9290	4,640	10,039	0.374	0.810	A	D
	SB	5M+1A+2ML	13,600		9,676	6,597		10,416	7,101	0.766	0.522	C	B
Rancho Bernardo Rd to Bernardo Center Drive	NB	5M+1A+2ML	13,600	211,000	4,416	9,553	0.9290	4,753	10,283	0.349	0.756	A	C
	SB	5M+2ML	12,400		9,911	6,757		10,669	7,274	0.860	0.587	D	B
Bernardo Ctr Drive to Camino Del Norte	NB	5M+1A+2ML	13,600	220,000	4,604	9,960	0.9290	4,956	10,722	0.364	0.788	A	C
	SB				10,334	7,046		11,124	7,584	0.818	0.558	D	B

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7–3 (CONTINUED)
EXISTING FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	AADT [b]	Peak Hour Volume		Truck Factor [c]	Peak Hour Volumes Factored for Trucks [d]		V/C [e]		LOS	
					AM	PM		AM	PM	AM	PM	AM	PM
SR 78													
Mar Vista Rd to Sycamore Ave	WB	3M	6,000	131,000	4,291	5,523	0.9557	4,490	5,779	0.748	**0.963**	C	**E**
	EB				5,429	4,368		5,680	4,570	**0.947**	0.762	**E**	C
Sycamore Ave to Rancho Santa Fe Ave	WB	3M	6,000	137,000	4,488	5,776	0.9557	4,696	6,044	0.783	**1.007**	C	**F(0)**
	EB				5,677	4,568		5,941	4,779	**0.990**	0.797	**E**	C
Rancho Santa Fe Ave to Las Posas Rd	WB	3M+1A	7,200	143,000	5,254	6,054	0.9557	5,497	6,335	0.764	0.880	C	D
	EB				5,786	4,556		6,054	4,767	0.841	0.662	D	C
Las Posas Rd to San Marcos Blvd	WB	3M	6,000	144,000	5,289	6,097	0.9557	5,535	6,379	**0.922**	**1.063**	**E**	**F(0)**
	EB				5,827	4,588		6,098	4,801	**1.016**	0.800	**F(0)**	D
San Marcos Blvd to Twin Oaks Valley Rd	WB	3M+1A	7,200	170,000	6,244	7,198	0.9557	6,534	7,531	0.907	**1.046**	D	**F(0)**
	EB				6,880	5,416		7,198	5,668	**1.000**	0.787	**E**	C

Footnotes:

a. Capacity calculated at 2,000 vehicles per hour (vph) per mainline lane (M); 1,200 per Managed lane (ML); and 1,200 vph per Auxiliary (A) lane.
b. Existing Average Annual Daily Traffic Volumes from Caltrans Traffic Census, 2015).
c. Truck Factor from "2015 Annual Average Daily Truck Traffic on the California State Highway System".
d. Peak Hour Volumes factored using Passenger Car Equivalent (PCE) for trucks.
e. V/C = (Peak Hour volume/Truck Factor/Capacity).

General Note:

Bold indicates Los E or worse operations.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

7.4 Ramp Meter Analysis

Table 7-4 summarizes the existing ramp meter operations. As shown in *Table 7–4*, using the *most restrictive* discharge rates obtained from Caltrans, none of the subject metered on-ramps are calculated to operate with delays of 15 minutes or more.

TABLE 7–4
EXISTING RAMP METER ANALYSIS

Location/Condition	Peak Hour	Demand D [a] (veh/hr/ln)	Meter Rate R [b] (veh/hr/ln)	Calculated (Most Restrictive)		
				Excess Demand E [c] (veh/hr/ln)	Delay [d] (min/ln)	Queue [e] (ft)
Sycamore Ave / SR 78 Interchange						(2 SOV+1 HOV)
Sycamore Ave to SR 78 WB	AM	247	418	0	0	0
San Marcos Blvd / SR 78 Interchange						(1 SOV + 1 HOV)
San Marcos Blvd SB to SR 78 WB	AM	231	301	0	0	0

Footnotes:

a. Demand "D" is the traffic that desires to enter the freeway at this on-ramp during the peak hour.
b. Meter Rate "R" is the *most restrictive* rate at which the ramp meter (signal) discharges traffic on to the freeway (See *Appendix A* for the ramp meter data obtained from Caltrans).
c. Excess Demand "E" is the difference between the Demand and the Peak Hour Flow.
d. Delay in minutes per lane experienced by each vehicle, calculated as the ratio of the Excess Demand and the Peak Hour Flow in one minute.
e. Queue is calculated as 25 feet per vehicle (E).

8.0 PROJECT TRIP GENERATION / DISTRIBUTION / ASSIGNMENT

8.1 Trip Generation

The Project trip generation was calculated using the trip rates published by the San Diego Association of Governments (SANDAG) in the *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

8.1.1 *Gross Trip Generation*

Table 8–1 summarizes the total Project traffic generation.

GROSS RESIDENTIAL TRIPS

The residential development is calculated to generate a total of 17,530 ADT with 1,363 trips (356 inbound / 1.007 outbound) during the AM peak hour and 1,714 trips (1.192 inbound / 522 outbound) during the PM peak hour.

GROSS NON-RESIDENTIAL TRIPS

The non-residential development, including commercial, school, and parks, is calculated to generate a total of 11,332 ADT with 767 trips (451 inbound / 316 outbound) during the AM peak hour and 1,117 trips (551inbound / 566 outbound) during the PM peak hour.

GROSS PROJECT TRIPS

The entire Project is calculated to generate a total of 28,862 ADT with 2,130 trips (807 inbound / 1,323 outbound) during the AM peak hour and 2,831 trips (1,743 inbound / 1,088 outbound) during the PM peak hour.

8.1.2 *Pass-by Trips*

Trip generation rates are derived from counts taken at the driveways of the various land uses. For many land uses, not all of the trips generated at the driveway represent new trips added to the roadways. This is due to "pass-by" trips. Pass-by trips are trips made by traffic already using the adjacent roadway that enter the site as an intermediate stop on the way from another destination (i.e., a stop at the dry cleaners on the way home from work). The trip is not "generated" by the land use under study, and thus, is not a new trip added to the transportation system. This pass-by factor should be taken into account in devising a trip generation estimate.

To assist in accounting for pass-by trips as part of the analysis, the SANDAG guide states that 40% of PM peak hour neighborhood shopping center trips are pass-by in nature. The SANDAG guide also reports that for a *community* shopping center (as distinguished from a neighborhood shopping center), pass-by trips account for 22% of *daily* trips and 30% of PM peak hour trips (see ***Appendix C-1***). Thus, the PM peak hour pass-by rate for a *neighborhood* shopping center is 33% higher than for a *community* shopping center. Using this ratio, the daily pass-by rate for a neighborhood shopping center would be 29%. To be conservative, a 25% pass-by rate was applied to the daily trips. Also, community shopping centers are generally 125,000 to 400,000 SF in size while neighborhood shopping centers are less than 125,000 SF in size. The retail area proposed by the Project is only 81,000 SF, which satisfies the

definition of a neighborhood shopping center, in terms of size. Also, the retail as proposed by the Project, serves more local needs and, therefore, captures more local trips. Neighborhood centers also provide goods that are more likely to be of the type purchased by "pass-by" shoppers such as bread and milk. Community shopping centers are more likely to sell goods such as clothing, not typically purchased by "pass-by" shoppers. Hence, it has a higher pass-by rate than a community shopping center. For all these reasons, a 25% daily pass-by rate was utilized for the neighborhood shopping center, which represents a conservative 3% increase over the SANDAG reported daily rate for a community shopping center.

As to the AM peak hour, SANDAG does not provide a neighborhood shopping center pass-by rate for the AM peak hour. However, SANDAG does provide a neighborhood shopping center pass-by rate for the PM peak hour, which is 40%. The AM peak hour rate would be expected to be similar to the PM since both periods are capturing trips generated during the work commute. Although a 40% rate would be reasonable, a lower AM peak hour pass-by rate of 25% was used.

8.1.3 *Internal Capture*

The ITE Trip Generation Handbook provides basic procedures for determining internal trips for mixed use projects. This procedure is applicable when the trip generation estimates use average trip generation rates or equations for stand-alone land uses, which is the case for the Newland Sierra Project. A summary of the procedure is:

1. Estimate the stand-alone trip generation for each land use within a mixed-use development using average trip generation rates or equations.

2. Determine which land uses interact with each other. For the Newland Sierra Project, the residential uses will interact with each of the other proposed land uses: commercial/retail, school, and parks. That is there will be internal trips between the residential uses and the retail/commercial, the residential uses and the school, and the residential uses and the parks.

3. Determine the percentage of trips that the residential land use will produce that can be attracted to each other land use and the resulting internal residential trips. As internal trips on the production side (residential) are always matched by an equal number of internal trips on the attraction side (e.g., the retail, school, and parks), a trip that is produced by the residential and attracted by the non-residential equates to two internal trips. For example, if 50 trips are internalized for the residential land use then an equal number, 50 trips, are also internalized on the attraction land use.

The Project includes several non-residential land uses, including neighborhood and community parks, a school site, and neighborhood serving retail uses that complement the residential uses and would considerably reduce external vehicle trip generation from the Project as a whole. These non-residential uses allow residents to shop, recreate, and attend school within the Project site, as opposed to traveling away from the site to satisfy these needs; therefore, the vehicle trips associated with these activities would remain internal to the Project Site, reducing the total volume of trips the Project would generate on the external road network. The effect this mix of land uses (residential combined with retail, a

school site, and parks) has on a project's net external trip generation is commonly referred to as "internal capture".

Specifically, the Project includes three non-residential land use types that will attract vehicle trips from the Project's residential uses: 35.9 acres of neighborhood and community parks, a 6-acre/555-student school site, and 81,000 square feet of retail. The ability of each non-residential land use to attract vehicle trips from the residential uses varies by land use, and is described as follows. In the case of the parks, given that the parks are sized to support the recreational needs of the Project and are located predominantly within the Project's various neighborhoods, an internal capture rate of 75% was used for the parks to reflect the fact that the vast majority of the trips to the Project's parks would be generated by the Project's residential uses and would remain "internal" to the Project Site. Accordingly, the Trip Generation for the project (refer to Table 8-1) reflects that 75% of the trips generated by the parks would come from and remain within (i.e., internal) to the Project Site and 25% would constitute net external trips.

In the case of the school site, at buildout, the Project is estimated to generate 449 elementary school students and an additional 130 middle school students, or a total of 589 kindergarten through eighth grade (K-8) school students (see Table 2.16-2 in the Draft EIR, Section 2.16, Public Facilities). The proposed school site would accommodate 555 students, which is less than the estimated K-8 student generation of the Project. Therefore, the majority of the students attending the school would be expected live within the Project site. Vehicle trips associated with elementary/middle schools typically include:

- Trips generated by parents/guardians dropping off students and then returning home.
- Diverted trips generated by parents/guardians dropping off students as an intermediate stop on their way to another destination (such as work or shopping).
- Trips generated by staff and faculty.

As it relates to the Project, the school would generate a combination of internal trips (trips between the school and home that do not leave the Project Site), diverted trips, and completely external trips (trips from outside of the Project going to the school, for example faculty/staff trips). Although the Project's residential neighborhoods would cause the school to generate both internal and diverted trips, an internal capture rate of 33% was applied to the school's gross trip generation and no reduction was taken for the diverted trips to the school. Therefore, 67% of the trips generated by the school site are modeled as new external trips. Given the Project's estimated student generation as referenced above and the types of trips the school would generate as described; the 33% internal capture rate / 67% external trip rate for the school likely overstates the school's net external trip generation and understates the number of internal trips. Additionally, it is important to clarify that the highest trip generation rate for schools was used to estimate trip generation (the elementary school rate of 1.6 trips per student) even though the school would accommodate elementary and middle school students and middle schools generate 1.4 trips per student (see "*SANDAG Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*"). This further contributes to the likelihood that the analysis overstates the school's net external trip generation. As such, the school's trip generation estimate likely results in overstating external vehicle trips.

In the case of the Project's retail uses, the proposed 81,000 square feet of retail would be neighborhood-serving with a grocery store, shops, and restaurants catering to the residents within the Project. A number of studies have been conducted establishing relationships between the amount of retail square footage a typical home generates, the internal capture that can be expected in mixed use projects that include retail with residential, and the amount of vehicle trips that can be replaced by non-motorized trips when you locate retail in close proximity to residential and other uses (such as schools).

In April 2002, SANDAG published their "*Not So Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*" (SANDAG Trip Generation Guide). Since its publication, the SANDAG Trip Generation Guide has served as the basis for estimating trip generation for various land uses and projects in the San Diego Region. At the time the Guide was published, the Guide allowed for a reduction in trip generation for projects that have access to transit and projects that include a mix of uses (such as residential with retail) up to 15%. Since 2002, a number of studies of mixed use projects have been conducted that show internal capture percentages are often considerably higher than the SANDAG Trip Generation Guide rates would produce.

For example, in 2010, SANDAG commissioned a comprehensive study of the trip reducing benefits of mixed use projects, entitled "Trip Generation for Smart Growth" (June 2010). The 2010 study analyzed Travel Behavior Survey trip records for 20 Smart Growth Opportunity Areas comprising a total of approximately 83,500 housing units, 30.3 million square feet of retail, 22.7 million square feet of office, and other smaller amounts of public and industrial uses. The study found an average 36% reduction in vehicle trips based on California Household Survey Data compared to the expected trip generation for these same uses as estimated by the SANDAG Trip Generation Guide. These trip reductions were driven primarily by the internal capture of trips when different land uses are included in close proximity to each other (e.g., residential, office, and retail). The 2010 SANDAG study also examined in more detail six Mixed Use/Transit Oriented Development sites within the San Diego region comprising a total of 1,831 housing units, 374,000 square feet of retail, 369,000 square feet of office space, as well as hotel, theater, and other uses. A comparison of the actual driveway trip counts for these six sites compared to the expected raw trip generation for the various uses (as calculated using the SANDAG Trip Generation Guide) showed an overall 21.3% reduction in trips with the internal capture rate ranging between 16.7% and 26.1% for the six sites.

Other comparable transportation planning agencies have conducted similar studies and established internal capture rates for mixed use projects. The Santa Clara Valley Transportation Authority (VTA) adopted Transportation Impact Analysis Guidelines in October 2014 that allow for trip reductions for mixed use projects. The VTA Guidelines specify a 15% internal capture rate for projects that include retail and residential uses. Additionally, the VTA Guidelines allow for additional reductions to the external trip generation for projects that include Transportation Demand Management (TDM) measures similar to the TDM measures included in the Project.

The SANDAG Guide, 2010 Smart Growth Study, and the Santa Clara VTA Guidelines provide foundational support for the Project's internal capture rates. Accordingly, an internal capture rate of 15% was utilized for the Project's retail uses: 15% of the trips generated by the Project's retail uses

would come from and return to the Project's residential neighborhoods. As discussed in detail in the Specific Plan and elsewhere in this report, in addition to the project's mix of land uses, the project's TDM measures would also contribute to a reduction in project trips, including a mix of land uses that reduce external trips, a community-sponsored electric bike-share program, shuttle services throughout the Project and to the Escondido Transit Center, and a network of pedestrian pathways, trails, and bicycle routes.

Taken in combination, the Project's internal capture rates for the parks, the school site, and the retail uses would result in an overall internal capture rate of 15.9% of the Project (i.e., 15.9% of the Project's gross trips would remain internal to the Project Site). Trip generation estimates were also performed for the Project using the SANDAG Series 12 Model select zone analysis to validate the 15.9% internalization rate. The SANDAG Model resulted in an overall internal capture rate of 17.7%, higher than and, therefore, further substantiating the rates used for the analysis in this report. Therefore, in light of the foregoing, the individual rates used above and the Project's overall rate are considered conservative for the purposes of forecasting the Project's net external trips and associated impacts on the external roadway network.

8.1.4 *Net Trip Generation*

Table 8–1 also tabulates the net Project traffic generation. This is the total traffic that would be added to the regional roadway network, taking into account internal trip capture and pass-by trips. The internal capture trips remain within and not leave the Project Site. The pass-by trips are trips that are already on the adjacent offsite roadways (e.g., Deer Springs Road) and are not new to the street network.

NET RESIDENTIAL TRIPS

The residential development is calculated to generate a net of 15,236 ADT with 1,140 trips (229 inbound / 911 outbound) during the AM peak hour and 1,493 trips (1.084 inbound / 409 outbound) during the PM peak hour.

NET NON-RESIDENTIAL TRIPS

The non-residential development is calculated to generate a total of 6,972 ADT with 461 trips (275 inbound / 187 outbound) during the AM peak hour and 566 trips (278 inbound / 288 outbound) during the PM peak hour.

NET PROJECT TRIPS

The entire Project is calculated to generate a total of 22,209 ADT with 1,601 trips (504 inbound / 1,098 outbound) during the AM peak hour and 2,059 trips (1,362 inbound / ,697 outbound) during the PM peak hour.

TABLE 8-1
TRIP GENERATION

Land Use	Quantity	Rate [a]	ADT	AM Peak Hour					PM Peak Hour				
				% of ADT	In: Out Split	Volume			% of ADT	In: Out Split	Volume		
						In	Out	Total			In	Out	Total
NON-RESIDENTIAL													
Community Parks	12.1 Acres	50 /Acre	605	13%	5:5	40	39	79	9%	5:5	27	27	54
Neighborhood Parks	23.8 Acres	5 /Acre	119	13%	5:5	8	7	15	9%	5:5	6	5	11
Retail	81 KSF [c]	120 /KSF	9,720	4%	6:4	233	156	389	10%	5:5	486	486	972
School	555 Students	1.6 /Student	888	32%	6:4	170	114	284	9%	4:6	32	48	80
Gross Non-Residential			**11,332**			**451**	**316**	**767**			**551**	**566**	**1,117**
Non-Residential Internal Capture & Pass-By													
Parks Internal Capture (75%)			*(543)*	*13%*	*5:5*	*(36)*	*(35)*	*(71)*	*9%*	*5:5*	*(25)*	*(24)*	*(49)*
Retail Internal Capture (15%)			*(1,458)*	*4%*	*6:4*	*(35)*	*(23)*	*(58)*	*10%*	*5:5*	*(73)*	*(73)*	*(146)*
School Internal Capture (33%)			*(293)*	*32%*	*6:4*	*(56)*	*(38)*	*(94)*	*9%*	*4:6*	*(10)*	*(16)*	*(26)*
Non-Residential Internal Capture [d]			***(2,294)***			***(127)***	***(96)***	***(223)***			***(108)***	***(113)***	***(221)***
Retail Pass-By [e] (Non-Project Trips captured from Deer Springs Road)			***(2,066)***			***(50)***	***(33)***	***(83)***			***(165)***	***(165)***	***(330)***
Net Non-Residential (Net of Internal Capture & Pass-By)			**6,972**			**275**	**187**	**461**			**278**	**288**	**566**
RESIDENTIAL													
Single Family	875 DU [b]	10 /DU	8,750	8%	3:7	210	490	700	10%	7:3	613	262	875
Multi Family	935 DU	8 /DU	7,480	8%	2:8	120	478	598	10%	7:3	524	224	748
Senior	325 DU	4 /DU	1,300	5%	4:6	26	39	65	7%	6:4	55	36	91
Gross Residential	**2,135 DU**		**17,530**			**356**	**1,007**	**1,363**			**1,192**	**522**	**1,714**
Residential Internal Capture [d]			***(2,294)***			***(127)***	***(96)***	***(223)***			***(108)***	***(113)***	***(221)***
Net Residential (Net of Internal Capture)			**15,236**			**229**	**911**	**1,140**			**1,084**	**409**	**1,493**
Gross Project			**28,862**			**807**	**1,323**	**2,130**			**1,743**	**1,088**	**2,831**
Net Project			**22,209**			**504**	**1,098**	**1,601**			**1,362**	**697**	**2,059**

Footnotes:

a. Rates obtained from a "Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002, published by SANDAG.
b. DU – Dwelling Units
c. KSF - 1,000 SF
d. Non-Residential internal capture for the project is 2,294 ADT. Therefore, the residential internal capture is also 2,294 ADT, making the total internal capture4,588 ADT (2 x 2,294 ADT, 15.9% of total Gross Trips). Refer to Section 8.1.3 in this report for more information on calculating internal capture for mixed use and multi-use projects like Sierra.
e. Pass-by trips percentages: 25% of Daily, 25% AM peak hour, and 40% of PM peak hour of Retail trips net of Retail internal capture.

8.2 Trip Distribution

The residential and non-residential portions of the Project will have different trip distribution characteristics. Therefore, Select Zone Analysis (SZA) plots were obtained from SANDAG for the residential and non-residential land uses.

Appendix C-2 contains the Select Zone Assignment plots for the residential and non-residential land uses. ***Figure 8–1*** depicts the traffic distribution for residential land uses and ***Figure 8–2*** depicts the traffic distribution for the non-residential land uses.

8.3 Trip Assignment

The proposed Project is located mostly within the Traffic Analysis Zone (TAZ) 444 in the SANDAG model. The proposed Project is to be developed in seven (7) neighborhoods. Six of these neighborhoods include residential uses and parks. The seventh includes condominiums, retail and a school site. The residential and non-residential land uses have different trip distribution characteristics and hence the retail was included in a separate TAZ. TAZ 444 was split into 7 TAZs, 444, 4683, 4684, 4685, 4686, 4687 and 4688. This allows for the assignment of traffic generated by each neighborhood, resulting in a realistic assignment of Project traffic. This methodology assures traffic is appropriately split between the three access points at Mesa Rock Road, Sarver Lane and Camino Mayor (Section 13.0 Access and Internal Circulation).

Thirty five percent (35%) of the residential traffic is oriented to the west of Sarver Lane and sixty two percent (62%) to the east of Mesa Rock Road, on Deer Springs Road (*Figure 8-1*). Therefore, most of the traffic destined to the west would use Sarver Lane and most of the traffic destined to the east would use Mesa Rock Road. Depending on the point of origin on-site and the proximity to the two access roads, drivers would use the nearest access point to their home.

The Project's residential and non-residential traffic was assigned separately using the trip distribution percentages in *Figures 8–1* and *8–2* respectively. Traffic was assigned to the three driveways Mesa Rock Road, Sarver Lane and Camino Mayor based on the location of the development within the site and the destination of the trips.

Figure 8–3 depicts the Project Residential segment traffic assignment, while ***Figure 8–4*** depicts the Project Residential AM / PM peak hour traffic assignment. ***Figure 8–5*** depicts the Project non-residential segment traffic assignment, while ***Figure 8–6*** depicts the Project non-residential AM / PM peak hour traffic assignment. ***Figure 8–7*** depicts the total Project segment traffic assignment, while ***Figure 8–8*** depicts the total Project AM / PM Peak Hour Traffic Assignment.

Figure 8–9 depicts the Existing + Project segment traffic volumes, while ***Figure 8–10*** depicts the Existing + Project AM / PM peak hour traffic volumes. ***Figure 8–11*** depicts the daily Project freeway mainline segment volumes and ***Figure 8–12*** depicts the daily Existing + Project freeway mainline segment volumes.

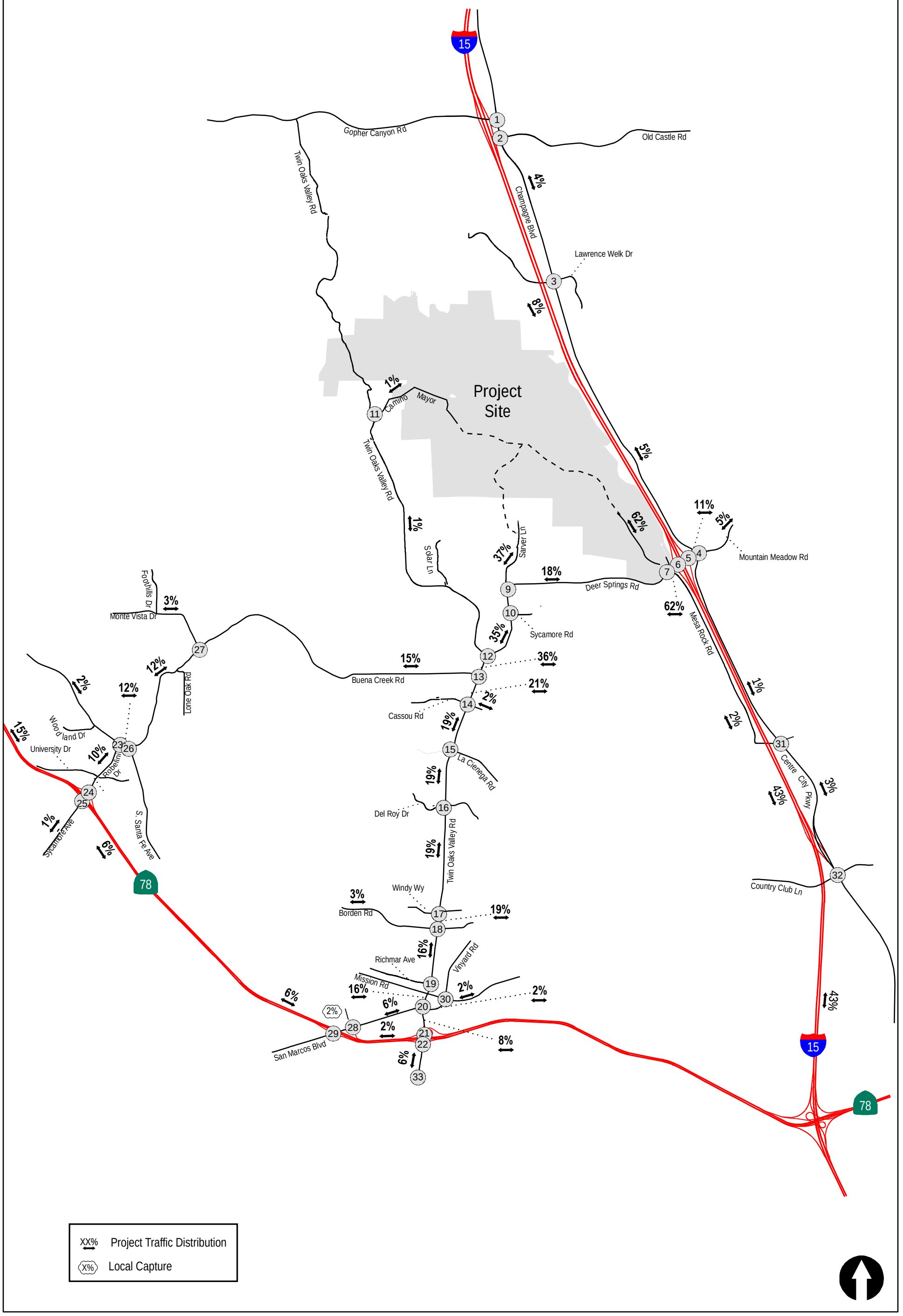

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Figure 8-1

Project Traffic Distribution - Residential

SIERRA

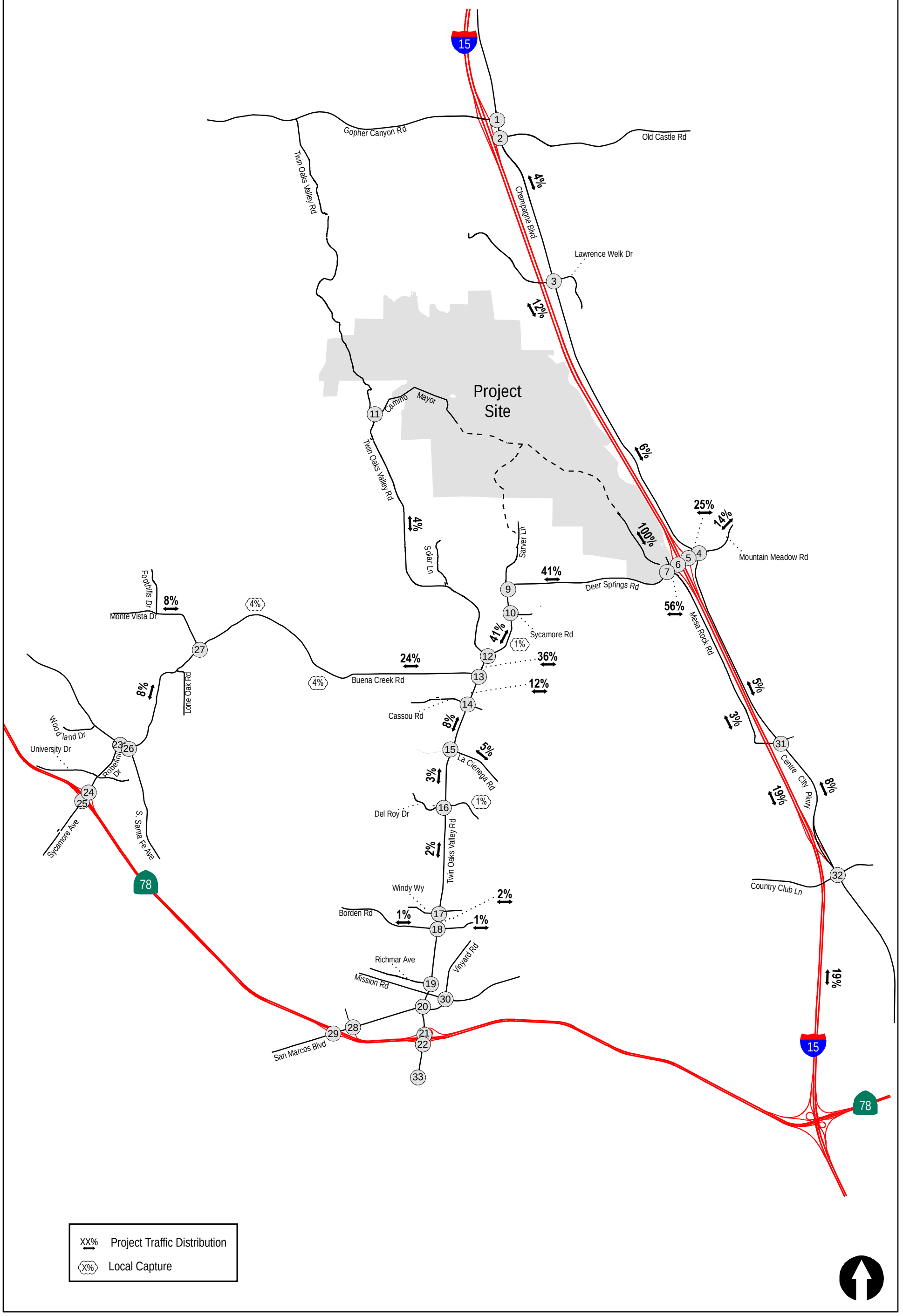

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Figure 8-2

Project Traffic Distribution - Non Residential

SIERRA

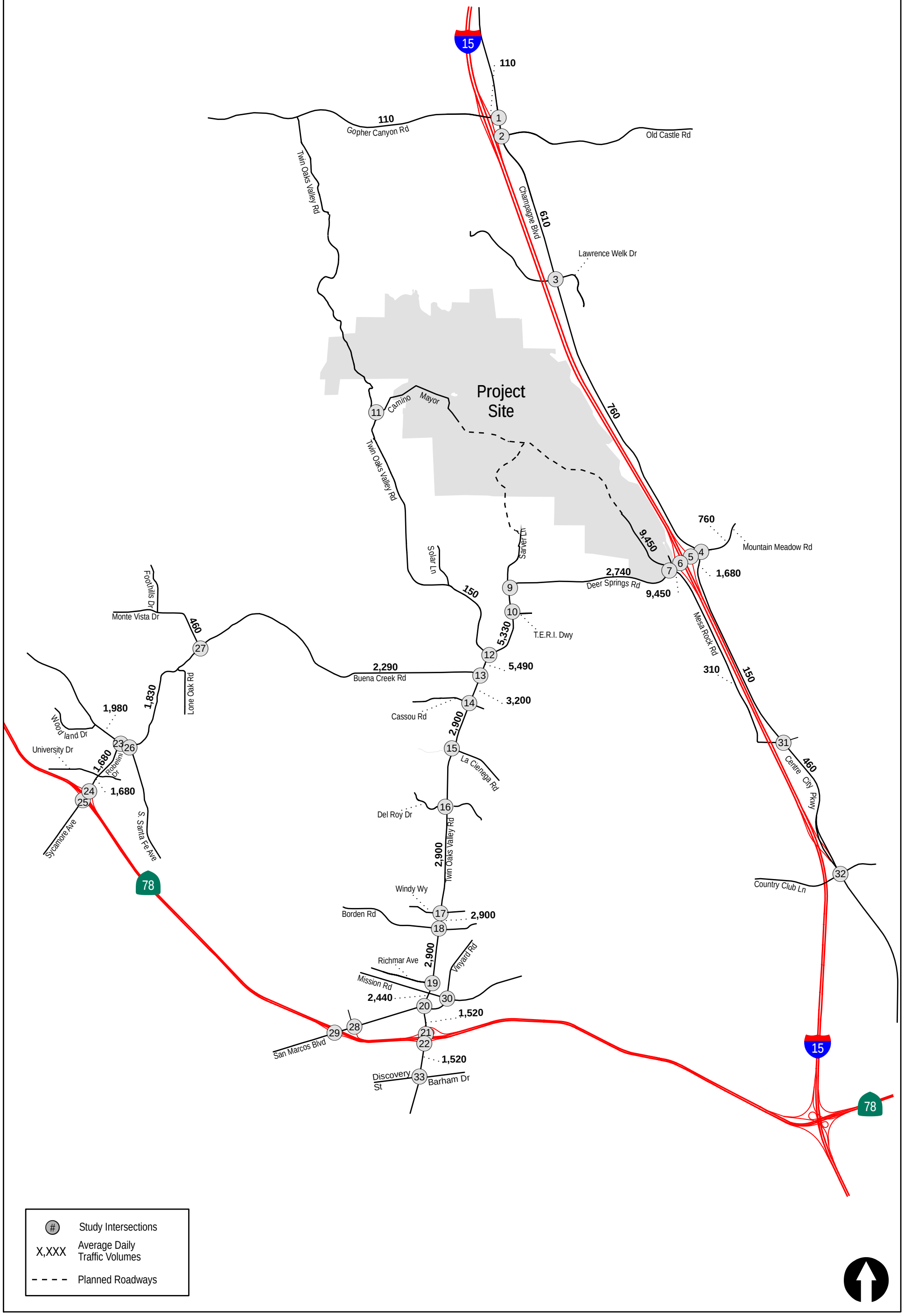

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Figure 8-3

Project Segment Traffic Assignment - Residential

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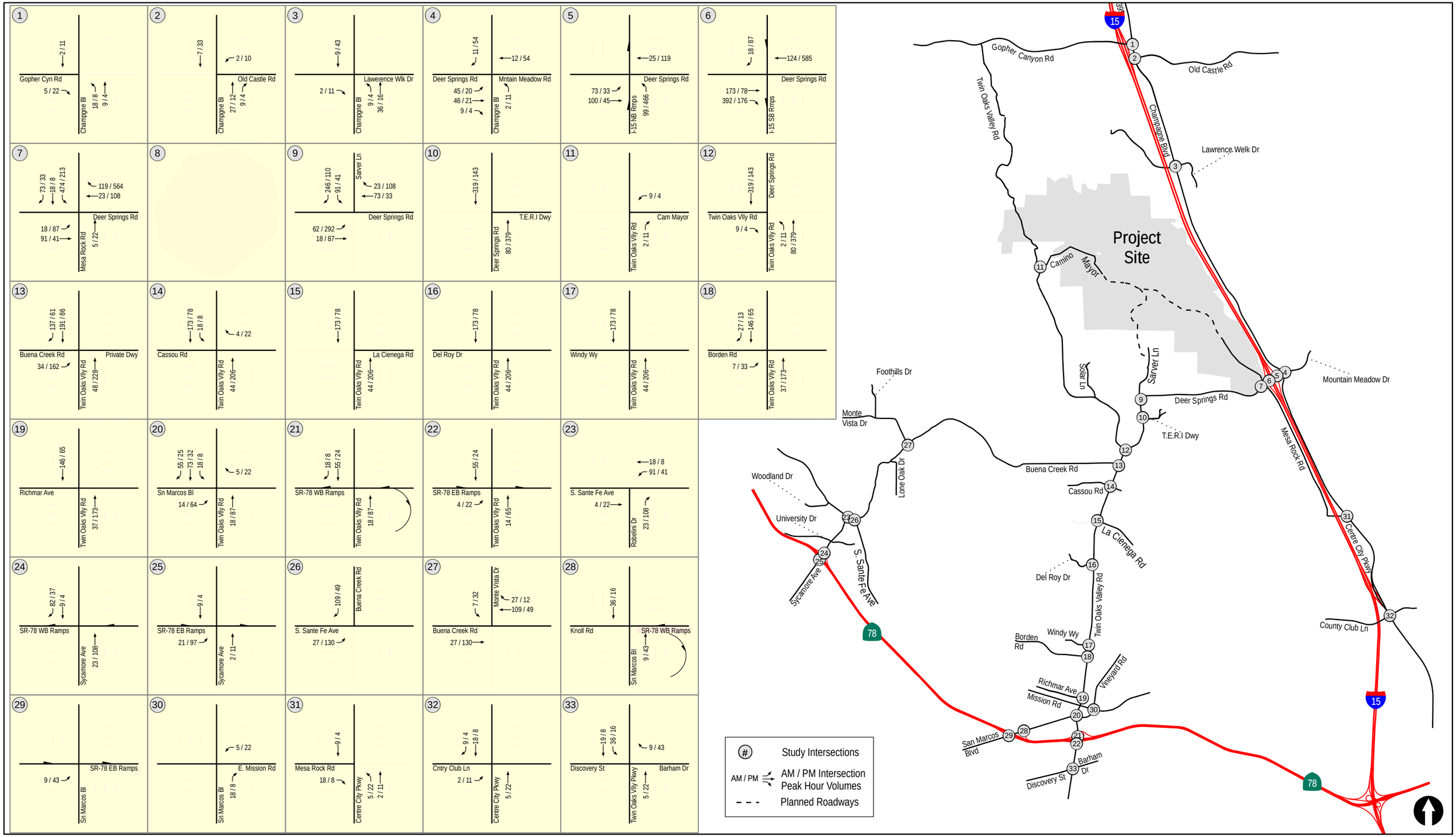

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Figure 8-4

Project AM / PM Peak Hour Traffic Assignment - Residential

SIERRA

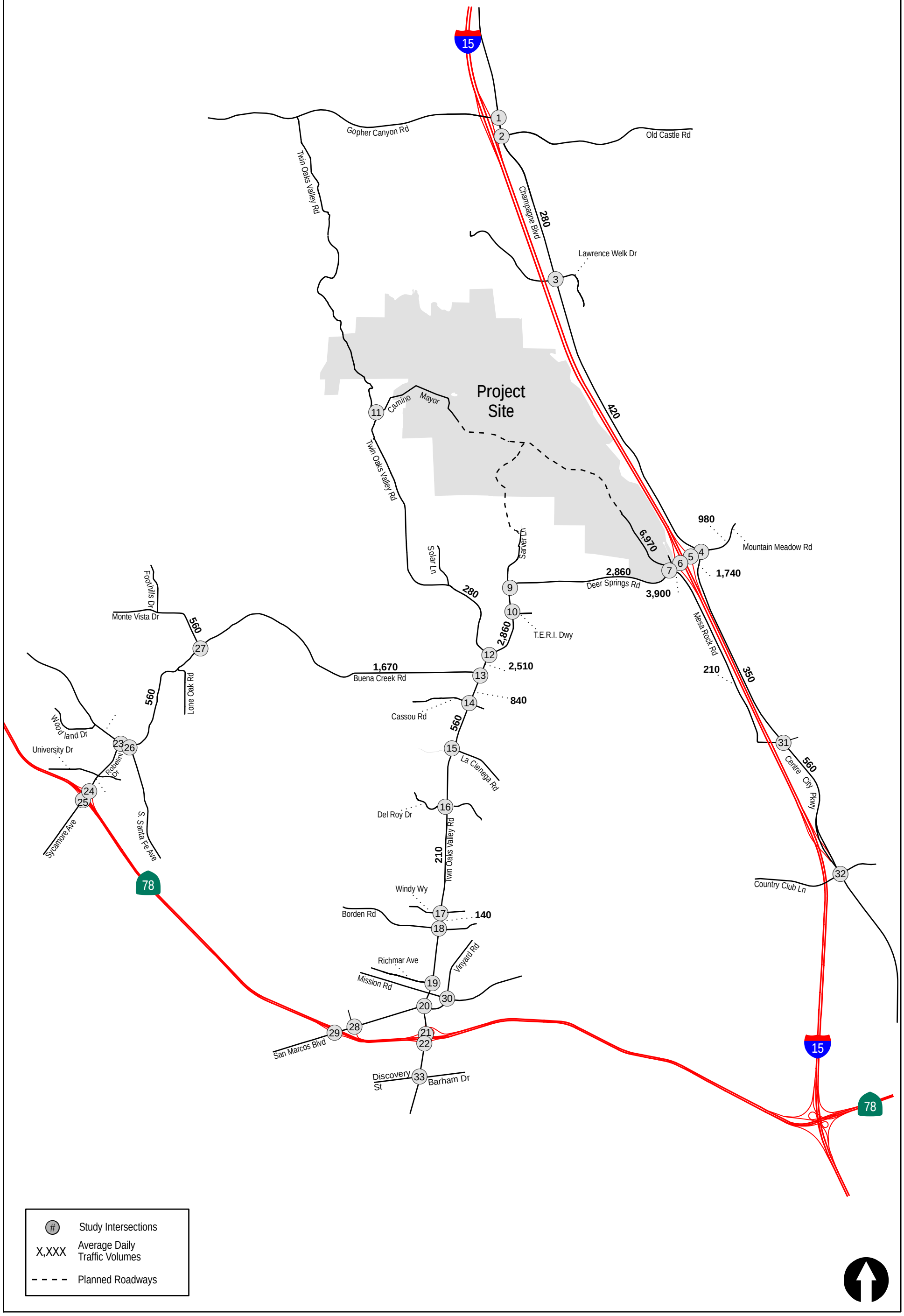

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Figure 8-5

Project Segment Traffic Assignment - Non-Residential

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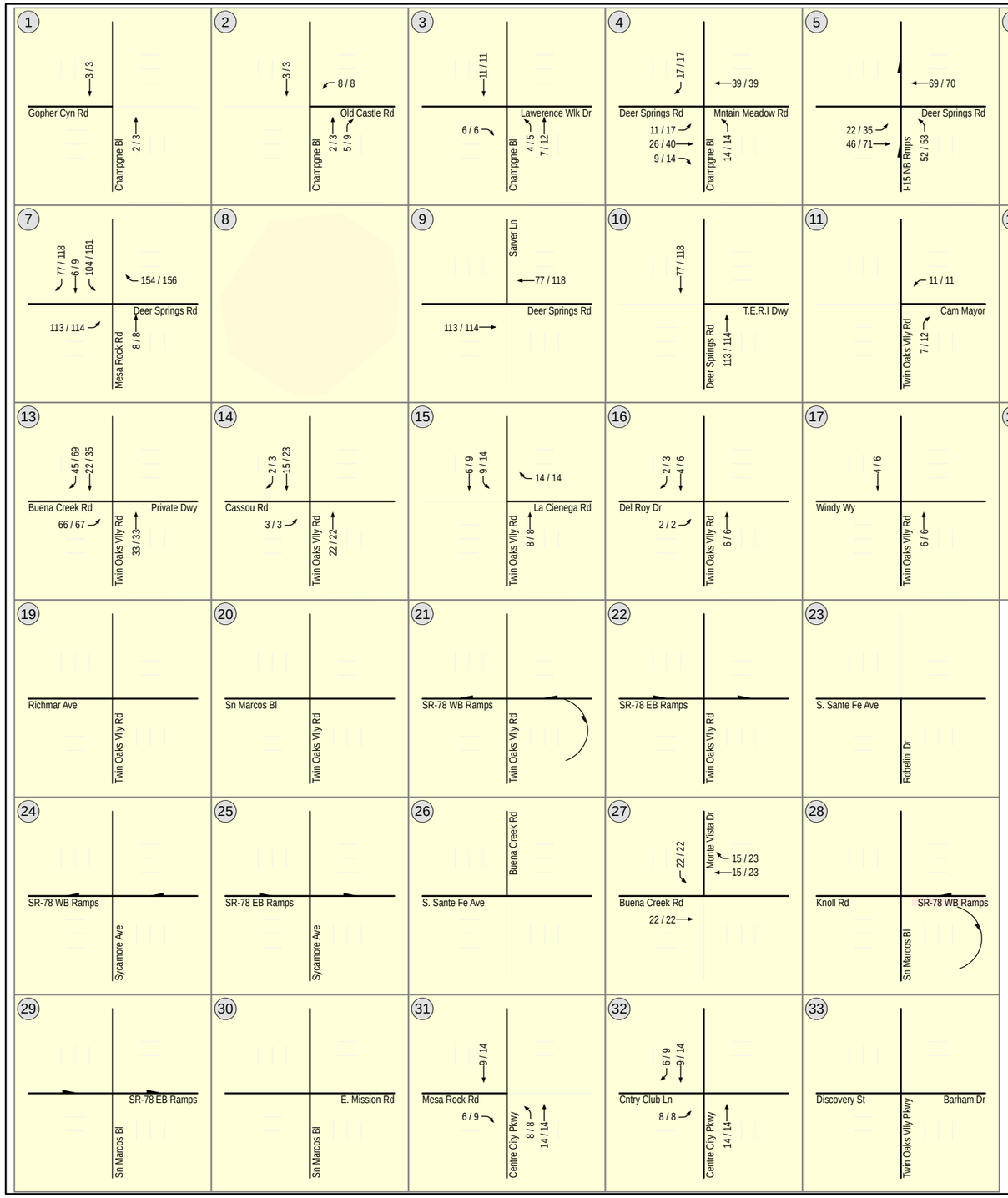

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Figure 8-6

Project AM / PM Peak Hour Traffic Assignment - Non-Residential

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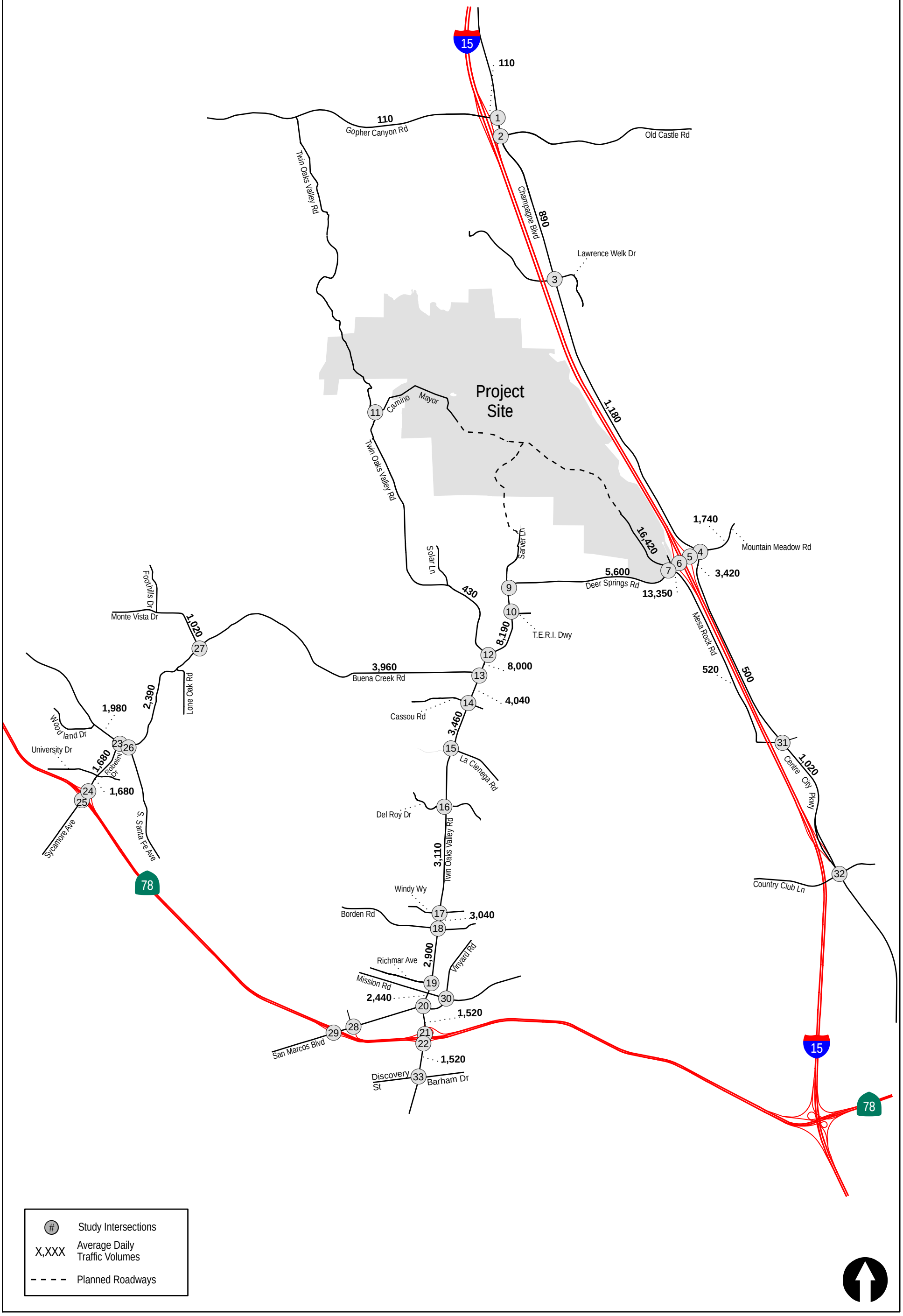

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Figure 8-7

Project Segment Traffic Assignment - Total

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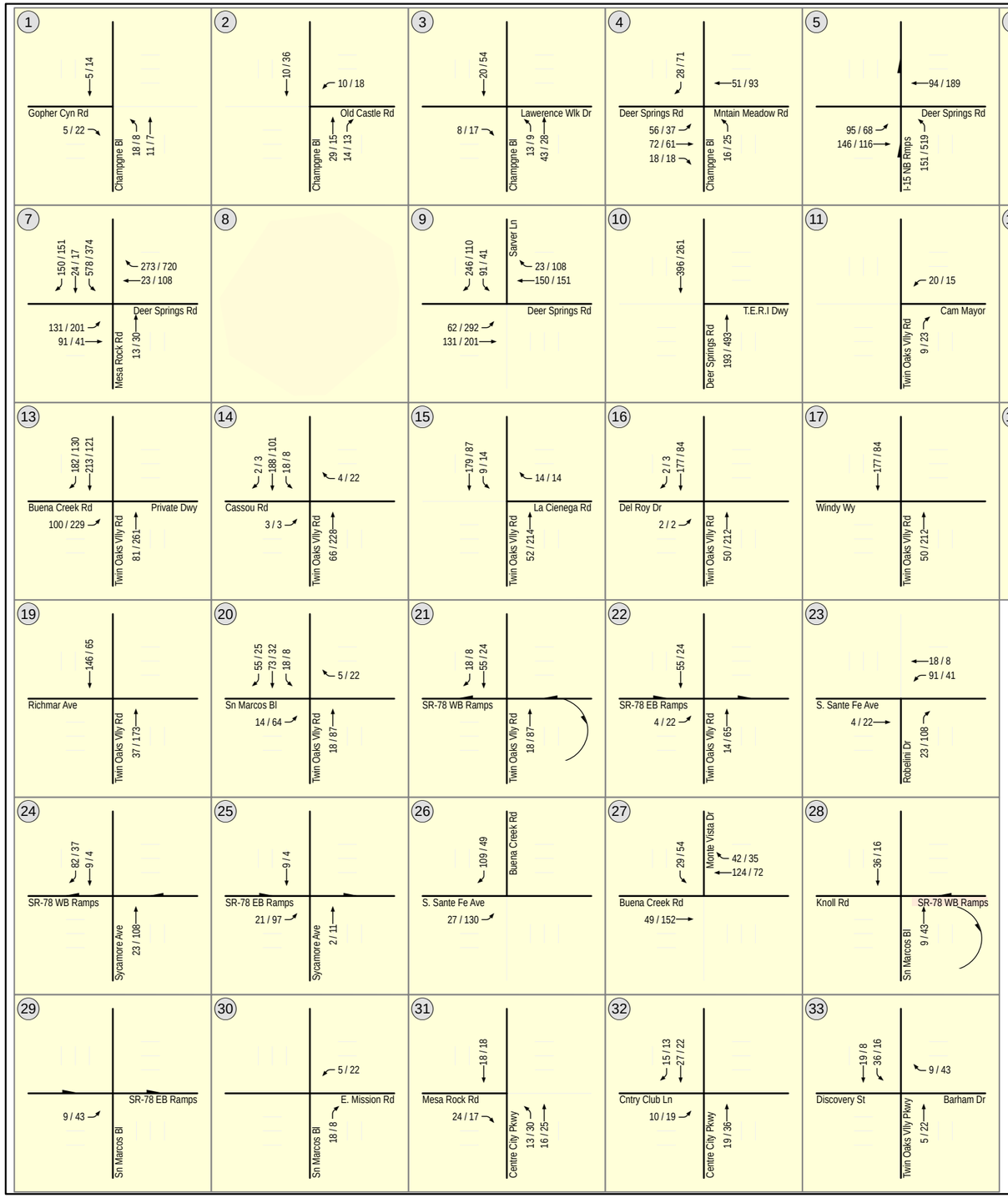

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Figure 8-8

Project AM / PM Peak Hour Traffic Assignment - Total

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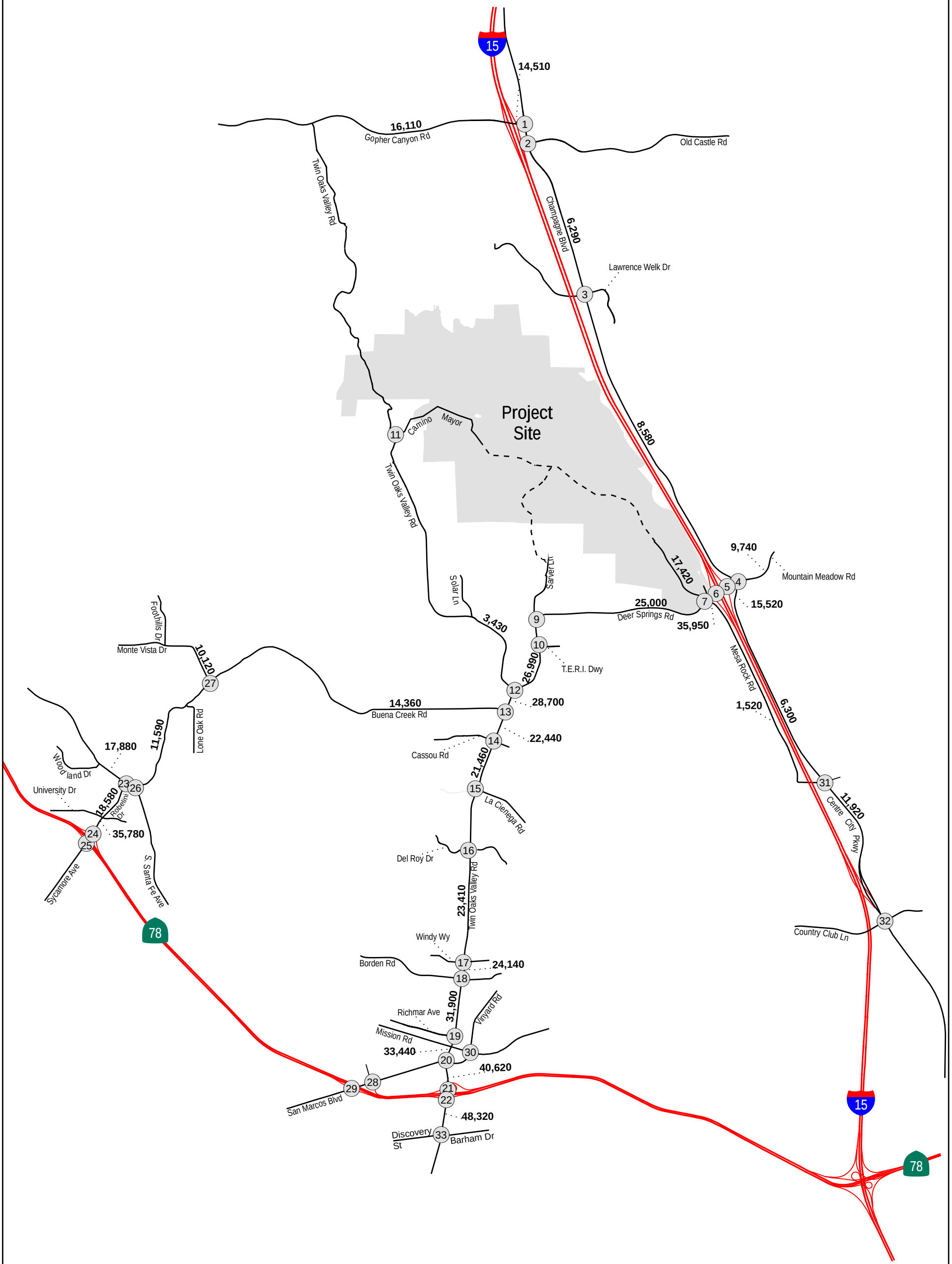

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Figure 8-9

Existing + Project Segment Traffic Volumes

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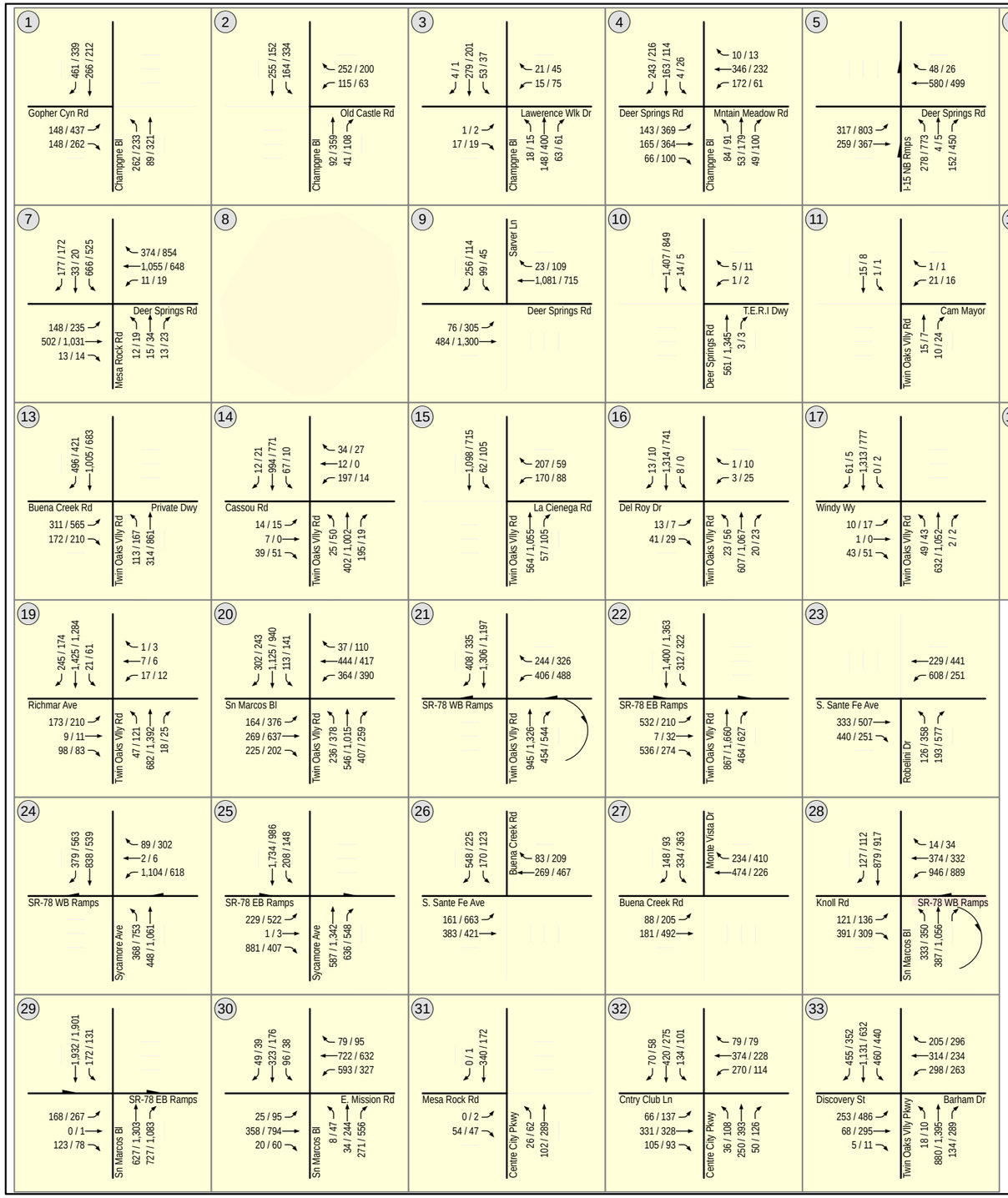

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Figure 8-10

Existing + Project AM / PM Peak Hour Traffic Volumes

SIERRA

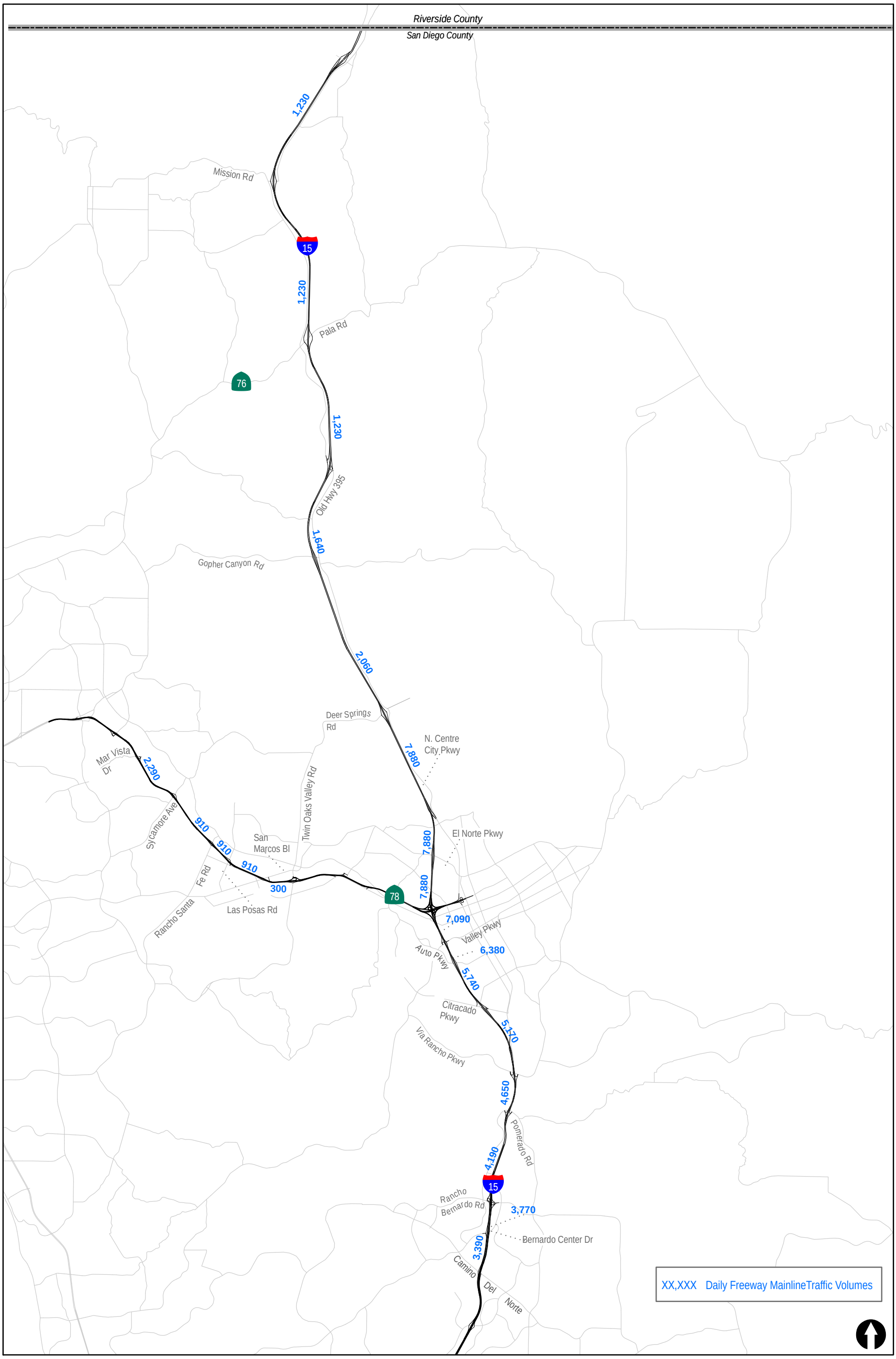

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Figure 8-11

Freeway Mainline Daily Project Traffic Volumes

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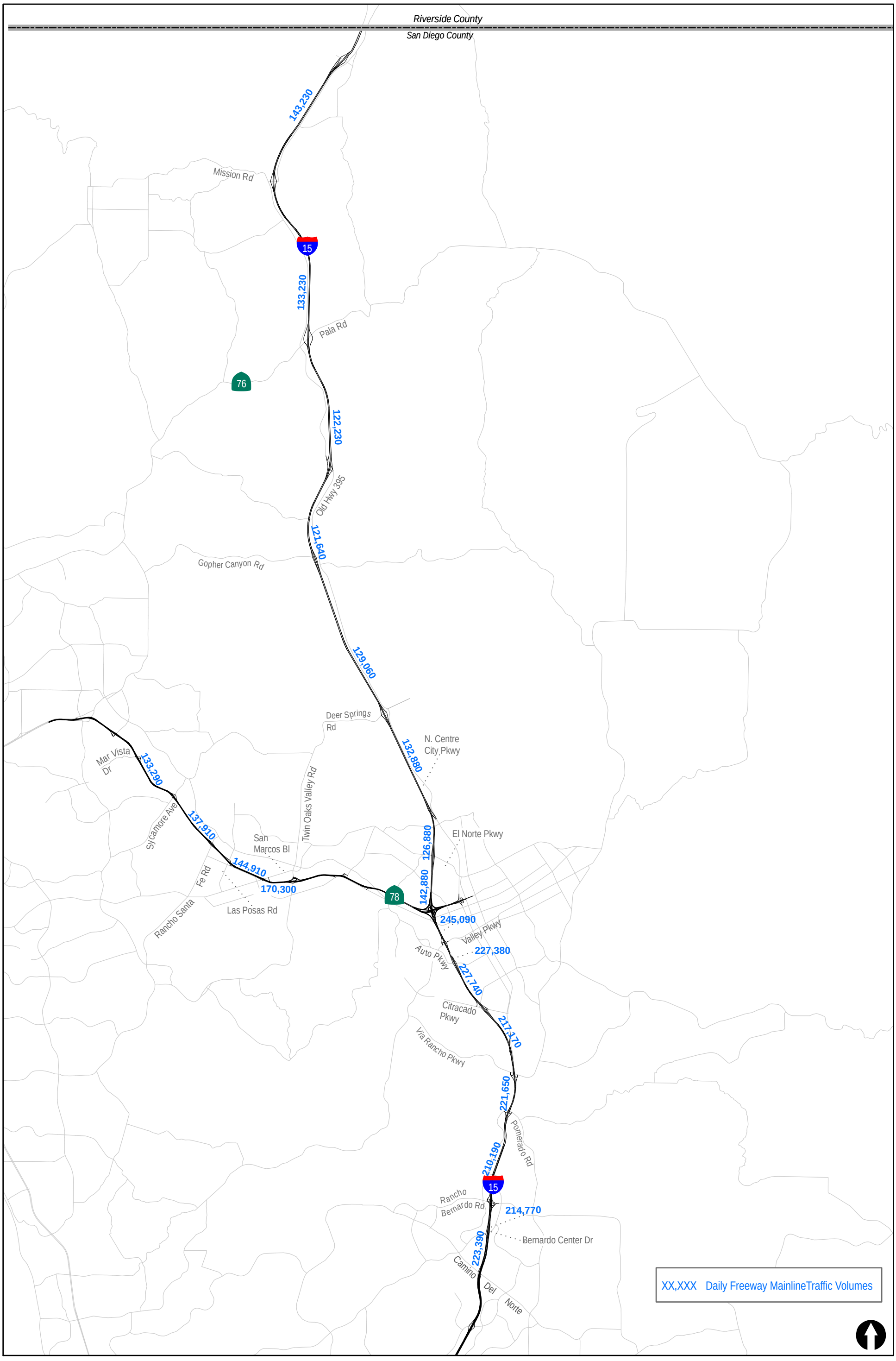

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Figure 8-12

Existing + Project Freeway Mainline Daily Traffic Volumes

SIERRA

9.0 CUMULATIVE PROJECTS

Based on a research of potential projects in the Project area and discussions with the County, a two-step process was utilized to estimate the total cumulative projects volumes. The first step was to utilize the SANDAG Series 12 Year 2020 model which incorporates the cumulative projects within the County of San Diego. The model did not include a comprehensive listing of cumulative projects within the adjacent Cities of Vista, San Marcos and Escondido, and therefore, the next step was to estimate the total cumulative traffic that would be generated by city projects and manually add that traffic to the volumes obtained from the 2020 model. A total of 192 projects are included.

9.1 Developing Cumulative Projects Volumes

Table 9–1 includes the approved and pending cumulative projects. The SANDAG Series 12 Year 2020 Transportation Model was used to forecast the cumulative projects. The existing traffic volumes were deducted from the Year 2020 volumes to obtain the cumulative traffic growth forecast within the County. The Cumulative projects traffic within jurisdictions outside the County was manually assigned to the Project study area intersections and segments and added to the above cumulative projects traffic to obtain the total cumulative projects traffic volumes.

As previously noted, the County General Plan Mobility Element includes a connection of Mirar de Valle Road (SC 990 2) between Mountain Meadow Road and Valley Center Road, referred to as "Mountain Meadow Road connection" in this report. Since this road connection would add a relatively large amount of traffic to Deer Springs Road west of I-15 and no funding or timetable has been identified to construct this roadway, the cumulative analysis was conducted both with the existing roadway network and with the Mountain Meadow Road connection.

Appendix D contains the Year 2020 volumes plots for the existing roadway network and with the Mountain Meadow Road connection respectively.

Figure 9–1 depicts the Cumulative projects segment traffic, while ***Figure 9–2*** depicts the Cumulative projects AM / PM peak hour traffic. ***Figure 9–3*** depicts the Cumulative projects (With Mountain Meadow Road connection) segment traffic, and ***Figure 9–4*** depicts the Cumulative projects (With Mountain Meadow Road connection) AM / PM peak hour traffic.

Figure 9–5 depicts the Existing + Project + Cumulative projects segment traffic and ***Figure 9–6*** depicts the Existing + Project + Cumulative projects AM / PM peak hour traffic. ***Figure 9–7*** depicts the Existing + Project + Cumulative projects (With Mountain Meadow Road connection) segment traffic. ***Figure 9–8*** depicts the Existing + Project + Cumulative projects (With Mountain Meadow Road connection) AM / PM peak hour traffic.

Figure 9–9 depicts the daily Existing + Project + Cumulative projects freeway mainline segment volumes. ***Figure 9–10*** depicts the daily Existing + Project + Cumulative projects (With Mountain Meadow Road connection) freeway mainline segment volumes.

TABLE 9–1
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
1. Campus Park	Mixed-use development, including: 529 single-family dwelling (SFR) units, 555 multi-family dwelling (MFR) units, a town center (retail) of 62,000 square feet (sf), an office building with 150,000 sf, a sports complex of 5.2 acres, and a small neighborhood park.	Just north of SR-76, 0.25 mile east of I-15
2. Campus Park West	Mixed-use development including approximately 355 MFR units, 400,000 sf Commercial, 50,000 sf Office Professional, 347,000 sf of Light Industrial, and possible Civic Uses..	Northeast quadrant of I-15 and SR-76
3. Pala Mesa Highlands	Maximum of 130 SFR. Density 1.6 DU/acre. Lot sizes vary from 5,500 sf to 23,500 sf, two parks totaling 4.3 acres, trails, 36.5 acres of open space. SPA to allow clustering.	West of Old Highway 395 between Pala Mesa Drive and Via Belamonte
4. Tedder TM	Split lot into 13 SFR lots, ranging in size from 1.0 to 6.43 acres net.	South side of Pala Mesa Drive, west of I-15 and east of Daisy Lane
5. Hukari Subdivision	Minor residential subdivision with road improvements. 4 SFR lots plus one remainder lot (3.4 to 7.7 net acres each).	Northern terminus of Mountain View Road and West Lilac Road on west side of Bonsall
6. Fallbrook Ranch	11 SFR lots	East of Old Highway 395 and Sterling View Drive (at Mission Road), Fallbrook
7. Los Willows Inn and Spa	Add additional units to a Bed and Breakfast	532 Stewart Canyon Road
8. Reeve TPM	Minor residential subdivision. 3 SFR lots (2 acres minimum).	2987 Sumac Road, Fallbrook
9. Evans TPM	Minor subdivision into 2 residential/agricultural parcels (2.00 and 2.10 acres). Private septic system.	West side of Sage Road between Sumac Road and Pala Road, Fallbrook
10. Bridge Pac West I TPM	Minor residential subdivision. 4 SFR lots plus one remainder lot (2.04, 2.08, 2.12, 2.14 and remainder 7.08 net acres each).	3321 Sage Road, Fallbrook
11. Pala Mesa Resort	Specific Plan Amendment for modification and construction of new recreation and resort-related facilities. Addition of 186 resort rooms and wedding facility. Expansion of resort by 6 acres.	2001 Old Highway 395 at Tecalote Lane, north of SR 76 and immediately west of I-15, Fallbrook
12. Lung TPM	Minor residential subdivision. 2 SFR lots (6.7 and 4.0 acres)	Citrus Drive and Calle Canonero, Fallbrook

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
13. Chipman TPM	Minor residential subdivision. 4 SFR lots plus one remainder lot, ranging from 2.13 to 2.85 net acres each and remainder 4.00 net acres. Septic system.	East side of Citrus Lane between Peony Drive and Dos Ninos, Fallbrook
14. Bierman TPM	Minor residential subdivision. 4 SFR lots, ranging from 2.01 to 2.19 net acres each. Septic system.	4065 Calle Canonero, Fallbrook, south of Vern Drive and west of Lorita Lane
15. Cooke Residence	4,723 sf SFR	3974 Citrus Drive between Wilt Road and Vern Drive
16. Treister TPM	Minor residential subdivision. 4 SFR lots plus one remainder lot.	Donut-shaped parcel surrounding 401 Ranger Road, Fallbrook
17. Mission Ridge Road TPM	Minor residential subdivision. 4 SFR lots.	235 Mission Ridge Road east of I-15 off Mission Road, Fallbrook
18. Rancho Alegre TPM	Part of 116-acre subdivision (33 lots). This project consists of 20 lots in the eastern portion of property and proposes a different street alignment, grading, and lot arrangement.	West side of Ranger Road approx. 0.4 mile north of Reche Road
19. Rarick TPM	Minor residential subdivision. 4 SFR lots (ranging from 2.02 to 2.25 acres each). Septic system.	3261 Reche Road, Fallbrook
20. Fernandez TPM	Minor residential subdivision. 4 SFR lots. Minimum lot size 2 acres. 2 existing SFR on-site.	3838 Foxglove Lane, Fallbrook
21. Rabuchin TPM	Subdivision of 2 lots into 4 SFR lots. Existing SFR on site	4065 Calle Canonero, Fallbrook
22. Pala Casino	187,300 sf casino, hotel, theater.	Pala Road and Pala Mission Road
23. Rosemary's Mountain/Palomar Aggregates Quarry	Aggregate rock quarry and processing plants for concrete and asphalt. Approximately 22 million tons of rock would be mined over 20 years. Realignment of SR 76 from Project site west to I-15. Reclamation Plan to designate lower portion of site as water storage reservoir after completion of mining activities.	North side of SR 76, 1.25 miles east of I-15
24. Patapoff Minor Residential Subdivision	Subdivide property into four parcels of 4.3 acres, 4.2 acres, 9.6 acres, 8acres, and a 33-acre parcel	Southern end of Rainbow Hills Road
25. Prominence at Pala	Subdivide the property into 30 SFR and two open space lots ranging in size from 4 to 96 acres	Pala Del Norte Road. 1/3 mile north of SR-76 and approximately two miles west of the Pala Indian Reservation

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
26. Palomar College North Education Center District Master Plan	New Community College campus to serve approximately 12,000 students, to include classroom and administration buildings, parking, open space, athletic fields, and off-site road, water and sewer improvements.	East side of I-15 between Pankey Road and Pala Mesa Heights Drive
27. Caltrans Realignment of SR-76	Realignment and widening of roadway, improvements to northbound I-15 on- and off-ramps.	From I-15 to west of Rice Canyon Road
28. San Luis Rey Municipal Water District Master Plan	Exploration of pipeline and water storage options.	SLRMWD service area and vicinity, north and south of SR-76 between I-15 and Pala Temecula Road
29. --	39 condo units	Canonita Drive and Old Hwy 395, Fallbrook
30. --	8 SFR lots	Aqueduct Road and Via Urner, Bonsall
31. --	9 SFR lots	Old Hwy 395 and Via Urner, Bonsall
32. Marquart Ranch	9 SFR lots. Includes improvements to Mesa Lilac Road, and drainage improvements.	West Lilac Road and Mesa Lilac Road, Bonsall
33. Fallbrook Oaks	19 SFR lots	Reche Road and Ranger Road, Fallbrook
34. Ridge Creek Drive	14 SFR lots	Ridge Creek east of Live Oak Park Road and Ridge Drive, Fallbrook
35. Club Estates	31 SFR lots	SR 76 east of Cole Grade Road at Pauma Valley Drive
36. Oak Tree Ranch TM	24 SFR	15560 Spring Valley Road
37. Turnbull TM	17 lots	32979 Temet Drive
38. Wexler TPM	4 lots	--
39. Shadow Run Ranch	54 SFR lots and 2 open space lots. MUP filed concurrently for Planned Residential Development that would cluster residential development on minimum 2-acre lots.	Shadow Run Ranch, SR-76 and Adams Drive, Pala
40. Diana Acres	3 lots	Adams Drive off SR-76, Pauma Valley
41. Hunter Subdivision	3 lots	15550 Adams Drive
42. Burge TPM	4 lots plus remainder	34487 Citracado Drive, Pala
43. Pauma Valley Packing Company	Packing and processing	34188 Hampton Road
44. Shadow Run Ranch/ Schoepe-Pauma TM	13 lots	15040 Adams Drive

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
45. Warner Ranch	732 SFR lots, 168 condo units, community park, fire station lot	Pala-Pauma
46. Pauma Casino and Hotel	400 room hotel and 171,000 s.f. casino	Approximately 11 miles east of I-15 along SR-76
47. De Jong/Pala Minor Subdivision	Minor residential subdivision. 3 SFR lots (1.03, 2.06 and 2.31 net acres each).	Canonita Drive between I-15 and Tecalote Drive
48. Crossroads Investors Minor Subdivision	Minor residential subdivision. 4 SFR lots plus one remainder lot. Existing SFR and grove on site	Ranger Road, Fallbrook
49. Chaffin/Red Mountain Ranch Subdivisions	Withdrawn TM 5217: Residential development with 29 SFR lots (2.28 to 18.33 acres) and 2 biological open space zones. TM 5225: 55 acres divided into 6 SFR lots (8.1 to 13.9 acres). TM 5227: 44.5 acres divided into 4 SFR lots (8.08 to 13.71 acres each).TM 5228: 19.1 acres divided into 2 lots (8.4 and 10.7 acres).	Rainbow Glen Road and Red Mountain Dam Road, Fallbrook
50. John Collins TPM	2 lots	Margarita in Fallbrook
51. Brannon Trust TPM Remai	4+ lots	411 Yucca Road, Fallbrook
52. Dien N Do TPM	4+ lots	405 Ranger Road
53. Tim Rosa TPM	4 lots plus remainder	2973 Los Alisos Drive
54. Leising TPM	4 lots	1246 Via Vista
55. Atteberry TPM	3 lots	1166 Sierra Bonita
56. Johnson TPM	2 lots	3035 Trelawney Lane
57. American Lotus Buddhist TPM	4 lots plus remainder lot	Reche Road at Rabbit Hill, Fallbrook
58. Chipman TPM	4 lots plus remainder	Camino Zasa, Fallbrook
59. Reche Road TM	12 SFR lots	3129 Reche Road, Bonsall
60. Palisades Estates	51 lots	3880 Dos Niños Road/Elevado Road
61. Dion TPM and time extension	2 lots	3562 Canonita Drive
62. Patricia Daniels TPM	4 lots plus remainder	3609 Canonita Road, Fallbrook
63. Cameron Subdivision	Minor residential subdivision. 3 SFR lots (2.22, 2.44 and 6.37 acres each). Septic system.	2644 Vista de Palomar, Fallbrook. North side of Vista de Palomar between Post Hill and Via Rancheros

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
64. Tesla Gray TPM	Minor residential subdivision. 4 SFR lots plus one remainder lot. Future development of 5 SFR	East end of Vista de Palomar, and north end of Old Post Road, Fallbrook
65. Aspel TPM	Minor residential subdivision. 2 SFR lots (2.09 and 5.20 acres each).	3107 Old Post Road, Fallbrook
66. James Patapoff TPM	Subdivision of 16.8 acres into 4 lots plus a remainder lot	2639 Via Alicia, Fallbrook
67. Yew Tree Spring Water Corp	3 residential lots	3573 Diego Estates Drive, Fallbrook
68. Haugh, Granger TPM	4 lots	Fallbrook
69. Brown, Lee & Karen, TPM	3 lots	3850 Gird Road
70. Pepper Drive TPM	4 residential lots	3926 Flowerwood Lane
71. Surf Properties TM	15 lots	3545 Vista Corona
72. Brook Hills TM	35 lots	4061 La Cañada Road, Fallbrook
73. Latter-Day/Via Monserate	17,000 sq. ft. church and meeting rooms	Fallbrook
74. Leeds and Strauss TM	17 SFR lots – TM time extension until 09/13/2009	North side of Olive Hill Road, near intersection with SR-76, Bonsall
75. Murray Davidson	7 lots	3956 Pala Mesa Road, Bonsall
76. Shamrock Partners TPM	3 lots	Shamrock Road, Bonsall
77. Crook TPM	5 lots	32179 Shamrock Road
78. Tabata Bonsall TPM	4 lots	5546 Mission Road
79. Berezousky TPM	Subdivision of 3.11 acre into 4 residential lots.	4040 Pala Mesa Drive, Fallbrook
80. Murray Davidson TPM	Subdivision of 1 lot into 4 SFR lots plus a remainder lot	3956 Pala Mesa Road, Fallbrook
81. Sumac TPM	4 lots	3111 Sumac Road
82. Janikowski SFR	3,200 sf SFR	9686 Pala Road (SR 76), Fallbrook, on north side of SR 76
83. Kratochvid TPM	4 lots	Old Highway 395
84. Kohl TPM	4 lots plus remainder	7641 Mount Ararat Way, Bonsall
85. Woodhead TPM	4 lots plus remainder	Mt. Ararat Way, Bonsall
86. Rockefeller TPM	2 lots	9590 Lilac Way, VC

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
87. McNulty TPM	2 lots	32171 Dos Niñas
88. Stehly Caminito Quieto TPM	4 lots	32009 Caminito Quieto at W. Lilac Road
89. Sanders TPM	4 lots plus remainder lot	West Lilac Road, 1.25 miles west of Old Highway 395
90. Pala Shopping Center	Addition of 5 commercial buildings to an existing commercial site with grocery store.	On Old Highway 395 just northwest of the intersection of I-15 and SR 76
91. Monserate TM	7 SFR	3624 Monserate Hill Road
92. Dimitri, Diffendale, Kirk TPM	4 lots	Monserate Hill Road and Monserate Place
93. Madrigal TPM	3 lots	1055 Rainbow Valley Boulevard near Old Hwy 395
94. Singh Power Plant	Power Generation facility	4 miles NE of I-15 on Pala Del Norte Road, north of SR 76
95. Gregory Landfill	Landfill site for solid waste	Approximately 3.5 miles east of I-15 on SR-76
96. Meadowood	355 single-family dwelling units, 503 multi-family dwelling units, a 10 acre neighborhood park, and an elementary school.	Just north of SR 76, 0.25 mile east of I-15
97. Bonsall - BO 18,20,22,29,32,33	61 Rural Single Family Residential - 1 unit per every 4 acres.	Bonsall - North of Camino Del Rey, west of I-15
98. Fallbrook - FB 17, 18	28 Single Family Rural Residential - splitting between SR1 and SR2 classification.	Reche Road, West of Ranger Road
99. Fallbrook - FB 21,22,23	7 Single Family Rural Residential - SR10 Class.	Northern border of county, next to river side county
100. Fallbrook - SR2	3 Single Family Rural Residential - SR10 class.	East of I-15 / Mission Road interchange
101. Fallbrook - FB19,25,26	13 Single Family Rural Residential - SR10 class.	North of Pala, East of I-15, west of Rice Canyon
102. Fallbrook - FB 21,22,23	7 Single Family Rural Residential.	Northern border of county, next to river side county
103. North County Metro - NC22	44 Single Family Rural Residential - SR1 class.	North of San Marcos Boundary, along Las Posas Road
104. North County Metro - NC37	30 Single Family Rural Residential - to SR4	West of Twin Oak Valley Road, northwest of Deer Spring road, at Calafia Road
105. North County Metro - NC3A	10 Single Family Residential - SR10	North-East of Broadway/Jesmon Dende, Access Vista Verde
106. N County Environmental Resources Recycling Facility	Recycling facility for pre-sorted, non-contaminated wood and construction debris. The project consists of 12,000 sf steel building, 100,000 gallon water tank, security, and truck scales.	25568 Mesa Rock Road, immediately east of I-15, north of SR 78

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
107. Valley Center - VC51	15 Single Family Rural Residential - SR-4	Corner of Courser Canyon and Lilac Road
108. Valley Center - VC57, 63, 64	238 Single Family Rural Residential - SR-2	Corner of Valley Center Road / Mactan Road
109. Valley Center - VC67	North and south of Valley center road between Miller Road and Cole Grade Road	North and south of Valley center road between Miller Road and Cole Grade Road
110. Valley Center – VC7, 11, 20A, 20B, 54, 61 ,66	261 Single Family Rural Residential - SR-2	East of I-15, south of W. Lilac Road
111. Casa de Amparo, MUP	This project is a Major Use Permit for a group residential care facility to serve up to 60 children and the child development center would have the capacity to serve 46 children.	325 Buena Creek Rd
112. Dai dang meditation center	The permit will provide for the development of the following buildings totaling 22,796 square feet: a Meditation Hall, Residence Quarters, and the Main Worship Hall	6326 Camino Del Rey
113. Dougherty pet resort/ MUP 10-027	The project also includes a proposed 1,056 square foot kennel with a rooftop grass deck and pedestrian bridge. Enough kennel for 40 dogs/cats	1412 Windsong Lane
114. Gainer, major use permit, p08-052	The project consists of construction of an approximately 10,368 square foot horse stable to accommodate up to 18 horses, construction of a 10,800 square foot covered riding arena, and improvement of the existing driveway.	6893 West Lilac Road
115. Patnode; MUP 08-036	The project proposes to construct a 4,000 square foot reception hall (not permitted in the zone), pave driveways for a shuttle to move the event attendees, and to use the existing residence as a staging area for scheduled events. Also, an unpaved parking area is proposed (not permitted).	14044 Horse Creek Trail
116. Valley Center Community Church	The project is a Major Use Permit for a new church campus on a 20.56-acre parcel. Construction will occur in four phases; at the completion of the final phase of construction, the church campus would consist of six main structures totaling approximately 65,000 square feet with associated parking, landscaping and outdoor areas.	29010 Cole Grade Road
117. Casa de Amparo MUP minor deviation p 03-	Foster Care Facility for Casa de Amparo - 4-Bldgs for a total sq. footage of 28353.	325 Buena Creek Road
118. Champagne lakes, mup, mod	Modification for the relocation of 51 RV spaces and one mobile home space to include full hookups to 20 RV spaces, a new restroom, and an area screened by landscaping for vehicle storage.	8310 Nelson Way

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
119. Crossroads church, MUP mod for pre-school	The modification proposes to install and operate relocatable pre-school classrooms. The pre-school classrooms will have a maximum of 100 students and will operate from 6am to 6:30pm Monday through Friday.	2406 N. Twin Oaks Valley Road
120. Vista Valley country club, SPA and MUP	Total increase of 12,520 sq. feet enclosed and 4,442 sq. feet un-enclosed.	2262 Gopher Canyon Road
121. Hidden meadows - Oak Woodlands rezone	The Project will contain 17.3 acres of General Commercial, 5.6 acres of Office/Professional, 7.7 acres of 10.9 DU/AC Multifamily Residential and 5.2 acres of 15.0 DU/AC Multifamily Residential.	This property is within the Northern Village Town Center of the Valley Center Community.
122. Mountain gate rezone for TM timex	Tentative Map Time Extension and Rezone to make sure that only those uses consistent with the Specific Plan are permitted. Tentative Map authorized a total of 147 single family lots.	27319, 27321, 27329 Mountain Meadow Road
123. Orchard run major subdivision (296 lot)	The project will contain 300 Single Family Residential, 5.8 acres Waste Water Treatment Plant, 1.4 Acres of Community Recreation	Valley Center Road; 13675 Old Road; 28290 Lilac Road
124. Tentative map	Approved Tentative Map for 16 dwelling units on 41.7 acres.	14357 Tyler Road
125. Alti, GPA, rez,	GPA withdrawn; however, the Tentative Map (TM 5551) proposes to subdivide 59.52 acre site into 71 lots.	14096 Sunday Drive; 27845 Valley Center Road
126. Beauvais TM	Tentative Map to subdivide 23.2 acres into 7 residential lots.	South of intersection of Bella Linda and Old Castle Road
127. Brisa del mar	The project is a Tentative Map for a residential subdivision of 206 acres into 27 x 2-acre minimum lots.	31002 Aquaduct Road; 7520, 7530, 7570, 7574, 7650 Camino Del Rey
128. Canyon villas Welk TM, rez and STP	The project is a Rezone and Tentative Map (TM 5313) to subdivide 20.89 acres into 177 time share units.	28833, 28915 Champagne Blvd; 8860 Welk View Drive
129. Charles froehlich TM	The project is a residential subdivision of two parent parcels, resulting in a total of six lots. The site is located on Double K Road within the Valley Center Community Planning Group in unincorporated San Diego County.	Sierra Roja and Double K
130. Circle p lane TM 5468rpl3	The project is a Major Subdivision of 11 proposed lots ranging in area from 1.03 to 2 gross acres on a 15.48-acre property with access via a private easement road from Mountain Meadow Road. The subject property is designated (2) Residential by the North County Metropolitan Subregional Plan	10264 Circle P Lane; 27446 Mountain Meadow Road
131. Dabbs tentative map	This is a request for a tentative map on 38.4 acres (gross acres). The subdivision proposes 9 lots. Each proposed lot will be 4 acres in size (net acres).	32006 Aquaduct Road

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
132. Foxenwood prd TM 4836 & STP 89-041	Tentative Map to subdivide 45.2 acres into 17 dwelling units.	Mirar De Valle
133. Golf green estates/s/site plan	116 Lot subdivisions of 6,000 square foot parcels.	Old River Road and Camino Del Rey
134. Kawano subdivision	Tentative Map to subdivide 10.51 into 8 residential lots.	1050 Ora Avo Drive
135. McIntyre TPM 5014	Lilac Mountain Ranch: 22-lot/108-ac	11278 Lilac Vista Drive;
136. Oak glen	The project proposes major subdivision of 20.01 acres. The subdivision proposes nine single family residences on 2 acre minimum lots. 9 Single Family Residential.	14099 West Oak Glen Road
137. Orchard Vista, TM, rez	Withdrawn	13278 Orchard Vista Road
138. Pauma Ranches	The project is a Tentative Map to subdivide 100 acres into 22 residential lots, with each lot no less than 4 acres in size.	30434 Montrachet Street;
139. Rabbit run, TM, 10 lots	The project is a major subdivision of 17.70 gross acres into 7 lots ranging in size from 2.03 to 4.02 gross acres.	29222, 29270 Duffwood Lane
140. West Lilac Farms I & II	Approved Tentative Map for 28 single family lots on 92.8 acres.	31817 Via Ararat Drive; 32542 Aquaduct Road
141. Boyer tpm 20794	Approved Tentative Parcel Map for 3 lots on 3 acres.	
142. Cunningham , TPM, 2 lots	The project proposes to create two legal lots from Assessor Parcel Numbers 172-140-62 and 64. Parcel 1 is 7.40 net acres and Parcel 2 is 17.6 net acres.	1221 Tarek Trail
143. Fitzpatrick TPM	The project is a minor subdivision of a 10.8-acre parcel currently being used for agriculture (avocado grove). The project proposes to develop four residential lots ranging in size from 2.3 to 3.1 acre.	Tomsyl Road
144. Gangavalli, TPM, 2 lots	The project proposes to divide 5.05 net acres into 2 parcels measuring 2.51 acres gross (2.29 acres net), and 2.51 acres gross (2.45 acres net).	10418 King Sanday Lane
145. Goodnight ranchos, TPM, 2 lots	The project proposes to divide 5.0 acres into 2 parcels measuring 2.45 acres net each. The proposed parcels will have frontage upon Circle R Lane.	30359 Circle R Lane
146. Harlow TPM	3 Lot Subdivision	12542 Betsworth Road
147. Hefner/brown 4 lot and remainder TPM: TP	Subdivide a +/-57.9 acre parcel into four lots plus a remainder (lots range from 7.4 to 13.1 net acres).	31460 Aquaduct Road
148. Kim tentative parcel map	4 lots TPM w/ Remainder Parcel The project is a tentative parcel map application to subdivide a 46.72 acre parcel into 4 lots plus a remainder lot, ranging in area from 7.4 acres to 12.2 acres, for residential land use.	29640 Pamoosa Lane

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
149. Kirkorowicz, TPM,	The project proposes a two lot subdivision for the creation of two single-family residences and associated driveways and septic.	Fairview Road
150. Matheson, TPM 21173	12.83 acres into 2 residential lots of 4.013 and 8.259 net acres.	1202 Rancho Luiseno Road
151. McBride, TPM, 2 lots	2-lot residential subdivision	29945 Spearhead Trail
152. McNally rd parcel map	The project proposes to divide 78.3 acres into 4 parcels and a remainder measuring 8.3 acres net, 4.2 acres net, 4.0 acres net, 4.0 acres net and 57.8 acres net, respectively.	McNally Road; Lilac Road
153. Moddelmoa TPM	Tentative Parcel Map to subdivide 21.1 acres into 4 parcels and a remainder.	30455 and 30463 Roadrunner Ridge South
154. Mustafa TPM	Tentative Parcel Map to subdivide 16.4 acres into 4 parcels and a remainder.	9770 Circle R Road
155. Nichols Whitman, TPM	TPM 4 Lots	10015 W Lilac Road
156. Rimsa TPM 2 lots	2 Single Family Residential lots	235 West Camino Calafia
157. Rios, TPM 21143	The project is a minor subdivision to create 2 parcels	12902 Mirar de Valle Road
158. Robinson, TPM, 4 lots	4 Single Family Residential lots	10127 Circle R Drive
159. Sage Meadow TPM	2 Single Family Residential lots	13510 Sage Meadow Lane
160. Sanders, TPM	Tentative Parcel Map: Standard 4 lots plus a reminder lot	6993 W Lilac Road
161. Souris, TPM, 4 lots	Divide 38.8 net acres into 4 parcels ranging in size from 4.01 to 21.47 net acres. One existing single-family residence and guesthouse resides on Parcel 3 and will remain	14174 Sun Rocks Drive
162. Tran TPM	4 Single Family Residential lots	29623 Valley of the King Road
163. Turner, TPM	4 Single Family Residential lots	29133 Sandy Hill Drive
164. Weber, TPM 21128	4 Single Family Residential lots	3458 Royal Road
165. Wild, TPM 21170	4 Single Family Residential lots	1560 Wild Acres Road
166. Yuan, minor subdivision + remainder, TPM	The project is a Tentative Map to subdivide 89.88 acres into four parcels plus a remainder parcel.	Old River Road and Dentro de Lomas
167. Pfaff, TPM, 3 lots	Tentative parcel map to divide a 7.79 acre parcel into three residential lots of 2.5, 2.1 and 2.7 net acres (Parcels 1, 2 and 3 respectively). The site contains an existing single-family residence on proposed Parcel 1 that would be retained.	32010 Caminito Quieto
168. Kohne Residence, rez	Withdrawn	Calle Oro Verde

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
169. Castle Creek Condominiums, GPA, SPA, TPM	The project is a General Plan Amendment, Specific Plan Amendment, and Tentative Map to change the existing Land Use Designations to (21) Specific Plan Area in order to increase the density from 1.29 to 1.37 to allow a Tentative Map to subdivide the site into 63 dwelling units.	8790 Old Castle Road
170. Lilac Hills Ranch	The project consists of a mix of residential, commercial, and institutional uses. 61,500 sf of specialty retail, 28,500 sf of office uses, 50-room country inn, 903 single-family detached homes, 375 multi-family homes, 468 age-restricted single-family homes, and civic facilities including fire station, parks, recreational center and amenities.	Generally bounded by SR-76 to the north, Valley Center to the east, Escondido to the south, and I-15 and Old Highway 395 to the west.
171. Pacific Industrial No. 1	22,160 sf industrial building	Pacific Street, north of Grand Ave.
172. Pacific Commercial	31,776 square foot commercial center	Northeast corner of Grand Ave. and Pacific St.
173. Main Street Plaza	Mixed-use development in Creek District Specific Plan (see #175) - 66,450 sf commercial, 428 apartments, 53,700 sf multi-use & 836 parking spaces.	1167 W. San Marcos Blvd
174. San Marcos Creek Specific Plan	Mixed-use development consisting of 1,265,000 sf of retail, 589,000 sf of office and 2,300 dwelling units.	Generally between Discovery Street and San Marcos Blvd.
175. Richmar Specific Plan	Mixed-use development. Incorporated as part of the general plan update.	Generally south of Richmar Avenue to that area north of the San Marcos Elementary School
176. Palomar Station	The 44,000 sf retail component of the mixed-use project consists of ground floor retail on the south side of Armorlite Drive facing Las Posas Road, and ground floor retail at the northwest and northeast corners of the north side of Armorlite and at the rear of the northerly phase adjacent to the Sprinter transit access. There is also a freestanding retail pad adjacent to Las Posas which is being marketed.	South of Mission Road, east of Las Posas Road, north & south of Armorlite Drive
177. Palomar Station	Mixed-use development consisting of 370 condominiums, 44,000 sf of commercial, 5,400 sf live/work, 5,000 sf restaurant/food court uses, and 70,000 sf of recreation	South of Mission Road, east of Las Posas Road, north & south of Armorlite Drive
178. East Gate	Mixed-use development of 42 units Multi-Family Affordable Housing and 11,285 sf of Retail/Commercial	NW corner of Grand Avenue and future Creekside Drive
179. The Promenade @ Creekside	Mixed-use development in Creek District Specific Plan - two and three-story, 98 affordable housing units and 26,491 sf Commercial/Retail/Recreation (see #175)	South side of future Creekside Drive, between Bent Avenue and Grand Avenue

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TABLE 9–1 (CONTINUED)
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Project	Description	Location
180. University District Specific Plan	2,600 units of multi-family residential, 800 units of student housing, hotel use (400 rooms) 638,000 sf of general office, 300,000 sf of medical office, 1,000,000 sf of commercial/mixed-use, 30,000 sf of civic/community use.	Generally bounded by SR-78, Industrial Street, Barham Drive/Discovery Street and San Marcos Creek
181. Windy Pointe Development	Four (4) light industrial buildings and thee (3) office buildings	Borden Road at the extension of Windy Way, East side of Windy Point Drive
182. The Corner	Retail center with retail, Class "A" office building, hotel & restaurant pads. (Replaces previous proposed projects "Corner@2Oaks," "Marketplace@Twin Oaks," & "Civic Center Marketplace").	SW corner of Twin Oaks Valley Road & San Marcos Boulevard
183. Leigh Hanson site	Resubmitted and proposing a Specific Plan Amendment to allow construction of residential, non-residential mixed-used & open space (72 paired homes & 148 courtyard homes).	Twin Oaks Valley Road, south of Craven Road (Hanson property)
184. The Norman SM Project, LLC	92 for-sale condos	316 E. Mission Road
185. UK Investments, LLC	35-unit multi-family apartments	794-796 Alda Drive
186. D.R. Horton	126-unit multi-family subdivision	West side of Mulberry Drive
187. Rancheros Commercial Park	New 29,983 sf building to house DMV with 281 parking spaces	Rancheros Drive
188. Davia Village	Mixed-use project - 3-story, 368 residential apartments, Commercial Retail - 19,855 sf, Live/Work Units - 8,895 sf	1001 Armorlite Drive, east of Palomar Station
189. Quad SM, LLC	Mixed-use project - consisting of student housing and retail	SE corner of Campus Way and North City Drive
190. Venturepoint Development	New 6,199 sf Buffalo Wild Wings restaurant building at Old California Restaurant Row	1020-1080 W. San Marcos Blvd
191. Vidler Estates	19-lot subdivision	824 N. Twin Oaks Valley Rd
192. SJ Asset Management, Inc.	50-unit senior housing project	Woodward Street, north of Borden Road

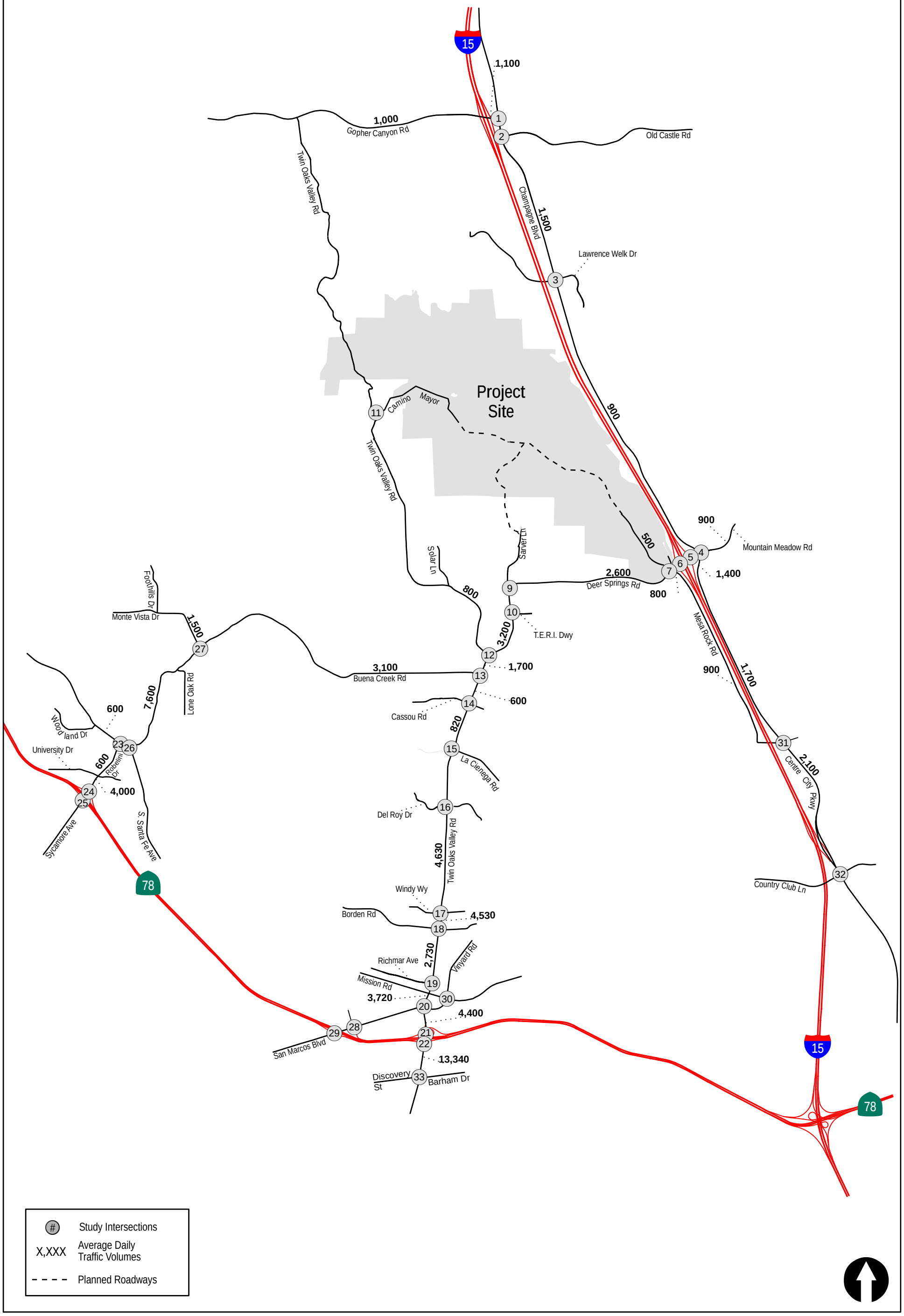

Figure 9-1

Cumulative Projects Segment Traffic Volumes

LINSCOTT LAW & GREENSPAN engineers

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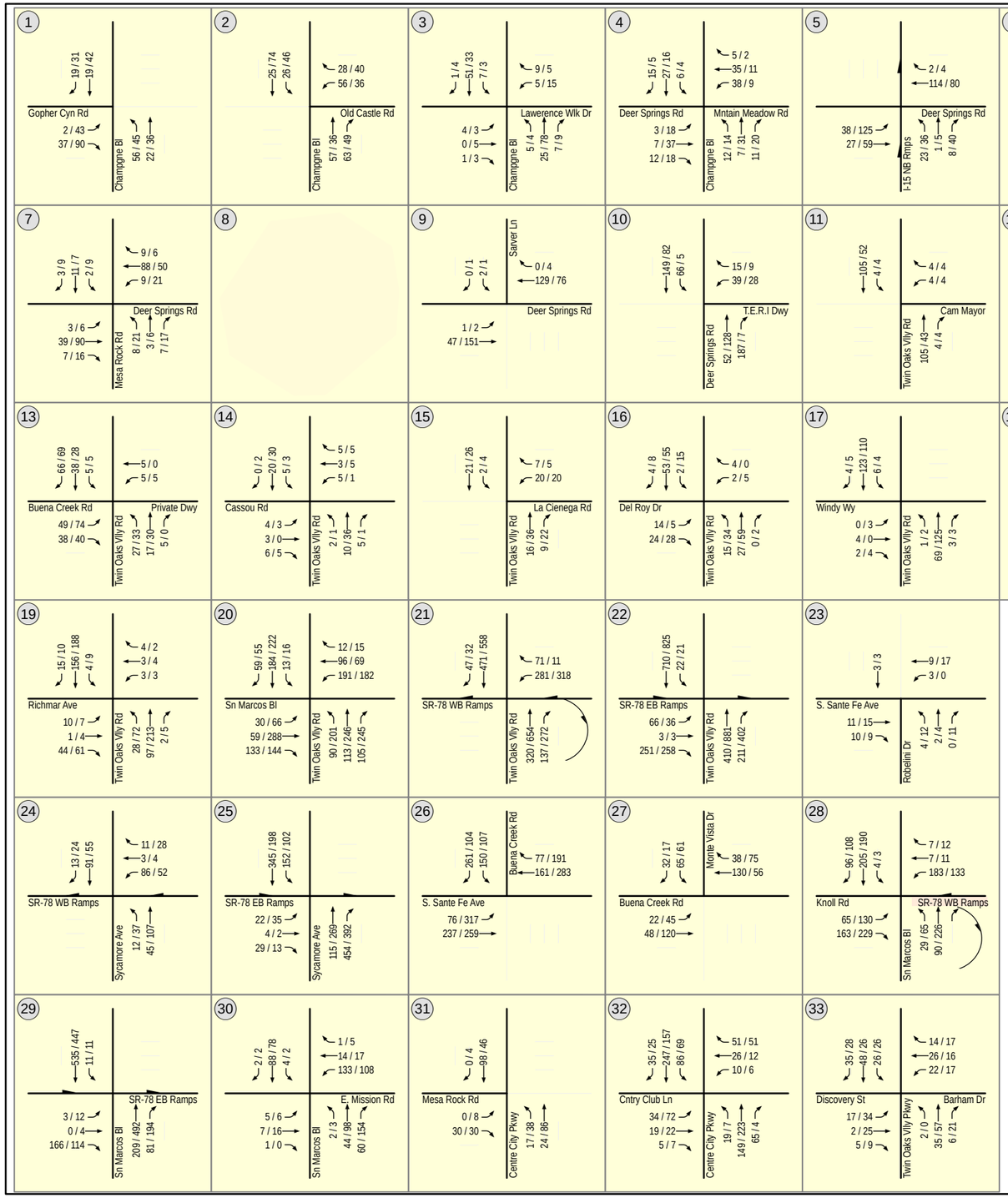

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Figure 9-2

Cumulative Projects AM / PM Peak Hour Traffic Volumes

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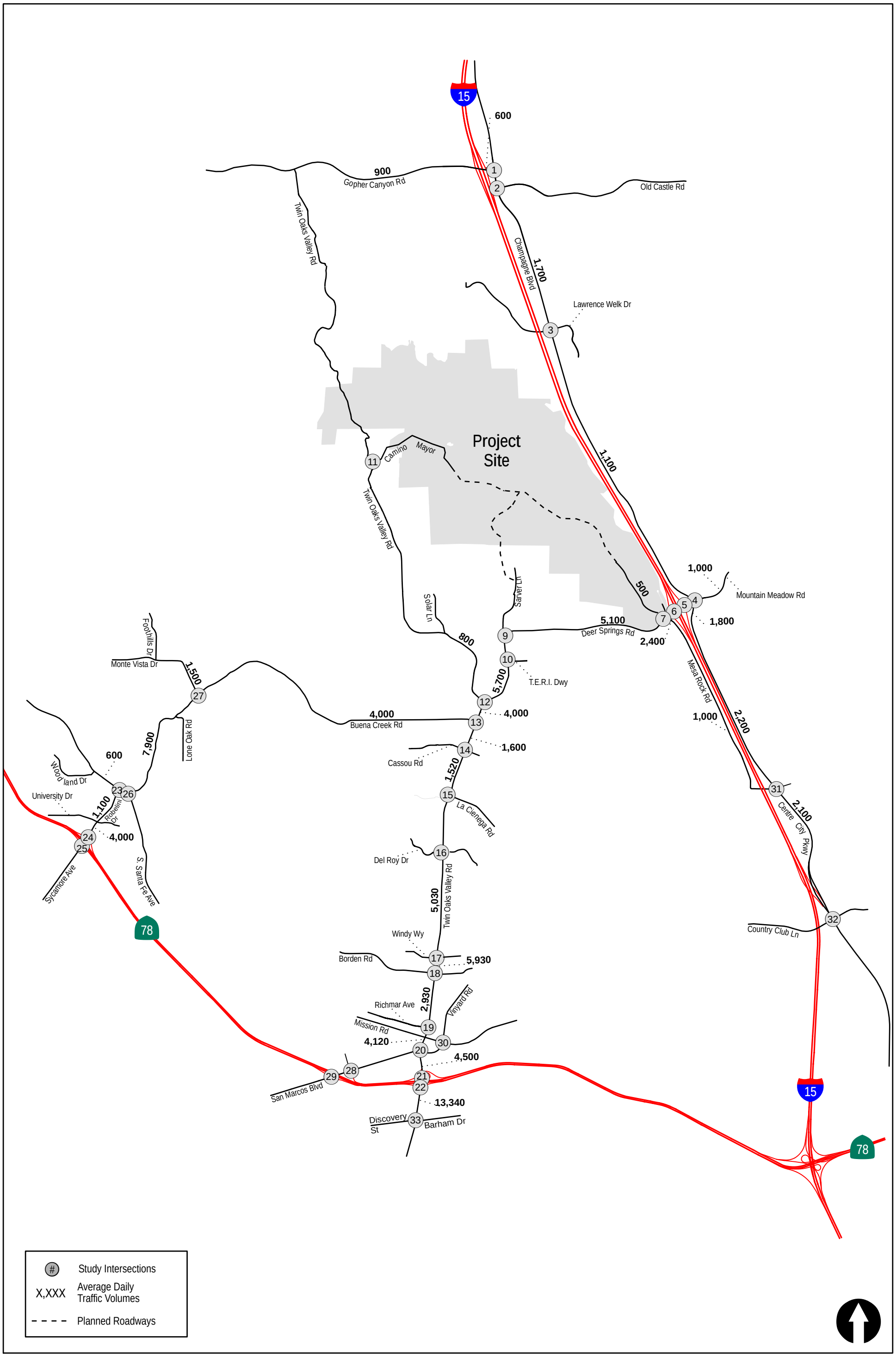

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Figure 9-3

Cumulative Projects Segment Traffic Volumes

With Mountain Meadow Road Connection

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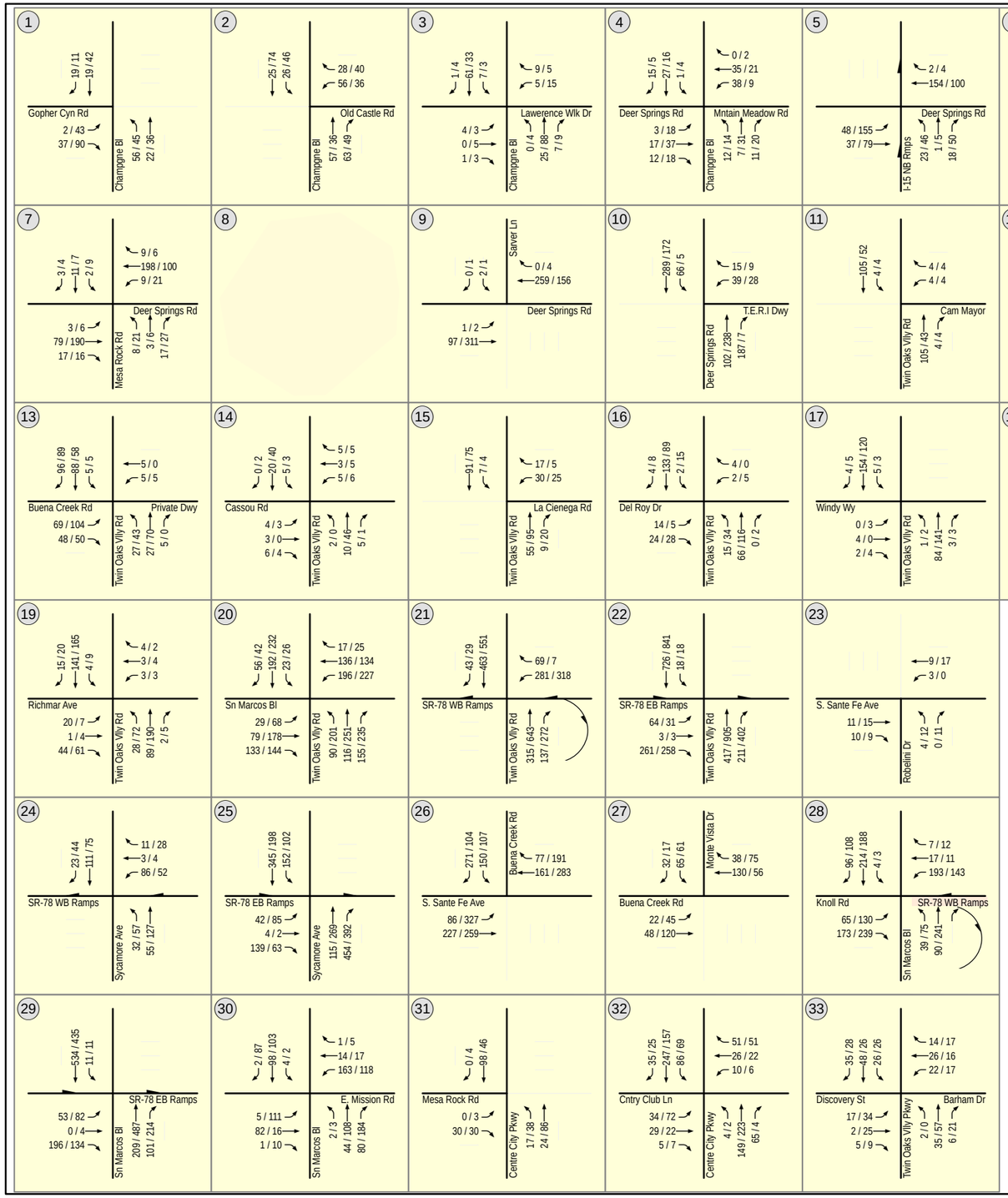

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Figure 9-4

Cumulative Projects AM / PM Peak Hour Traffic Volumes

With Mountain Meadow Road Connection

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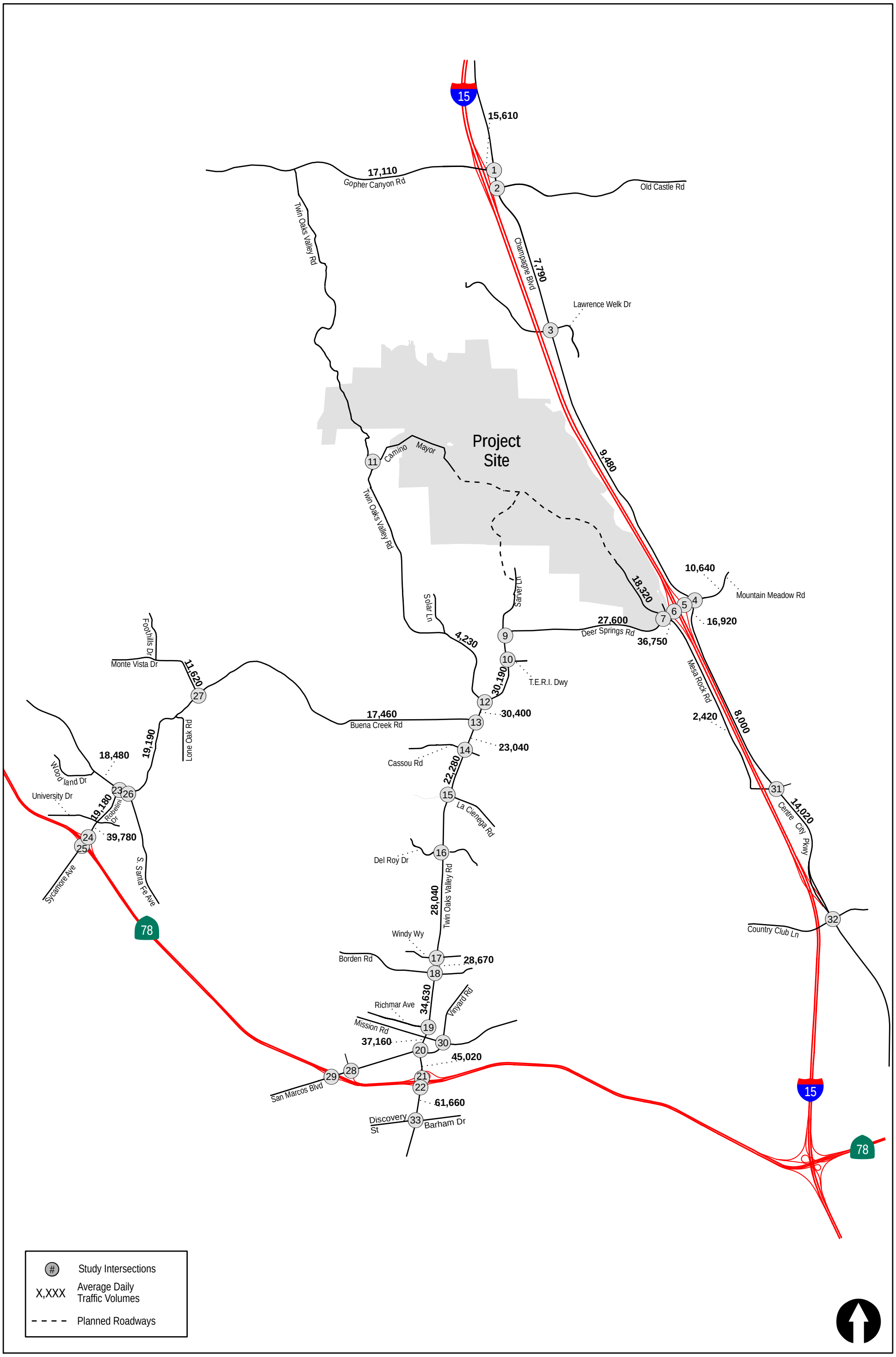

Figure 9-5

Existing + Project + Cumulative Projects Segment Traffic Volumes

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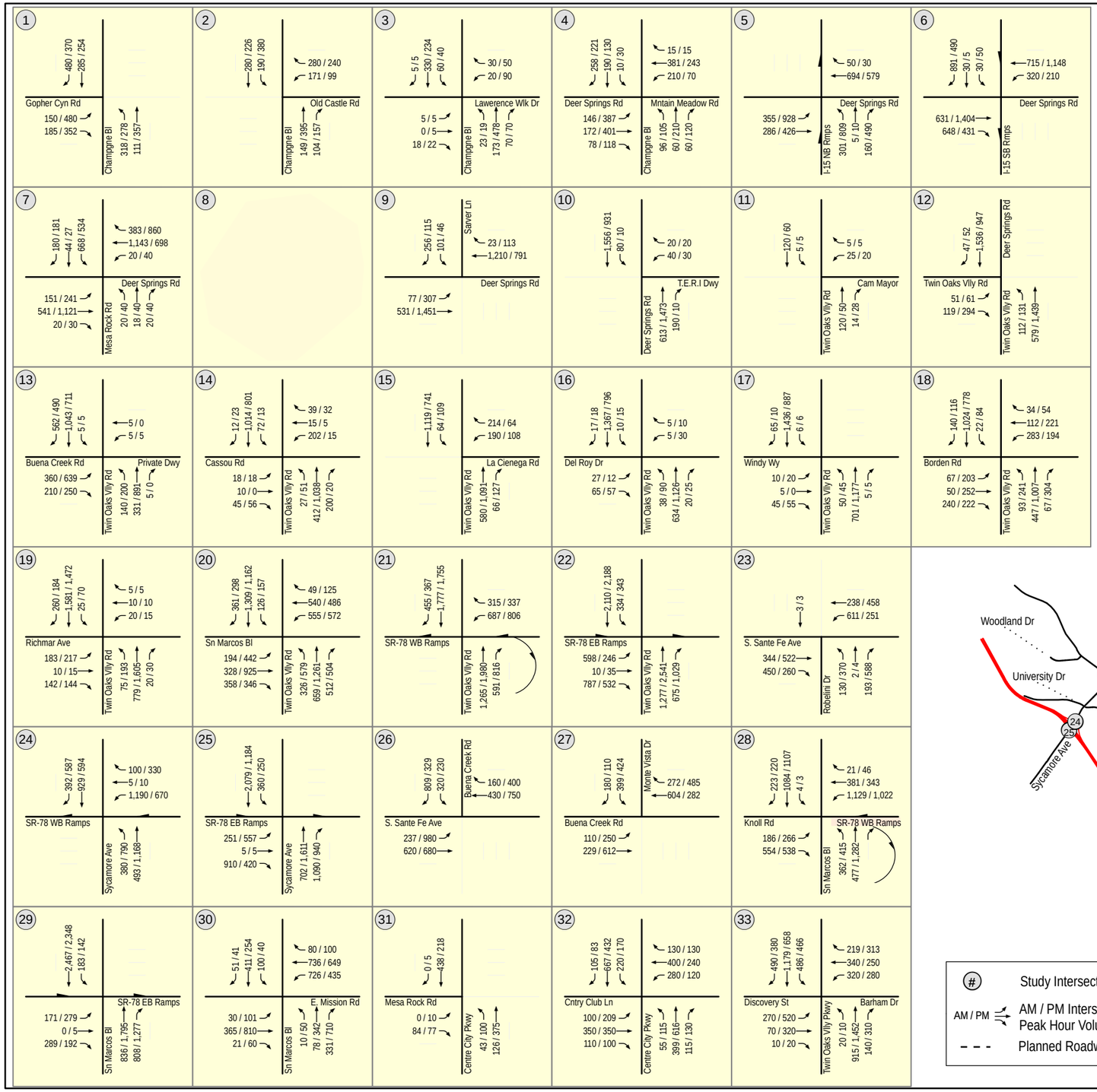

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Figure 9-6

Existing + Project + Cumulative Projects AM / PM Peak Hour Traffic Volumes

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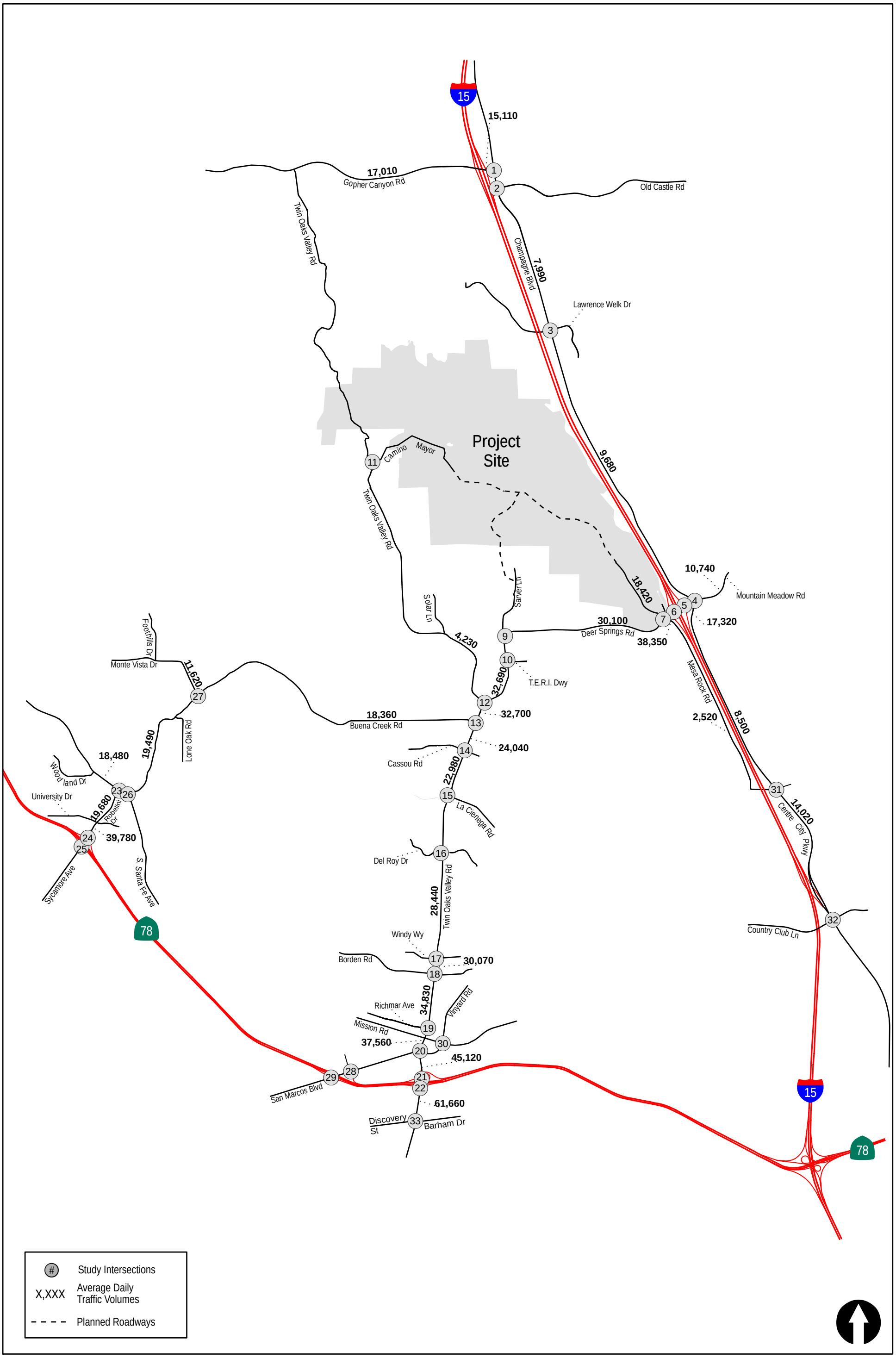

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Figure 9-7

Existing + Project + Cumulative Projects Segment Traffic Volumes

With Mountain Meadow Road Connection

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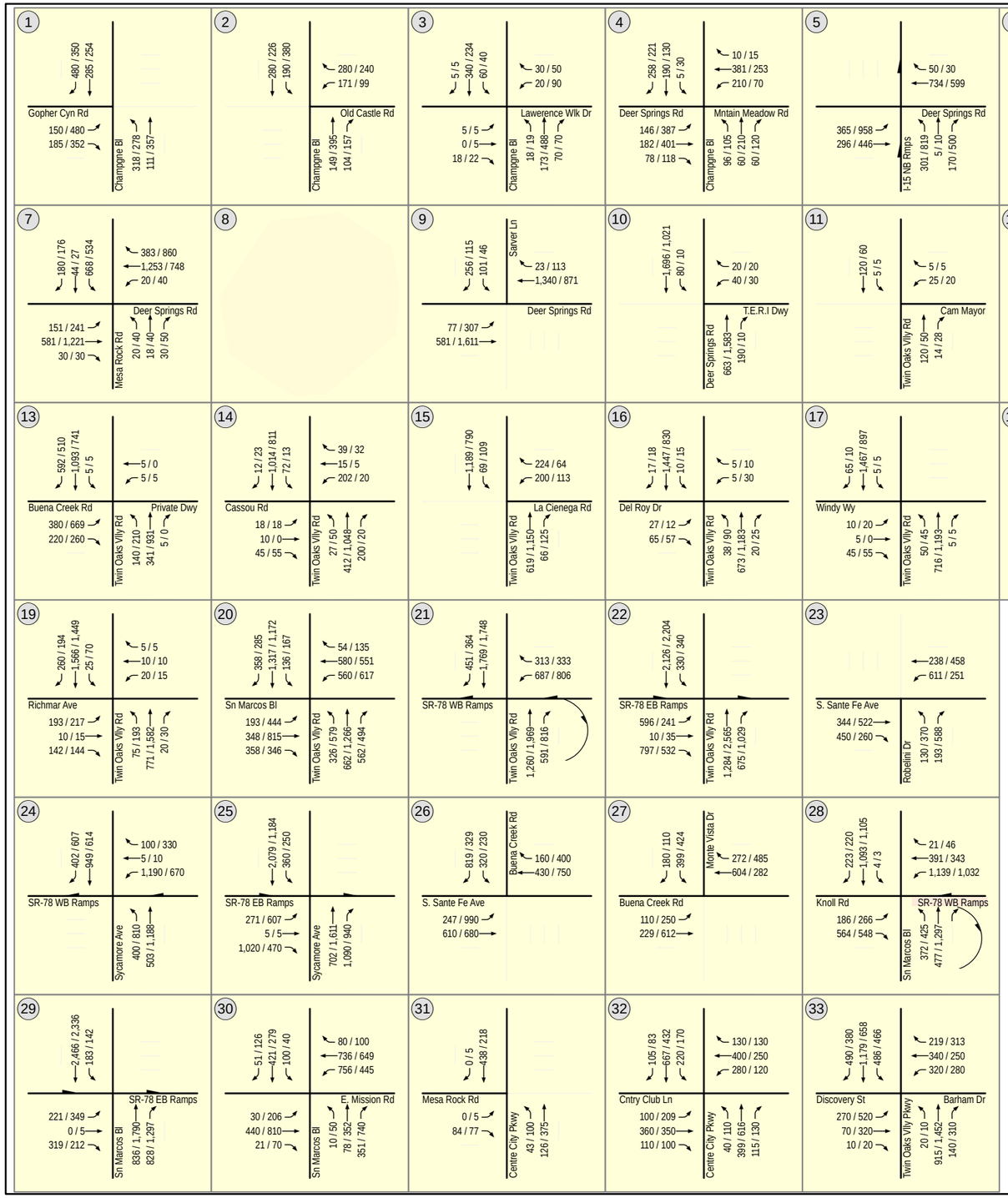

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Figure 9-8

Existing + Project + Cumulative Projects AM / PM Peak Hour Traffic Volumes

With Mountain Meadow Road Connection

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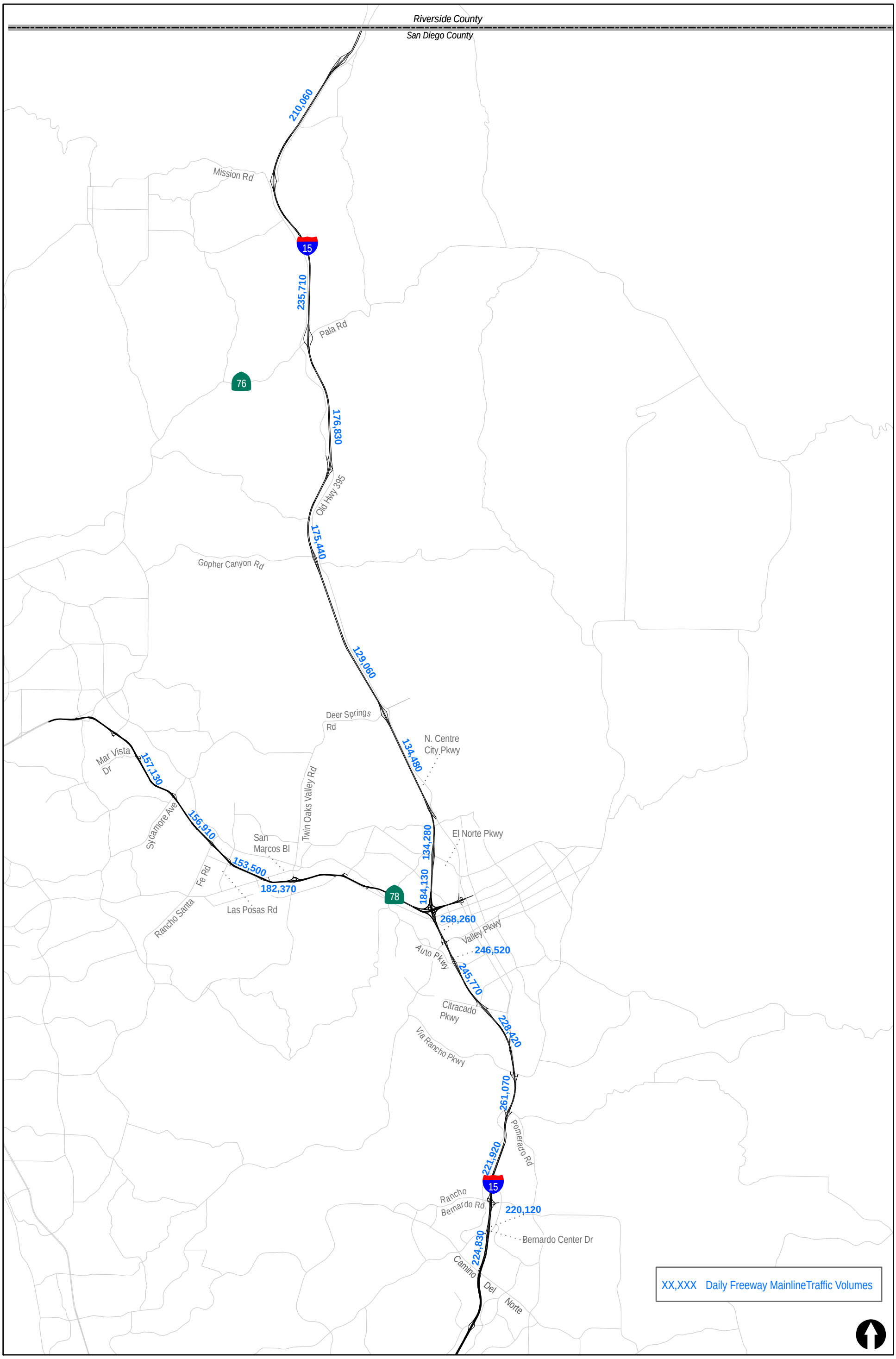

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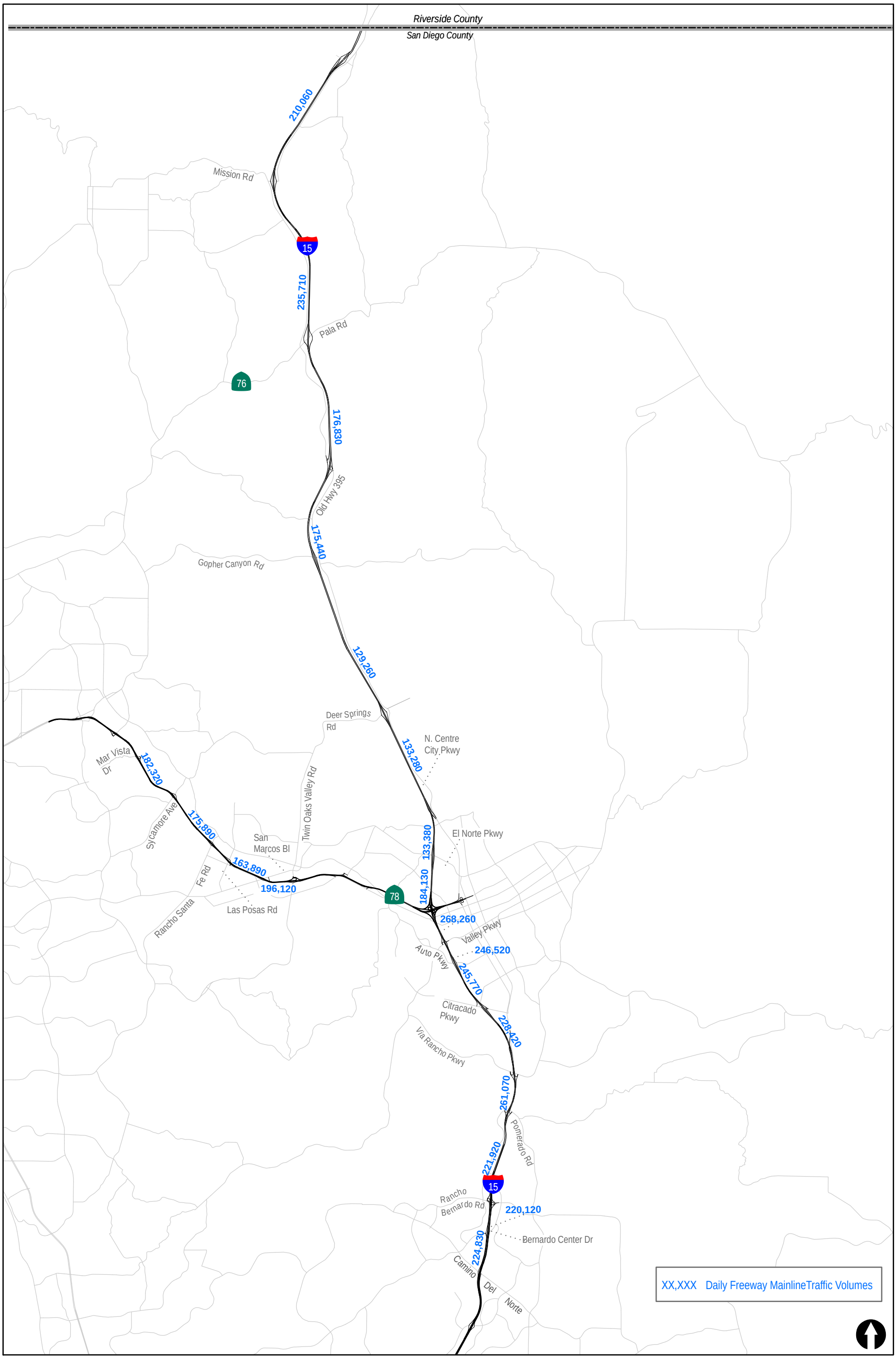
Figure 9-9

Existing + Project + Cumulative Projects Freeway Mainline Daily Traffic Volumes



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9-10

Existing + Project + Cumulative Projects Freeway Mainline Daily Traffic Volumes

With Mountain Meadow Road Connection

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10.0 ANALYSIS OF EXISTING PLUS PROJECT & CUMULATIVE SCENARIOS

10.1 Existing + Project

10.1.1 *Intersection Analysis*

Table 10–1 summarizes the Existing + Project intersections operations. The existing intersection geometry and traffic control was assumed in the analysis. As shown in *Table 10–1*, the following intersections are calculated to operate at LOS E or worse:

- Deer Springs Road / I-15 NB Ramps (LOS F during the PM peak hour)
- Deer Springs Road / I-15 SB Ramps (LOS F during the PM peak hour)
- Deer Springs Road / Mesa Rock Road (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sarver Lane (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sycamore Road (LOS F during the PM peak hour)
- Twin Oaks Valley Road / Deer Springs Road (LOS F during the AM and PM peak hours)
- Twin Oaks Valley Road / Buena Creek Road (LOS E during the AM and PM peak hours)
- Buena Creek Road/Monte Vista Drive (LOS F during the AM and PM peak hours)
- Buena Creek Road/South Santa Fe Avenue (LOS F during the AM and PM peak hours)
- Robelini Drive / South Santa Fe Avenue (LOS F during the AM peak hour)

The Project has significant direct impacts at each of the above intersections except at the Deer Springs Road / Sycamore Road intersection. The remaining intersections are calculated to operate at an acceptable LOS D or better. ***Appendix E*** contains the Existing + Project peak hour Synchro Analysis worksheets.

10.1.2 *Segment Operations*

Table 10–2 summarizes the Existing + Project segment operations. As shown in *Table 10–2*, the following segments are calculated to operate at LOS E or worse:

- **Deer Springs Road:** Mesa Rock Road to I-15 (LOS F)
- **Deer Springs Road:** Sarver Lane to Mesa Rock Road (LOS F)
- **Deer Springs Road:** Twin Oaks Valley Road to Sarver Lane (LOS F)
- **Twin Oaks Valley Road:** Deer Springs Road to Buena Creek Road (LOS F)
- **Twin Oaks Valley Road:** Buena Creek Road to Cassou Road (LOS F)
- **Buena Creek Road:** Monte Vista Drive to Twin Oaks Valley Road (LOS E)
- **Buena Creek Road:** S. Santa Fe Avenue to Monte Vista Drive (LOS E)
- **South Santa Fe Avenue:** Robelini Drive to Buena Creek Road (LOS E)
- **Robelini Drive:** Sycamore Avenue to South Santa Fe Avenue (LOS F)
- **Gopher Canyon Road:** Little Gopher Canyon Road to I-15 Ramps (LOS E)

The Project has significant direct impacts on all of the above segments except the Gopher Canyon Road segment, which operates at LOS E and the Project would add only 120 ADT to the segment, less

than the allowable threshold of 200 ADT. The remaining segments are calculated to operate at an acceptable LOS D or better.

10.1.3 *Freeway Mainline Analysis*

Table 10–3 summarizes the Existing + Project freeway mainline levels of service. As shown in *Table 10–3*, with the addition of Project traffic, the following sections of the freeway are calculated to operate at LOS E or worse:

- I-15: Riverside County Boundary to Old Highway 395
- I-15: Gopher Canyon Road to Pomerado Road
- SR 78: Mar Vista Road to Rancho Santa Fe Avenue
- SR 78: Las Posas Road to Twin Oaks Valley Road

Direct significant impacts are calculated on segments where the project traffic results in an increase in the v/c ratio of more than 0.01 on segments operating at LOS E and 0.005 on segments operating at LOS F.

- I-15: Deer Springs Road to Pomerado Road

10.1.4 *Ramp Meter Analysis*

Table 10–4 summarizes the Existing + Project ramp meter operations. As shown in *Table 10–4*, using the most restrictive discharge rates obtained from Caltrans, since the demand would be less than the most restrictive flow rate, none of the study area metered ramps would operate with delays of 15 minutes or more with the addition of project traffic. Therefore, impacts associated with freeway ramp meters would be less than significant.

TABLE 10–1
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing		Existing + Project		Project Traffic / Δ Delay [c]	Impact Type
				Delay [a]	LOS [b]	Delay	LOS		
1. Champagne Blvd / Gopher Canyon Rd	County	Signal	AM	32.9	C	34.3	C	1.4	None
			PM	33.6	C	35.0	D	1.4	None
2. Champagne Blvd / Old Castle Rd	County	Signal	AM	11.4	B	11.8	B	0.4	None
			PM	23.5	C	24.5	C	1.0	None
3. Champagne Blvd / Lawrence Welk Dr	County	MSSC [d]	AM	11.3	B	12.4	B	0	None
			PM	16.8	C	20.9	C	0	None
4. Mtn Meadow Rd / Champagne Blvd	County	Signal	AM	16.1	B	19.2	B	3.1	None
			PM	20.5	C	24.4	C	3.9	None
5. Deer Springs Rd / I-15 NB Ramps	County	Signal	AM	28.6	C	47.5	D	18.9	None
			PM	35.1	D	**>100.0**	**F**	**>10.0**	**Direct**
6. Deer Springs Rd / I-15 SB Ramps	County	Signal	AM	27.5	C	30.3	C	2.8	None
			PM	60.8	E	**85.1**	**F**	**24.3**	**Direct**
7. Deer Springs Rd / Mesa Rock Rd	County	Signal	AM	23.3	C	**>100.0**	**F**	**>10.0**	**Direct**
			PM	22.5	C	**99.1**	**F**	**>10.0**	**Direct**
9. Deer Springs Rd / Sarver Ln	County	Signal	AM	23.1	C	**>100.0**	**F**	**91**	**Direct**
			PM	30.1	D	**>100.0**	**F**	**41**	**Direct**
10. Deer Springs Rd / Sycamore Rd	County	MSSC	AM	14.4	B	25.9	D	0	None
			PM	22.6	C	>100.0	F	0	None [e]

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TABLE 10–1 (CONTINUED)
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing		Existing + Project		Project Traffic / Δ Delay [c]	Impact Type
				Delay [a]	LOS [b]	Delay	LOS		
11. Twin Oaks Valley Rd / Camino Mayor	County	MSSC	AM	8.6	A	8.8	A	20	None
			PM	8.5	A	8.8	A	15	None
12. Twin Oaks Valley Rd / Deer Springs Rd	San Marcos	Signal	AM	44.1	D	**>100.0**	**F**	**>10.0**	**Direct**
			PM	18.6	B	**>100.0**	**F**	**>10.0**	**Direct**
13. Twin Oaks Valley Rd / Buena Creek Rd	San Marcos	Signal	AM	24.1	C	**57.2**	**E**	**33.1**	**Direct**
			PM	26.2	C	**69.7**	**E**	**43.5**	**Direct**
14. Twin Oaks Valley Rd / Cassou Rd	San Marcos	Signal	AM	29.9	C	44.3	D	14.4	None
			PM	15.6	B	24.5	C	8.9	None
15. Twin Oaks Valley Rd / La Cienega Rd	San Marcos	Signal	AM	13.2	B	14.0	B	0.8	None
			PM	11.7	B	12.7	B	1.0	None
16. Twin Oaks Valley Rd / Del Roy Dr	San Marcos	Signal	AM	12.7	B	13.3	B	0.6	None
			PM	9.3	A	9.7	A	0.4	None
17. Twin Oaks Valley Rd / Windy Wy	San Marcos	Signal	AM	7.0	A	7.4	A	0.4	None
			PM	6.9	A	6.9	A	0.0	None
18. Twin Oaks Valley Rd / Borden Rd	San Marcos	Signal	AM	26.1	C	28.1	C	2.0	None
			PM	29.3	C	31.6	C	2.3	None
19. Twin Oaks Valley Rd / Richmar Ave	San Marcos	Signal	AM	22.4	C	23.1	C	0.7	None
			PM	28.5	C	29.3	C	0.8	None

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TABLE 10–1 (CONTINUED)
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing		Existing + Project		Project Traffic / Δ Delay [c]	Impact Type
				Delay [a]	LOS [b]	Delay	LOS		
20. Twin Oaks Valley Rd / San Marcos Blvd	San Marcos	Signal	AM	34.8	C	38.0	D	3.2	None
			PM	50.8	D	54.2	D	3.4	None
21. Twin Oaks Valley Rd / SR 78 WB Ramps	Caltrans	Signal	AM	12.2	B	12.4	B	0.2	None
			PM	12.6	B	13.0	B	0.4	None
22. Twin Oaks Valley Rd / SR 78 EB Ramps	Caltrans	Signal	AM	26.6	C	26.7	C	0.1	None
			PM	19.5	B	20.3	C	0.8	None
23. Robelini Dr / South Santa Fe Ave	County	Signal	AM	65.3	E	**96.4**	**F**	**31.1**	**Direct**
			PM	28.0	C	29.0	C	1.0	None
24. Sycamore Ave / SR78 WB Ramps	Caltrans	Signal	AM	37.1	D	37.7	D	0.6	None
			PM	32.7	C	33.0	C	0.3	None
25. Sycamore Ave / SR 78 EB Ramps	Caltrans	Signal	AM	31.2	C	31.3	C	0.1	None
			PM	23.3	C	25.8	C	2.5	None
26. Buena Creek Rd / South Santa Fe Ave	County	Signal	AM	**93.3**	**F**	**>100.0**	**F**	**>10.0**	**Direct**
			PM	**72.5**	**E**	**>100.0**	**F**	**>10.0**	**Direct**
27. Buena Creek Rd / Monte Vista Dr	County	AWSC [e]	AM	34.2	D	**94.2**	**F**	**29**	**Direct**
			PM	**70.2**	**F**	**>100.0**	**F**	**54**	**Direct**
28. San Marcos Blvd/ Knoll Rd / SR 78 WB Ramps	Caltrans	Signal	AM	35.7	D	35.7	D	0.0	None
			PM	33.5	C	33.5	C	0.0	None

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TABLE 10–1 (CONTINUED)
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing		Existing + Project		Project Traffic / Δ Delay [c]	Impact Type
				Delay [a]	LOS [b]	Delay	LOS		
29. San Marcos Blvd / SR 78 EB Ramps	Caltrans	Signal	AM	10.8	B	11.0	B	0.2	None
			PM	12.5	B	13.4	B	0.9	None
30. Mission Rd / Vineyard Rd	County	Signal	AM	27.4	C	27.5	C	0.1	None
			PM	32.7	C	33.6	C	0.9	None
31. North Centre City Pkwy / Mesa Rock Rd	County	Signal	AM	10.6	B	11.0	B	24	None
			PM	9.5	A	9.7	A	17	None
32. North Centre City Pkwy /Country Club Ln	Escondido	Signal	AM	24.4	C	24.5	C	0.1	None
			PM	21.0	C	21.4	C	0.4	None
33. Twin Oaks Valley Rd / Barham Dr / Discovery St	San Marcos	Signal	AM	38.0	D	38.6	D	0.6	None
			PM	51.7	D	52.4	D	0.7	None

Footnotes:

a. Average delay per vehicle in seconds
b. Level of service
c. Increase in traffic in the critical movement due to Project at unsignalized intersections in San Diego County and increase in delay in the critical movement at unsignalized intersections in the City of San Marcos and the City of Escondido. Increase in delay due to the Project at signalized intersections.
d. MSSC - Minor Street STOP-Controlled intersection. Minor street delay and LOS are reported.
e. AWSC – All Way STOP-Controlled intersection. Overall delay and LOS are reported.
f. The Project does not add traffic to the critical movement at this unsignalized County location and hence the Project does not have a significant impact.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. **Bold** indicates potential significant impact.

TABLE 10–2
EXISTING + PROJECT SEGMENT OPERATIONS

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing			Existing + Project			Δ V/C / Project Traffic	Impact Type
				Vol [c]	LOS [d]	V/C [e]	Vol	LOS	V/C		
Deer Springs Road											
Twin Oaks Valley Rd to Sarver Ln	San Marcos/ County	2.2E Lt Col	16,200	**18,800**	**F**	**1.160**	**26,990**	**F**	**1.666**	**8,190**	**Direct**
Sarver Lane to Mesa Rock Road	County	2.2E Lt Col	16,200	**19,400**	**F**	**1.198**	**25,000**	**F**	**1.543**	**5,600**	**Direct**
Mesa Rock Rd to I-15 SB Ramps	County	2.2E Lt Col	16,200	**22,600**	**F**	**1.395**	**35,950**	**F**	**2.219**	**13,350**	**Direct**
I-15NB Ramps to Champagne Blvd	County	4.1B Major Rd	34,200	12,100	A	0.354	15,520	B	0.454	3,420	None
Mountain Meadow Road											
East of Champagne Blvd	County	4.1B Major Rd	34,200	8,000	A	0.234	9,740	A	0.285	1,740	None
Twin Oaks Valley Road											
Solar Ln to Deer Springs Rd	County	2.2E Lt Col	16,200	3,000	B	0.185	3,430	B	0.212	430	None
Deer Springs Rd to Buena Creek Rd	San Marcos	2 Ln Col	15,000	**20,700**	**F**	**1.380**	**28,700**	**F**	**1.913**	**0.533**	**Direct**
Buena Creek Rd to Cassou Rd	San Marcos	2 Ln Col	15,000	**18,400**	**F**	**1.227**	**22,440**	**F**	**1.496**	**0.269**	**Direct**
Cassou Rd to La Cienega Rd	San Marcos	4 Ln Sec Art	30,000	18,000	C	0.600	21,460	D	0.715	0.115	None
La Cienega Rd to Windy Way	San Marcos	4 Ln Major Art	40,000	20,300	B	0.508	23,410	C	0.585	0.078	None
Windy Way to Borden Rd	San Marcos	4 Ln Major Art	40,000	21,100	C	0.528	24,140	C	0.604	0.076	None
Borden Rd to Richmar Ave	San Marcos	4 Ln Major Art	40,000	29,000	C	0.725	31,900	D	0.798	0.073	None
Richmar Ave to San Marcos Blvd	San Marcos	4 Ln Major Art	40,000	31,000	D	0.775	33,440	D	0.836	0.061	None
San Marcos Blvd to SR 78	San Marcos	6-Ln Prime Art	60,000	39,100	C	0.652	40,620	C	0.677	0.025	None
SR 78 to Barham Dr / Discovery St	San Marcos	8-Ln Prime Art	70,000	46,800	C	0.669	48,320	C	0.690	0.022	None

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TABLE 10–2 (CONTINUED)
EXISTING + PROJECT SEGMENT OPERATIONS

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing			Existing + Project			Δ V/C / Project Traffic	Impact Type
				Vol [c]	LOS [d]	V/C [e]	Vol	LOS	V/C		
Buena Creek Road											
S. Santa Fe Ave to Monte Vista Dr	County	2.2E Lt Col	16,200	9,200	D	0.568	**11,590**	**E**	**0.715**	**2,390**	**Direct**
Monte Vista Dr to Twin Oaks Valley Rd.	County	2.2E Lt Col	16,200	10,400	D	0.642	**14,360**	**E**	**0.886**	**3,960**	**Direct**
Monte Vista Drive											
Foothill Dr to Buena Creek Rd	County	2.2E Lt Col	16,200	9,100	D	0.562	10,120	D	0.625	1,020	None
Mesa Rock Road											
Deer Springs Rd to N. Centre City Pkwy	County	4 Ln Major Art	16,200	1,000	A	0.062	1,520	A	0.094	520	None
Gopher Canyon Road											
Little Gopher Canyon Rd to I-15 Ramps	County	2.2E Lt Col	16,200	16,000	E	0.988	16,110	E	0.994	110	None [f]
I-15 Ramps to Champagne Blvd	County	2.2B Blvd	28,000	14,400	A	0.514	14,510	A	0.518	110	None
Champagne Boulevard											
Old Castle Rd to Lawrence Welk Dr	County	2.2E Lt Col	16,200	5,400	C	0.333	6,290	C	0.388	890	None
Lawrence Welk Dr to Mtn Meadow Rd	County	2.2E Lt Col	16,200	7,400	D	0.457	8,580	D	0.530	1,180	None
North Centre City Parkway											
Mountain Meadow Rd to I-15 Ramps	County	2.2E Lt Col	16,200	5,800	C	0.358	6,300	C	0.389	500	None
I-15 Ramps to Country Club Ln	Escondido	4 Ln Col	34,200	10,900	A	0.319	11,920	B	0.349	0.030	None
Robelini Drive											
Sycamore Ave to South Santa Fe Ave	County	2.2E Lt Col	16,200	**16,900**	**F**	**1.043**	**18,580**	**F**	**1.147**	**1,680**	**Direct**

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TABLE 10–2 (CONTINUED)
EXISTING + PROJECT SEGMENT OPERATIONS

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing			Existing + Project			Δ V/C / Project Traffic	Impact Type
				Vol [c]	LOS [d]	V/C [e]	Vol	LOS	V/C		
South Santa Fe Avenue											
Robelini Dr to Buena Creek Rd	County	2.1B Com Col	19,000	**15,900**	**E**	**0.837**	**17,880**	**E**	**0.941**	**1,980**	**Direct**
Sycamore Avenue											
SR 78 WB Ramps to University Dr	County	6.2 Prime Art	57,000	34,100	B	0.598	35,780	B	0.628	1,680	None

Footnote:

a. The existing roadway class.
b. Capacity of the existing roadway per the County *Table 1, Average Daily Vehicle Trips.*
c. Existing Average Daily Traffic (ADT) volumes.
d. Level of Service.
e. Volume / Capacity ratio.
f. Not a significant impact since the Project adds 120 ADT to the segment, less than the allowable threshold of 200 ADT.

General Notes:

1. **Bold** indicates potential significant impact.

TABLE 10–3
EXISTING + PROJECT FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Peak Hour Traffic						V/C [e]				LOS		Δ V/C [g]	
				Existing [b]		Project [c]		Existing + Project [d]		Existing [f]		Existing + Project					
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																	
Riverside County Boundary to Mission Rd	NB	4M	8,000	2,216	7,287	57	41	2,273	7,328	0.277	0.911	0.284	0.916	A	D	0.007	0.005
	SB			8,489	3,586	31	72	8,520	3,658	1.061	0.448	1.065	0.457	F(0)	B	0.004	0.009
Mission Rd to SR-76	NB	4M	8,000	2,318	7,226	57	41	2,375	7,267	0.290	0.903	0.297	0.908	A	D	0.007	0.005
	SB			8,114	3,652	31	72	8,145	3,724	1.014	0.456	1.018	0.465	F(0)	B	0.004	0.009
SR-76 to Old Highway 395	NB	4M	8,000	2,129	6,637	57	41	2,186	6,678	0.266	0.830	0.273	0.835	A	D	0.007	0.005
	SB			7,453	3,354	31	72	7,484	3,426	0.932	0.419	0.935	0.428	E	B	0.004	0.009
Old Highway 395 to Gopher Cyn Rd	NB	4M	8,000	2,456	7,209	76	54	2,532	7,263	0.307	0.901	0.316	0.908	A	D	0.009	0.007
	SB			7,209	3,645	41	96	7,250	3,741	0.901	0.456	0.906	0.468	D	B	0.005	0.012
Gopher Canyon Rd to Deer Springs Rd	NB	4M	8,000	2,688	7,891	95	68	2,783	7,959	0.336	0.986	0.348	0.995	A	E	0.012	0.009
	SB			7,890	3,990	51	120	7,941	4,110	0.986	0.499	0.993	0.514	E	B	0.006	0.015
Deer Springs Rd to N. Centre City Pkwy	NB	4	8,000	2,646	7,767	151	519	2,797	8,286	0.331	0.971	0.350	1.036	A	**E**	0.019	**0.065**
	SB			7,766	3,927	428	231	8,194	4,158	0.971	0.491	1.024	0.520	**E**	B	**0.053**	0.029
N. Centre Pkwy to El Norte Pkwy	NB	4	8,000	1,962	7,344	151	519	2,113	7,863	0.245	0.918	0.264	0.983	A	D	0.019	0.065
	SB			7,360	3,706	476	231	7,836	3,937	0.920	0.463	0.980	0.492	**E**	B	**0.060**	0.029
El Norte Pkwy to SR-78	NB	4	8,000	2,149	8,044	151	519	2,300	8,563	0.269	1.005	0.288	1.070	A	**F(0)**	0.019	**0.065**
	SB			8,062	4,059	428	231	8,490	4,290	1.008	0.507	1.061	0.536	**F(0)**	B	**0.053**	0.029

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TABLE 10–3 (CONTINUED)
EXISTING + PROJECT FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Peak Hour Traffic						V/C [e]				LOS		Δ V/C [g]	
				Existing [b]		Project [c]		Existing + Project [d]		Existing [f]		Existing + Project					
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																	
SR-78 to W. Valley Pkwy	NB	4M+2A	10,400	5,727	12,630	136	467	5,863	13,097	0.551	1.214	0.564	1.259	B	**F(0)**	0.013	**0.045**
	SB	5M+1A	11,200	11,771	8,095	385	208	12,156	8,303	1.051	0.723	1.085	0.741	**F(0)**	C	**0.034**	0.019
W. Valley Pkwy to Auto Park Way	NB	5M+2ML	12,400	5,318	11,728	122	420	5,440	12,148	0.429	0.946	0.439	0.980	B	**E**	0.010	**0.034**
	SB			10,930	7,517	347	187	11,277	7,704	0.881	0.606	0.909	0.621	D	B	0.028	0.015
Auto Park Way to W. Citracado Pkwy	NB	5M+2ML	12,400	5,342	11,781	110	378	5,452	12,160	0.431	0.950	0.440	0.981	B	**E**	0.009	**0.031**
	SB	4M+1A+2ML	11,600	10,979	7,551	312	168	11,291	7,720	0.947	0.651	0.973	0.665	**E**	C	**0.027**	0.015
W. Citracado Pkwy to Via Rancho Pkwy	NB	5M+2ML	12,400	4,481	11,441	99	341	4,580	11,781	0.361	0.923	0.369	0.950	A	**E**	0.008	**0.027**
	SB	4M+1A+2ML	11,600	11,448	7,386	281	152	11,729	7,537	0.987	0.637	1.011	0.650	**E**	C	**0.024**	0.013
Via Rancho Pkwy to Pomerado Rd	NB	4M+1A+2ML	11,600	6,791	10,837	89	306	6,880	11,143	0.585	0.934	0.593	0.961	B	**E**	0.008	**0.026**
	SB	5M+2ML	12,400	10,635	7,149	253	136	10,887	7,286	0.858	0.577	0.878	0.588	D	B	0.020	0.011
Pomerado Rd to Rancho Bernardo Rd	NB	5M+2ML	12,400	4,640	10,039	80	276	4,721	10,315	0.374	0.810	0.381	0.832	A	D	0.006	0.022
	SB	5M+1A+2ML	13,600	10,416	7,101	227	123	10,643	7,224	0.766	0.522	0.783	0.531	C	B	0.017	0.009
Rancho Bernardo Rd to Bernardo Ctr Dr	NB	5M+1A+2ML	13,600	4,753	10,283	72	248	4,825	10,531	0.349	0.756	0.355	0.774	A	C	0.005	0.018
	SB	5M+2ML	12,400	10,669	7,274	205	110	10,874	7,384	0.860	0.587	0.877	0.596	D	B	0.017	0.009
Bernardo Ctr Dr to Camino Del Norte	NB	5M+1A+2ML	13,600	4,956	10,722	65	223	5,021	10,945	0.364	0.788	0.369	0.805	A	C	0.005	0.016
	SB			11,124	7,584	184	99	11,308	7,683	0.818	0.558	0.831	0.565	D	B	0.014	0.007

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TABLE 10–3 (CONTINUED)
EXISTING + PROJECT FREEWAY MAINLINE OPERATIONS

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Peak Hour Traffic						V/C [e]				LOS		Δ V/C	
				Existing [b]		Project [c]		Existing + Project [d]		Existing [f]		Existing + Project [g]					
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
SR 78																	
Mar Vista Rd to Sycamore Ave	WB	3M	6,000	4,490	5,779	136	61	4,626	5,840	0.748	0.963	0.771	0.973	C	E	0.023	0.010
	EB			5,680	4,570	34	162	5,714	4,732	0.947	0.762	0.952	0.789	E	C	0.006	0.027
Sycamore Ave to Rancho Santa Fe Ave	WB	3M	6,000	4,696	6,044	54	24	4,750	6,068	0.783	1.007	0.792	1.011	C	F(0)	0.009	0.004
	EB			5,941	4,779	13	162	5,954	4,941	0.990	0.797	0.992	0.824	E	C	0.002	0.027
Rancho Santa Fe Ave to Las Posas Rd	WB	3M + 1A	7,200	5,497	6,335	54	24	5,551	6,359	0.764	0.880	0.771	0.883	C	D	0.007	0.003
	EB			6,054	4,767	13	65	6,067	4,832	0.841	0.662	0.843	0.671	D	C	0.002	0.009
Las Posas Rd to San Marcos Blvd	WB	3M	6,000	5,535	6,379	54	24	5,589	6,403	0.922	1.063	0.931	1.067	E	F(0)	0.009	0.004
	EB			6,098	4,801	13	65	6,111	4,866	1.016	0.800	1.018	0.811	F(0)	D	0.002	0.011
San Marcos Blvd to Twin Oaks Valley Rd	WB	3M + 1A	7,200	6,534	7,531	18	8	6,552	7,539	0.907	1.046	0.910	1.047	D	F(0)	0.002	0.001
	EB			7,198	5,668	4	22	7,202	5,690	1.000	0.787	1.000	0.790	E	C	0.001	0.003

Footnotes:

a. Capacity calculated at 2,000 vehicles per hour (vph) per mainline lane (M); 1,200 per Managed lane (ML); and 1,200 vph per Auxiliary (A) lane.
b. Peak Hour Volumes from *Table 7-3*.
c. Project traffic added to the freeway segments.
d. Total Existing + Project peak Hour volumes.
e. V/C = (Peak Hour volume/Truck Factor/Capacity)
f. Existing V/C ratio from *Table 7-3*.
g. Increase in V/C ratio due to Project traffic.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

TABLE 10–4
EXISTING + PROJECT + CUMULATIVE PROJECTS RAMP METER ANALYSIS

Location/Condition	Peak Hour	Demand D [a] (veh/hr/ln)	Meter Rate R [b] (veh/hr/ln)	Calculated (Most Restrictive)		
				Excess Demand E [c] (veh/hr/ln)	Delay [d] (min/ln)	Queue [e] (ft)
Sycamore Ave / SR 78 Interchange						
Sycamore Ave to SR 78 WB						(2 SOV+1 HOV)
Existing	AM	247	418	0	0	0
Existing + Project	AM	282	418	0	0	0
Project Increase		35		0	0	0
Existing + Project + Cumulative Projects						
Existing Roadway Network	AM	293	418	0	0	0
Project Increase		35		0	0	0
With Mountain Meadow Road Connection	AM	306	418	0	0	0
Project Increase		35		0	0	0
San Marcos Blvd / SR 78 Interchange						
San Marcos Blvd SB to SR 78 WB						(1 SOV + 1 HOV)
Existing	AM	231	301	0	0	0
Existing + Project	AM	262	301	0	0	0
Project Increase		31		0	0	0
Existing + Project + Cumulative Projects						
Existing Roadway Network	AM	266	301	0	0	0
Project Increase		31		0	0	0
With Mountain Meadow Road Connection	AM	292	301	0	0	0
Project Increase		31		0	0	0

Footnotes:

a. Demand "D" is the traffic that desires to enter the freeway at this on-ramp during the peak hour.

b. Meter Rate "R" is the *most restrictive* rate at which the ramp meter (signal) discharges traffic on to the freeway (See *Appendix A)* for the ramp meter data obtained from Caltrans).

c. Excess Demand "E" is the difference between the Demand and the Peak Hour Flow.

d. Delay in minutes per lane experienced by each vehicle, calculated as the ratio of the Excess Demand and the Peak Hour Flow in one minute.

e. Queue is calculated as 25 feet per vehicle (E).

10.2 Cumulative Impact Analyses

Two cumulative analyses including the Project at buildout, were conducted, one based on the existing road network (i.e., no inclusion of planned or anticipated road improvements added to the road network) and the other based on the existing road network but with Mountain Meadow Road connected to Valley Center. The second scenario results in higher traffic volumes on the road network analyzed by the project.

10.2.1 *Existing + Project + Cumulative Projects*

This analysis is based on the existing roadway network.

INTERSECTION ANALYSIS

Table 10–5 summarizes the Existing + Project + Cumulative Projects intersections operations based on the existing road network and with the Mountain Meadow Road connection scenarios. The existing intersection geometry and traffic control were assumed in the analysis. As shown in *Table 10–5*, the following intersections are calculated to operate at LOS E or worse:

- Deer Springs Road / I-15 NB Ramps (LOS E during the AM peak hour and LOS F during the PM peak hour)
- Deer Springs Road / I-15 SB Ramps (LOS F during the PM peak hour)
- Deer Springs Road / Mesa Rock Road (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sarver Lane (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sycamore Road (LOS F during the AM and PM peak hours)
- Twin Oaks Valley Road / Deer Springs Road (LOS F during the AM and PM peak hours)
- Twin Oaks Valley Road / Buena Creek Road (LOS E during the AM peak hour and LOS F during the PM peak hour)
- Twin Oaks Valley Road/San Marcos Boulevard (LOS F during the AM and PM peak hours)
- Buena Creek Road/Monte Vista Drive (LOS F during the AM and PM peak hours)
- Buena Creek Road/South Santa Fe Avenue (LOS F during the AM and PM peak hours)
- Robelini Drive / South Santa Fe Avenue (LOS F during the AM peak hour)

A cumulative impact would occur at all of the intersections listed above. The remaining intersections are calculated to operate at an acceptable LOS D or better. An additional Horizon Year cumulative impact would occur in the City of San Marcos to the Twin Oaks Valley Road/Richmar Avenue intersection. Please refer to section 12 of this report, City of San Marcos Horizon Year Analyses.

Appendix F contains the peak hour analysis worksheets for Existing + Project + Cumulative Projects.

TABLE 10–5
INTERSECTION OPERATIONS FOR CUMULATIVE SCENARIOS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing + Project		Project Traffic / Δ Delay [c]	Existing + Project + Cumulative Projects					
							Existing Road Network			Existing Road Network With Mountain Meadow Road Added		
				Delay [a]	LOS [b]		Delay	LOS	Impact	Delay	LOS	Impact
1. Champagne Blvd / Gopher Canyon Rd	County	Signal	AM	34.3	C	1.4	41.4	D	None	41.5	D	None
			PM	35.0	D	1.4	47.4	D	None	45.6	D	None
2. Champagne Blvd / Old Castle Rd	County	Signal	AM	11.8	B	0.4	14.6	B	None	14.6	B	None
			PM	24.5	C	1.0	31.8	C	None	31.8	C	None
3. Champagne Blvd / Lawrence Welk Dr	County	MSSC [d]	AM	12.4	B	0	13.6	B	None	13.6	B	None
			PM	20.9	C	0	33.5	D	None	32.8	D	None
4. Mountain Meadow Rd / Champagne Blvd	County	Signal	AM	19.2	B	3.1	21.4	C	None	21.2	C	None
			PM	24.4	C	3.9	28.3	C	None	28.5	C	None
5. Deer Springs Rd / I-15 NB Ramps	Caltrans	Signal	AM	47.5	D	18.9	**56.2**	**E**	**Cumulative**	**59.1**	**E**	**Cumulative**
			PM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
6. Deer Springs Rd / I-15 SB Ramps	Caltrans	Signal	AM	30.3	C	2.8	42.0	D	None	50.1	D	None
			PM	**85.1**	**F**	**24.3**	**96.3**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
7. Deer Springs Rd / Mesa Rock Rd	County	Signal	AM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	**99.1**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
9. Deer Springs Rd / Sarver Ln	County	MSSC	AM	**>100.0**	**F**	**91**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	**>100.0**	**F**	**41**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
10. Deer Springs Rd / Sycamore Rd	County	MSSC	AM	25.9	D	0	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	>100.0	F	0	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**

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TABLE 10–5 (CONTINUED)
INTERSECTION OPERATIONS FOR CUMULATIVE SCENARIOS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing + Project		Project Traffic / Δ Delay [c]	Existing + Project + Cumulative Projects					
							Existing Road Network			Existing Road Network **With** Mountain Meadow Road Added		
				Delay [a]	LOS [b]		Delay	LOS	Impact	Delay	LOS	Impact
11. Twin Oaks Valley Rd / Camino Mayor	County	MSSC	AM	8.8	A	20	10.4	B	None	10.4	B	None
			PM	8.8	A	15	9.5	A	None	9.5	A	None
12. Twin Oaks Valley Rd / Deer Springs Rd	San Marcos	Signal	AM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
13. Twin Oaks Valley Rd / Buena Creek Rd	San Marcos	Signal	AM	**57.2**	**E**	**33.1**	**69.8**	**E**	**Cumulative**	**82.6**	**E**	**Cumulative**
			PM	**69.7**	**E**	**43.5**	**99.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
14. Twin Oaks Valley Rd / Cassou Rd	San Marcos	Signal	AM	44.3	D	14.4	49.7	D	None	50.8	D	None
			PM	24.5	C	8.9	33.1	C	None	34.6	C	None
15. Twin Oaks Valley Rd / La Cienega Rd	San Marcos	Signal	AM	14.0	B	0.8	14.5	B	None	15.7	B	None
			PM	12.7	B	1.0	13.4	B	None	15.0	B	None
16. Twin Oaks Valley Rd / Del Roy Dr	San Marcos	Signal	AM	13.3	B	0.6	14.6	B	None	14.8	B	None
			PM	9.7	A	0.4	18.8	B	None	19.0	B	None
17. Twin Oaks Valley Rd / Windy Wy	San Marcos	Signal	AM	7.4	A	0.4	8.5	A	None	8.6	A	None
			PM	6.9	A	0.0	7.2	A	None	7.2	A	None
18. Twin Oaks Valley Rd / Borden Rd	San Marcos	Signal	AM	28.1	C	2.0	37.7	D	None	37.9	D	None
			PM	31.6	C	2.3	42.7	D	None	42.9	D	None
19. Twin Oaks Valley Rd / Richmar Ave	San Marcos	Signal	AM	23.1	C	0.7	29.0	C	None	29.3	C	None
			PM	29.3	C	0.8	41.4	D	None	40.8	D	None

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TABLE 10–5 (CONTINUED)
INTERSECTION OPERATIONS FOR CUMULATIVE SCENARIOS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing + Project		Project Traffic / Δ Delay [c]	Existing + Project + Cumulative Projects					
							Existing Road Network			Existing Road Network With Mountain Meadow Road Added		
				Delay [a]	LOS [b]		Delay	LOS	Impact	Delay	LOS	Impact
20. Twin Oaks Valley Rd / San Marcos Blvd	San Marcos	Signal	AM	38.0	D	3.2	**85.3**	**F**	**Cumulative**	**85.6**	**F**	**Cumulative**
			PM	54.2	D	3.4	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
21. Twin Oaks Valley Rd / SR 78 WB Ramps	Caltrans	Signal	AM	12.4	B	0.2	15.5	B	None	15.2	B	None
			PM	13.0	B	0.4	15.6	B	None	16.8	B	None
22. Twin Oaks Valley Rd / SR 78 EB Ramps	Caltrans	Signal	AM	26.7	C	0.1	34.7	C	None	34.8	C	None
			PM	20.3	C	0.8	47.7	D	None	49.0	D	None
23. Robelini Dr/ South Santa Fe Ave	County	Signal	AM	**96.4**	**F**	**31.1**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	29.0	C	1.0	30.9	C	None	30.9	C	None
24. Sycamore Ave/ SR78 WB Ramps	Caltrans	Signal	AM	37.7	D	0.6	39.1	D	None	39.3	D	None
			PM	33.0	C	0.3	33.1	C	None	33.1	C	None
25. Sycamore Ave/ SR 78 EB Ramps	Caltrans	Signal	AM	31.3	C	0.1	46.9	D	None	49.6	D	None
			PM	25.8	C	2.5	30.5	C	None	32.3	C	None
26. Buena Creek Rd/ South Santa Fe Ave	County	Signal	AM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	**>100.0**	**F**	**>10.0**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
27. Buena Creek Rd/ Monte Vista Dr	County	AWSC [e]	AM	**94.2**	**F**	**29**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
			PM	**>100.0**	**F**	**54**	**>100.0**	**F**	**Cumulative**	**>100.0**	**F**	**Cumulative**
28. San Marcos Blvd/ Knoll Rd / SR 78 WB Off Ramp	Caltrans	Signal	AM	35.7	D	0.0	41.5	D	None	41.5	D	None
			PM	33.5	C	0.0	43.4	D	None	43.7	D	None

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TABLE 10–5 (CONTINUED)
INTERSECTION OPERATIONS FOR CUMULATIVE SCENARIOS

Intersection #	Jurisdiction	Traffic Control	Peak Hour	Existing + Project		Project Traffic / Δ Delay [c]	Existing + Project + Cumulative Projects					
							Existing Road Network			Existing Road Network **With** Mountain Meadow Road Added		
				Delay [a]	LOS [b]		Delay	LOS	Impact	Delay	LOS	Impact
29. San Marcos Blvd / SR 78 EB Off Ramp	Caltrans	Signal	AM	11.0	B	0.2	15.9	B	None	17.6	B	None
			PM	13.4	B	0.9	17.6	B	None	19.3	B	None
30. Mission Rd/ Vineyard Rd	San Marcos	Signal	AM	27.5	C	0.1	30.8	C	None	33.7	C	None
			PM	33.6	C	0.9	50.7	D	None	50.8	D	None
31. North Centre City Pkwy/ Mesa Rock Rd	County	Signal	AM	11.0	B	24	12.5	B	None	12.5	B	None
			PM	9.7	A	17	11.4	B	None	10.8	B	None
32. North Centre City Pkwy/ Country Club Ln	Escondido	Signal	AM	24.5	C	0.1	30.5	C	None	29.9	C	None
			PM	21.4	C	0.4	27.9	C	None	27.9	C	None
33. Twin Oaks Valley Rd / Barham Dr / Discovery St	San Marcos	Signal	AM	38.6	D	0.6	42.5	D	None	43.5	D	None
			PM	52.4	D	0.7	54.5	D	None	54.6	D	None

Footnotes:

a. Average delay per vehicle in seconds
b. Level of service
c. Increase in traffic in the critical movement due to Project at unsignalized intersections in San Diego County and increase in delay in the critical movement at unsignalized intersections in the City of San Marcos and the City of Escondido. Increase in delay due to Project at signalized intersections.
d. MSSC - Minor Street STOP-Controlled intersection. Minor street delay and LOS are reported.
e. AWSC – All Way STOP-Controlled intersection. Overall delay and LOS are reported.

SIGNALIZED		UNSIGNALIZED	
Delay	**LOS**	**Delay**	**LOS**
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

Bold indicates potential impact.

SEGMENT OPERATIONS

Table 10–6 summarizes the Existing + Project + Cumulative projects segment operations based on the existing road and freeway network only. As shown in *Table 10–5*, the following segments are calculated to operate at LOS E or worse.

- Deer Springs Road: Twin Oaks Valley Road to Sarver Lane (LOS F)
- Deer Springs Road: Sarver Lane to Mesa Rock Road (LOS F)
- Deer Springs Road: Mesa Rock Road to I-15 (LOS F)
- Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road (LOS F)
- Twin Oaks Valley Road: Buena Creek Road to Cassou Road (LOS F)
- Twin Oaks Valley Road: Richmar Avenue to San Marcos Boulevard (LOS E)
- Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive (LOS F)
- Buena Creek Road: Monte Vista Drive to Twin Oaks Valley Road (LOS F)
- Monte Vista Drive: Foothill Drive to Buena Creek Road (LOS E)
- Gopher Canyon Road: Little Gopher Canyon Road to I-15 Ramps (LOS F)
- Robelini Drive: Sycamore Avenue to South Santa Fe Avenue (LOS F)
- South Santa Fe Avenue: Robelini Drive to Buena Creek Road (LOS E)

The Project has significant cumulative impacts on all of the above segments. An additional Horizon Year cumulative impact would occur in the City of San Marcos to the segment of Twin Oaks Valley Road between Deer Springs Road and Buena Creek Road. Please refer to section 12 of this report, City of San Marcos Horizon Year Analyses. The remaining segments are calculated to operate at an acceptable LOS D or better.

FREEWAY MAINLINE ANALYSIS

Even though an analysis of the Existing + Cumulative Projects scenario is not required by the County, this analysis was conducted to provide a comparative analysis of the freeway mainline without and with the Project traffic.

Table 10–7 summarizes the freeway mainline levels of service for Existing + Cumulative Projects and Existing + Project + Cumulative Projects along the subject segments within the Project study area based on the existing road and freeway network only. As shown in *Table 10–7*, for the Existing + Cumulative Projects + Project scenario, the following freeway sections are calculated to operate at LOS E or worse:

- I-15: Riverside County Boundary to Pomerado Road
- SR 78: Mar Vista Road to Rancho Santa Fe Avenue
- SR 78: Las Posas Road Twin to Oaks Valley Road

Significant cumulative impacts are calculated on segments where the project traffic results in an increase in the v/c ratio of more than 0.01 on segments operating at LOS E and 0.005 on segments operating at LOS F.

- I-15: Old Highway 395 to Pomerado Road
- SR 78: Mar Vista Road to Sycamore Avenue

RAMP METER ANALYSIS

Table 10–4 summarizes the ramp meter operations for Existing + Project + Cumulative Projects based on the existing road and freeway network only. As shown in *Table 10–4*, using the most restrictive discharge rates obtained from Caltrans, since the demand would be less than the most restrictive flow rate, none of the study area metered ramps would operate with delays of 15 minutes or more with the addition of project traffic. Therefore, impacts associated with freeway ramp meters would be less than significant.

TABLE 10–6
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS (EXISTING ROAD NETWORK)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Deer Springs Road										
Twin Oaks Valley Rd to Sarver Ln	San Marcos / County	2.2E Lt Col	16,200	**26,990**	**F**	**1.666**	**30,190**	**F**	**1.864**	**Cumulative**
Sarver Lane to Mesa Rock Road	County	2.2E Lt Col	16,200	**25,000**	**F**	**1.543**	**27,600**	**F**	**1.704**	**Cumulative**
Mesa Rock Road to I-15	County	2.2E Lt Col	16,200	**35,950**	**F**	**2.219**	**36,750**	**F**	**2.269**	**Cumulative**
I-15 to Champagne Boulevard	County	4.1B Major Rd	34,200	15,520	B	0.454	16,920	B	0.604	None
Mountain Meadow Road										
East of Champagne Blvd	County	4.1B Major Rd	34,200	9,740	A	0.285	10,640	A	0.355	None
Twin Oaks Valley Road										
Solar Ln to Deer Springs Rd	County	2.2E Lt Col	16,200	3,430	B	0.212	4,230	C	0.261	None
Deer Springs Rd to Buena Creek Rd	San Marcos	2 Ln Col	15,000	**28,700**	**F**	**1.913**	**30,400**	**F**	**2.027**	**Cumulative**
Buena Creek Rd to Cassou Rd	San Marcos	2 Ln Col	15,000	**22,440**	**F**	**1.496**	**23,040**	**F**	**1.536**	**Cumulative**
Cassou Rd to La Cienega Rd	San Marcos	4 Ln Sec Art	30,000	21,460	D	0.715	22,280	D	0.743	None
La Cienega Rd to Windy Wy	San Marcos	4 Ln Sec Art	40,000	23,410	C	0.585	28,040	C	0.701	None
Windy Wy to Borden Rd	San Marcos	4 Ln Sec Art	40,000	24,140	C	0.604	28,670	C	0.717	None
Borden Rd to Richmar Ave	San Marcos	4 Ln Sec Art	40,000	31,900	D	0.798	34,630	D	0.866	None
Richmar Ave to San Marcos Blvd	San Marcos	4 Ln Sec Art	40,000	33,440	D	0.836	**37,160**	**E**	**0.929**	**Cumulative**
San Marcos Blvd to SR 78	San Marcos	Prime Art	60,000	40,620	C	0.677	45,020	C	0.750	None
SR 78 to Barham Dr / Discovery St	San Marcos	Prime Art	70,000	48,320	C	0.690	61,660	D	0.881	None

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TABLE 10–6 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS (EXISTING ROAD NETWORK)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Buena Creek Road										
S. Santa Fe Ave to Monte Vista Dr	County	2.2E Lt Col	16,200	**11,590**	**E**	**0.715**	**19,190**	**F**	**1.185**	**Cumulative**
Monte Vista Dr to Twin Oaks Valley Rd.	County	2.2E Lt Col	16,200	**14,360**	**E**	**0.886**	**17,460**	**F**	**1.078**	**Cumulative**
Monte Vista Drive										
Foothill Dr to Buena Creek Rd	County	2.2E Lt Col	16,200	10,120	D	0.625	**11,620**	**E**	**0.717**	**Cumulative**
Mesa Rock Road										
Deer Springs Rd to N. Centre City Pkwy	County	2.2E Lt Col	16,200	1,520	A	0.094	2,420	B	0.149	None
Gopher Canyon Road										
Little Gopher Canyon Rd to I-15 Ramps	County	2.2E Lt Col	16,200	16,110	E	0.994	**17,110**	**F**	**1.056**	**Cumulative**
I-15 Ramps to Champagne Blvd	County	2.2B Blvd	28,000	14,510	A	0.518	15,610	A	0.558	None
Champagne Boulevard										
Old Castle Rd to Lawrence Welk Dr	County	2.2E Lt Col	16,200	6,290	C	0.388	7,790	D	0.481	None
Lawrence Welk Dr to Mtn Meadow Rd	County	2.2E Lt Col	16,200	8,580	D	0.530	9,480	D	0.585	None
North Centre City Parkway										
Mountain Meadow Rd to I-15 Ramps	County	2.2E Lt Col	16,200	6,300	C	0.389	8,000	D	0.494	None
I-15 Ramps to Country Club Ln	Escondido	4 Ln Col	34,200	11,920	B	0.349	14,020	B	0.410	None

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TABLE 10–6 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS (EXISTING ROAD NETWORK)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Robelini Drive										
Sycamore Ave to South Santa Fe Ave	County	2.2E Lt Col	16,200	**18,580**	**F**	**1.147**	**19,180**	**F**	**1.184**	**Cumulative**
South Santa Fe Avenue										
Robelini Dr to Buena Creek Rd	County	2.1B Com Col	19,000	**17,880**	**E**	**0.941**	**18,480**	**E**	**0.973**	**Cumulative**
Sycamore Avenue										
SR 78 WB Ramps to University Dr	County	6.2 Prime Art	57,000	35,780	B	0.628	39,780	C	0.698	None

Footnote:

a. The existing roadway class. Capacity of the existing roadway per the County *Table 1, Average Daily Vehicle Trips.*
b. Roadway capacity at LOS E
c. Level of Service.
d. Volume / Capacity ratio.
e. The increase in V/C ratio due to the Project at this segment in the City of San Marcos is less than the allowable threshold of 0.02 and hence the Project does not have a significant impact.
f. Not a significant impact since the Project adds 120 ADT to the segment, less than the allowable threshold of 200 ADT.

General Notes:

Bold indicates potential impact.

TABLE 10-7
EXISTING + CUMULATIVE PROJECTS + PROJECT FREEWAY MAINLINE OPERATIONS (EXISTING ROAD NETWORK)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																			
Riverside County Boundary to Mission Rd	NB	4	8,000	1,043	3,429	3,259	10,716	0.407	1.340	A	F(1)	3,316	10,757	0.414	1.345	B	F(1)	0.007	0.005
	SB	4	8,000	3,995	1,688	12,485	5,273	1.561	0.659	F(3)	C	12,516	5,345	1.564	0.668	F(3)	C	0.004	0.009
Mission Rd to SR-76	NB	4	8,000	1,800	5,610	4,118	12,836	0.515	1.605	B	F(3)	4,175	12,877	0.522	1.610	B	F(3)	0.007	0.005
	SB	4	8,000	6,300	2,835	14,414	6,487	1.802	0.811	F(3)	D	14,445	6,559	1.806	0.820	F(3)	D	0.004	0.009
SR-76 to Old Highway 395	NB	4	8,000	961	2,995	3,090	9,632	0.386	1.204	A	F(0)	3,147	9,673	0.393	1.209	A	F(0)	0.007	0.005
	SB	4	8,000	3,363	1,513	10,816	4,867	1.352	0.608	F(2)	B	10,847	4,939	1.356	0.617	F(2)	B	0.004	0.009
Old Highway 395 to Gopher Cyn Rd	NB	4	8,000	1,101	3,232	3,557	10,442	0.445	1.305	B	**F(1)**	3,633	10,496	0.454	1.312	B	**F(1)**	0.010	**0.007**
	SB	4	8,000	3,232	1,634	10,441	5,279	1.305	0.660	F(1)	C	10,482	5,375	1.310	0.672	F(1)	C	0.005	0.012
Gopher Canyon Rd to Deer Springs Rd	NB	4	8,000	59	174	2,747	8,065	0.343	1.008	A	**F(0)**	2,842	8,133	0.355	1.017	A	**F(0)**	0.012	**0.009**
	SB	4	8,000	174	88	8,064	4,077	1.008	0.510	**F(0)**	B	8,115	4,197	1.014	0.525	**F(0)**	B	**0.006**	0.015
Deer Springs Rd to N. Centre City Pkwy	NB	4	8,000	53	155	2,699	7,922	0.337	0.990	A	**E**	2,850	8,441	0.356	1.055	A	**F(0)**	0.019	**0.065**
	SB	4	8,000	155	79	7,922	4,005	0.990	0.501	**E**	B	8,350	4,236	1.044	0.530	**F(0)**	B	**0.054**	0.029
N. Centre Pkwy to El Norte Pkwy	NB	4	8,000	61	228	2,023	7,572	0.253	0.947	A	**E**	2,174	8,091	0.272	1.011	A	**F(0)**	0.019	**0.065**
	SB	4	8,000	229	115	7,589	3,821	0.949	0.478	**E**	B	8,065	4,052	1.008	0.507	**F(0)**	B	**0.060**	**0.029**
El Norte Pkwy to SR-78	NB	4	8,000	657	2,458	2,806	10,502	0.351	1.313	A	**F(1)**	2,957	11,021	0.370	1.378	A	**F(2)**	0.019	**0.065**
	SB	4	8,000	2,463	1,240	10,525	5,300	1.316	0.662	**F(1)**	C	10,953	5,531	1.369	0.691	**F(2)**	C	**0.054**	0.029

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TABLE 10−7 (CONTINUED)
EXISTING + CUMULATIVE PROJECTS + PROJECT FREEWAY MAINLINE OPERATIONS (EXISTING ROAD NETWORK)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																			
SR-78 to W. Valley Pkwy	NB	4+2A	10,400	558	1,230	6,285	13,860	0.604	1.333	B	**F(1)**	6,420	14,327	0.617	1.378	B	**F(2)**	0.013	**0.045**
	SB	5+1A	11,200	1,146	788	12,917	8,884	1.153	0.793	**F(0)**	C	13,302	9,091	1.188	0.812	**F(0)**	D	**0.034**	0.019
W. Valley Pkwy to Auto Park Wy	NB	5+2ML	12,400	461	1,016	5,779	12,744	0.466	1.028	B	**F(0)**	5,901	13,164	0.476	1.062	B	**F(0)**	0.010	**0.034**
	SB	5+2ML	12,400	947	651	11,877	8,168	0.958	0.659	**E**	C	12,223	8,355	0.986	0.674	**E**	C	**0.028**	0.015
Auto Park Way to W. Citracado Pkwy	NB	5+2ML	12,400	434	957	5,776	12,738	0.466	1.027	B	**F(0)**	5,886	13,116	0.475	1.058	B	**F(0)**	0.009	**0.031**
	SB	4+1A+2ML	11,600	892	613	11,871	8,165	1.023	0.704	**F(0)**	C	12,183	8,333	1.050	0.718	**F(0)**	C	**0.027**	0.015
W. Citracado Pkwy to Via Rancho Pkwy	NB	5+2ML	12,400	238	607	4,718	12,048	0.381	0.972	A	**E**	4,818	12,389	0.389	0.999	A	**E**	0.008	**0.027**
	SB	4+1A+2ML	11,600	607	392	12,055	7,778	1.039	0.670	**F(0)**	C	12,336	7,929	1.063	0.684	**F(0)**	C	**0.024**	0.013
Via Rancho Pkwy to Pomerado Rd	NB	4+1A+2ML	11,600	1,234	1,969	8,024	12,805	0.692	1.104	C	**F(0)**	8,113	13,112	0.699	1.130	C	**F(0)**	0.008	**0.026**
	SB	5+2ML	12,400	1,671	1,299	12,306	8,448	0.992	0.681	**E**	C	12,558	8,585	1.013	0.692	**F(0)**	C	**0.020**	0.011
Pomerado Rd to Rch Bernardo Rd	NB	5+2ML	12,400	264	572	4,905	10,611	0.396	0.856	A	D	4,985	10,887	0.402	0.878	A	D	0.006	0.022
	SB	5+1A+2ML	13,600	593	404	11,009	7,506	0.809	0.552	D	B	11,237	7,629	0.826	0.561	D	B	0.017	0.009
Rch Bernardo Rd to Bernardo Ctr Dr	NB	5+1A+2ML	13,600	121	261	4,874	10,544	0.358	0.775	A	C	4,946	10,792	0.364	0.794	A	C	0.005	0.018
	SB	5+2ML	12,400	271	184	10,939	7,458	0.882	0.601	D	B	11,144	7,569	0.899	0.610	D	B	0.017	0.009
Bernardo Ctr Dr to Camino Del Norte	NB	5+1A+2ML	13,600	32	70	4,988	10,792	0.367	0.794	A	C	5,053	11,015	0.372	0.810	A	D	0.005	0.016
	SB	5+1A+2ML	13,600	73	50	11,197	7,634	0.823	0.561	D	B	11,381	7,733	0.837	0.569	D	B	0.014	0.007

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TABLE 10−7 (CONTINUED)
EXISTING + CUMULATIVE PROJECTS + PROJECT FREEWAY MAINLINE OPERATIONS (EXISTING ROAD NETWORK)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
State Route 78																			
Mar Vista Rd to Sycamore Ave	WB	3	6,000	311	400	4,801	6,179	0.800	1.030	D	**F(0)**	4,937	6,240	0.823	**1.040**	D	**F(0)**	0.023	**0.010**
	EB	3	6,000	393	316	6,074	4,887	1.012	0.814	**F(0)**	D	6,108	5,049	**1.018**	0.841	**F(0)**	D	**0.006**	0.027
Sycamore Ave to Rancho Santa Fe Ave	WB	3	6,000	124	160	4,820	6,204	0.803	1.034	D	F(0)	4,874	6,228	0.812	1.038	D	F(0)	0.009	0.004
	EB	3	6,000	157	127	6,098	4,906	1.016	0.818	F(0)	D	6,111	5,068	1.018	0.845	F(0)	D	0.002	0.027
Rancho Santa Fe Ave to Las Posas Rd	WB	3 + 1A	7,200	151	174	5,648	6,509	0.784	0.904	C	D	5,702	6,533	0.792	0.907	C	D	0.007	0.003
	EB	3 + 1A	7,200	166	131	6,220	4,898	0.864	0.680	D	C	6,233	4,963	0.866	0.689	D	C	0.002	0.009
Las Posas Rd to San Marcos Blvd	WB	3	6,000	209	241	5,743	6,620	0.957	1.103	E	F(0)	5,797	6,644	0.966	1.107	E	F(0)	0.009	0.004
	EB	3	6,000	230	181	6,328	4,982	1.055	0.830	F(0)	D	6,341	5,047	1.057	0.841	F(0)	D	0.002	0.011
San Marcos Blvd to Twin Oaks Valley Rd	WB	3 + 1A	7,200	301	347	6,835	7,878	0.949	1.094	E	F(0)	6,853	7,886	0.952	1.095	E	F(0)	0.003	0.001
	EB	3 + 1A	7,200	332	261	7,530	5,929	1.046	0.823	F(0)	D	7,534	5,951	1.046	0.826	F(0)	D	0.001	0.003

Footnotes:

a. Capacity calculated at 2,000 vehicles per hour (vph) per mainline lane (M); 1,200 per Managed lane (ML); and 1,200 vph per Auxiliary (A) lane.
b. Volume / Capacity ratio.
c. Level of Service
d. Existing + Project peak hour volumes from Table 10-3
e. Cumulative Projects peak hour volumes
f. Peak Hour Existing + Project + Cumulative Projects traffic volumes
g. Existing + Projects + Cumulative Projects V/C ratio.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1.00
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

General Notes:

Bold indicates potential impact.

10.2.2 *Existing + Project + Cumulative Projects Operations (With Mountain Meadow Road Connection)*

This analysis assumes the connection of Mountain Meadow Road to the east.

INTERSECTION ANALYSIS

Table 10–1 summarizes the Existing + Project + Cumulative Projects intersections operations under the With Mountain Meadow Road connection scenario. The existing intersection geometry and traffic control were assumed in the analysis. As shown in *Table 10–1*, the following intersections are calculated to operate at LOS E or worse. The remaining intersections are calculated to operate at an acceptable LOS D or better.

- Deer Springs Road / I-15 NB Ramps (LOS E during the AM and LOS F during the PM peak hours)
- Deer Springs Road / I-15 SB Ramps (LOS F during the PM peak hour)
- Deer Springs Road / Mesa Rock Road (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sarver Lane (LOS F during the AM and PM peak hours)
- Deer Springs Road / Sycamore Road (LOS F during the AM and PM peak hours)
- Twin Oaks Valley Road / Deer Springs Road (LOS F during the AM and PM peak hours)
- Twin Oaks Valley Road / Buena Creek Road (LOS F during the AM and LOS F PM peak hours)
- Twin Oaks Valley Road / San Marcos Boulevard (LOS F during the AM and PM peak hours)
- Robelini Drive / South Santa Fe Avenue (LOS F during the AM peak hour)
- Buena Creek Road/South Santa Fe Avenue (LOS F during the AM and PM peak hours)
- Buena Creek Road/Monte Vista Drive (LOS F during the AM and PM peak hours)

A cumulative significant impact is calculated at all of the above intersections. ***Appendix G*** contains the Existing + Project + Cumulative Projects With Mountain Meadow Road Connection peak hour analysis worksheets.

SEGMENT OPERATIONS

Table 10–8 summarizes the segment operations for Existing + Project + Cumulative Projects under the With Mountain Meadow Road connection scenario. As shown in *Table 10–5*, the following segments are calculated to operate at worse than LOS D. The remaining segments are calculated to operate at an acceptable LOS D or better.

- Deer Springs Road: Twin Oaks Valley Road to Sarver Lane (LOS F)
- Deer Springs Road: Sarver Lane to Mesa Rock Road (LOS F)
- Deer Springs Road: Mesa Rock Road to I-15 (LOS F)
- Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road (LOS F)
- Twin Oaks Valley Road: Buena Creek Road to Cassou Road (LOS F)
- Twin Oaks Valley Road: Richmar Avenue to San Marcos Boulevard (LOS E)

- Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive (LOS F)
- Buena Creek Road: Monte Vista Drive to Deer Springs Road (LOS F)
- Monte Vista Drive: Foothill Drive to Buena Creek Road (LOS E)
- Gopher Canyon Road: Little Gopher Canyon Road to I-15 Ramps (LOS F)
- Robelini Drive: Sycamore Avenue to South Santa Fe Avenue (LOS F)
- South Santa Fe Avenue: Robelini Drive to Buena Creek Road (LOS E)

FREEWAY MAINLINE ANALYSIS

Table 10–9 summarizes the freeway mainline levels of service for Existing + Project + Cumulative Projects along the subject segments within the Project study area for the With Mountain Meadow Road connection scenario. As shown in *Table 10–9*, the following segments are calculated to operate at LOS E or worse:

- SB I-15: Riverside County Boundary to Pomerado Road
- SR 78: Mar Vista Road to Rancho Santa Fe Avenue
- SR 78: Las Posas Road to Twin Oaks Valley Road

Significant cumulative impacts are calculated on segments where the project traffic results in an increase in the v/c ratio of more than 0.01 on segments operating at LOS E and 0.005 on segments operating at LOS F.

- I-15: Old Highway 395 to Pomerado Road
- SR 78: Mar Vista Road to Sycamore Avenue

RAMP METER ANALYSIS

Table 10–4 summarizes the ramp meter operations for Existing + Project + Cumulative Projects With the Mountain Meadow Road connection. As shown in *Table 10–4*, using the most restrictive discharge rates obtained from Caltrans, since the demand would be less than the most restrictive flow rate, none of the study area metered ramps would operate with delays of 15 minutes or more with the addition of project traffic. Therefore, impacts associated with freeway ramp meters would be less than significant.

10.3 Comparison of Cumulative Analyses (Existing road network only vs. with Mountain Meadow Road Added)

The potentially significant cumulative impacts identified under the Existing + Project + Cumulative analyses are the same whether or not Mountain Meadow Road is assumed to be connected to Mirar de Valle into the community of Valley Center. However, as shown in *Tables 10–5, 10–6,* and *10–9*, the ADTs, intersection delays, and v/c ratios would higher along many of the road segments and at many of the intersections analyzed by the project under the scenario where Mountain Meadow Road is connected. Therefore, as the project's cumulative impacts would occur at an earlier point in the project's buildout, the mitigation for cumulative impacts has been developed based on the project's impacts under the cumulative scenario which includes the Mountain Meadow Road Connection (refer to Section 16 of this report).

As it relates to I-15, the Mountain Meadow Road Connection would result in a slight decrease in the daily traffic volumes from Deer Springs Road to El Norte Parkway and a slight increase in the daily volumes from Gopher Canyon Road to Deer Springs Road with the balance of the freeway unaffected. As it relates to SR 78, the Mountain Meadow Road Connection would result in an increase in the daily volumes from Mar Vista Road to Twin Oaks Valley Road. As it relates to the two metered freeway ramps analyzed by the project (Westbound SR 78 at Sycamore Avenue and Westbound SR 78 at San Marcos Boulevard), peak hour volumes at these ramps would be slightly higher with the Mountain Meadow Road Connection. Despite the differences in daily volumes, no new impacts to Caltrans facilities would result under the cumulative scenario which includes the Mountain Meadow Road Connection.

TABLE 10–8
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION FOR CUMULATIVE SCENARIO)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Deer Springs Road										
Twin Oaks Valley Rd to Sarver Ln	San Marcos / County	2.2E Lt Col	16,200	**26,990**	**F**	**1.666**	**32,690**	**F**	**2.018**	**Cumulative**
Sarver Lane to Mesa Rock Road	County	2.2E Lt Col	16,200	**25,000**	**F**	**1.543**	**30,100**	**F**	**1.858**	**Cumulative**
Mesa Rock Road to I-15	County	2.2E Lt Col	16,200	**35,950**	**F**	**2.219**	**38,350**	**F**	**2.367**	**Cumulative**
I-15 to Champagne Boulevard	County	4.2B Blvd	28,000	15,520	B	0.454	17,320	B	0.619	None
Mountain Meadow Road										
East of Champagne Blvd	County	42A Blvd	30,000	9,740	A	0.285	10,740	A	0.358	None
Twin Oaks Valley Road										
Solar Ln to Deer Springs Rd	County	2.2E Lt Col	16,200	3,430	B	0.212	4,230	C	0.261	None
Deer Springs Rd to Buena Creek Rd	San Marcos	2 Ln Col	15,000	**28,700**	**F**	**1.913**	**32,700**	**F**	**2.180**	**Cumulative**
Buena Creek Rd to Cassou Rd	San Marcos	2 Ln Col	15,000	**22,440**	**F**	**1.496**	**24,040**	**F**	**1.603**	**Cumulative**
Cassou Rd to La Cienega Rd	San Marcos	4 Ln Sec Art	30,000	21,460	D	0.715	22,980	D	0.766	None
La Cienega Rd to Windy Wy	San Marcos	4 Ln Sec Art	40,000	23,410	C	0.585	28,440	C	0.711	None
Windy Wy to Borden Rd	San Marcos	4 Ln Sec Art	40,000	24,140	C	0.604	30,070	D	0.752	None
Borden Rd to Richmar Ave	San Marcos	4 Ln Sec Art	40,000	31,900	D	0.798	34,830	D	0.871	None
Richmar Ave to San Marcos Blvd	San Marcos	4 Ln Sec Art	40,000	33,440	D	0.836	**37,560**	**E**	**0.939**	**Cumulative**
San Marcos Blvd to SR 78	San Marcos	Prime Art	60,000	40,620	C	0.677	45,120	C	0.752	None
SR 78 to Barham Dr / Discovery St	San Marcos	Prime Art	70,000	48,320	C	0.690	61,660	D	0.881	None

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TABLE 10–8 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION FOR CUMULATIVE SCENARIO)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Buena Creek Road										
S. Santa Fe Ave to Monte Vista Dr	County	2.2E Lt Col	16,200	**11,590**	**E**	**0.715**	**19,490**	**F**	**1.203**	**Cumulative**
Monte Vista Dr to Twin Oaks Valley Rd.	County	2.2E Lt Col	16,200	**14,360**	**E**	**0.886**	**18,360**	**F**	**1.133**	**Cumulative**
Monte Vista Drive										
Foothill Dr to Buena Creek Rd	County	2.2E Lt Col	16,200	10,120	D	0.625	**11,620**	**E**	**0.717**	**Cumulative**
Mesa Rock Road										
Deer Springs Rd to N. Centre City Pkwy	County	2.2E Lt Col	16,200	1,520	A	0.094	2,520	B	0.156	None
Gopher Canyon Road										
Little Gopher Canyon Rd to I-15 Ramps	County	2.2E Lt Col	16,200	16,110	E	0.994	**17,010**	**F**	**1.050**	**Cumulative**
I-15 Ramps to Champagne Blvd	County	2.2B Blvd	28,000	14,510	A	0.518	15,110	A	0.540	None
Champagne Boulevard										
Old Castle Rd to Lawrence Welk Dr	County	2.2E Lt Col	16,200	6,290	C	0.388	7,990	D	0.493	None
Lawrence Welk Dr to Mtn Meadow Rd	County	2.2E Lt Col	16,200	8,580	D	0.530	9,680	D	0.598	None
North Centre City Parkway										
Mountain Meadow Rd to I-15 Ramps	County	2.2E Lt Col	16,200	6,300	C	0.389	8,500	D	0.525	None
I-15 Ramps to Country Club Ln	Escondido	4 Ln Col	34,200	11,920	B	0.349	14,020	B	0.410	None

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TABLE 10–8 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS SEGMENT OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION FOR CUMULATIVE SCENARIO)

Street Segment	Jurisdiction	Functional Classification [a]	LOS E Capacity [b]	Existing + Project			Existing + Project + Cumulative Projects			Impact Type
				Volume	LOS [c]	V/C [d]	Volume	LOS	V/C	
Robelini Drive										
Sycamore Ave to South Santa Fe Ave	County	2.2E Lt Col	16,200	**18,580**	**F**	**1.147**	**19,680**	**F**	**1.215**	**Cumulative**
South Santa Fe Avenue										
Robelini Dr to Buena Creek Rd	County	2.1B Com Col	19,000	**17,880**	**E**	**0.941**	**18,480**	**E**	**0.973**	**Cumulative**
Sycamore Avenue										
SR 78 WB Ramps to University Dr	County	6.2 Prime Art	57,000	35,780	B	0.628	39,780	C	0.698	None

Footnote:

a. The existing roadway class. Capacity of the existing roadway per the County *Table 1, Average Daily Vehicle Trips.*
b. Roadway capacity at LOS E
c. Level of Service.
d. Volume / Capacity ratio.
e. The increase in V/C ratio due to the Project at this segment in the City of San Marcos is less than the allowable threshold of 0.02 and hence the Project does not have a significant impact.
f. Not a significant impact since the Project adds 120 ADT to the segment, less than the allowable threshold of 200 ADT.

General Notes:

Bold indicates potential impact.

TABLE 10-9
EXISTING + CUMULATIVE PROJECTS + PLUS PROJECT FREEWAY MAINLINE OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																			
Riverside Boundry to Mission Rd	NB	4	8,000	1,043	3,429	3,259	10,716	0.407	1.340	A	F(1)	3,316	10,757	0.414	1.345	B	F(1)	0.007	0.005
	SB	4	8,000	3,995	1,688	12,485	5,273	1.561	0.659	F(3)	C	12,516	5,345	1.564	0.668	F(3)	C	0.004	0.009
Mission Rd to SR-76	NB	4	8,000	1,800	5,610	4,118	12,836	0.515	1.605	B	F(3)	4,175	12,877	0.522	1.610	B	F(3)	0.007	0.005
	SB	4	8,000	6,300	2,835	14,414	6,487	1.802	0.811	F(3)	D	14,445	6,559	1.806	0.820	F(3)	D	0.004	0.009
SR-76 to Old Hwy 395	NB	4	8,000	961	2,995	3,090	9,632	0.386	1.204	A	F(0)	3,147	9,673	0.393	1.209	A	F(0)	0.007	0.005
	SB	4	8,000	3,363	1,513	10,816	4,867	1.352	0.608	F(2)	B	10,847	4,939	1.356	0.617	F(2)	B	0.004	0.009
Old Hwy 395 to Gopher Cyn Rd	NB	4	8,000	1,101	3,232	3,557	10,442	0.445	1.305	B	F(1)	3,633	10,496	0.454	1.312	B	**F(1)**	0.010	**0.007**
	SB	4	8,000	3,232	1,634	10,441	5,279	1.305	0.660	F(1)	C	10,482	5,375	1.310	0.672	F(1)	C	0.005	0.012
Gopher Cyn Rd to Deer Springs Rd	NB	4	8,000	63	186	2,751	8,078	0.344	1.010	A	F(0)	2,846	8,146	0.356	1.018	A	**F(0)**	0.012	**0.008**
	SB	4	8,000	186	94	8,077	4,084	1.010	0.510	F(0)	B	8,128	4,204	1.016	0.525	**F(0)**	B	0.006	0.015
Deer Springs Rd to N. Ctr City Pkwy	NB	4	8,000	28	81	2,673	7,848	0.334	0.981	A	E	2,824	8,367	0.353	1.046	A	**F(0)**	0.019	**0.065**
	SB	4	8,000	81	41	7,847	3,968	0.981	0.496	E	B	8,275	4,199	1.034	0.525	**F(0)**	B	**0.053**	0.029
N. Centre Pkwy to El Norte Pkwy	NB	4	8,000	46	173	2,009	7,517	0.251	0.940	A	E	2,160	8,036	0.270	1.004	A	**F(0)**	0.019	**0.065**
	SB	4	8,000	173	87	7,533	3,793	0.942	0.474	E	B	8,009	4,024	1.001	0.503	**F(0)**	B	**0.060**	0.029
El Norte Pkwy to SR-78	NB	4	8,000	657	2,458	2,806	10,502	0.351	1.313	A	F(1)	2,957	11,021	0.370	1.378	A	**F(2)**	0.019	**0.065**
	SB	4	8,000	2,463	1,240	10,525	5,300	1.316	0.662	F(1)	C	10,953	5,531	1.369	0.691	**F(2)**	C	**0.054**	0.029

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TABLE 10−9 (CONTINUED)
EXISTING + CUMULATIVE PROJECTS + PLUS PROJECT FREEWAY MAINLINE OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Interstate 15																			
SR-78 to W. Valley Pkwy	NB	4+2A	10,400	558	1,230	6,285	13,860	0.604	1.333	B	F(1)	6,420	14,327	0.617	1.378	B	**F(2)**	0.013	**0.045**
	SB	5+1A	11,200	1,146	788	12,917	8,884	1.153	0.793	F(0)	C	13,302	9,091	1.188	0.812	**F(0)**	D	**0.034**	0.019
W. Valley Pkwy to Auto Park Way	NB	5+2ML	12,400	461	1,016	5,779	12,744	0.466	1.028	B	F(0)	5,901	13,164	0.476	1.062	B	**F(0)**	0.010	**0.034**
	SB	5+2ML	12,400	947	651	11,877	8,168	0.958	0.659	E	C	12,223	8,355	0.986	0.674	**E**	C	**0.028**	0.015
Auto Park Way to W. Citracado Pkwy	NB	5+2ML	12,400	434	957	5,776	12,738	0.466	1.027	B	F(0)	5,886	13,116	0.475	1.058	B	**F(0)**	0.009	**0.031**
	SB	4+1A+2ML	11,600	892	613	11,871	8,165	1.023	0.704	F(0)	C	12,183	8,333	1.050	0.718	**F(0)**	C	**0.027**	0.015
W. Citracado Pkwy to Via Rancho Pkwy	NB	5+2ML	12,400	238	607	4,718	12,048	0.381	0.972	A	E	4,818	12,389	0.389	0.999	A	**E**	0.008	**0.027**
	SB	4+1A+2ML	11,600	607	392	12,055	7,778	1.039	0.670	F(0)	C	12,336	7,929	1.063	0.684	**F(0)**	C	**0.024**	0.013
Via Rancho Pkwy to Pomerado Rd	NB	4+1A+2ML	11,600	1,234	1,969	8,024	12,805	0.692	1.104	C	F(0)	8,113	13,112	0.699	1.130	C	**F(0)**	0.008	**0.026**
	SB	5+2ML	12,400	1,671	1,299	12,306	8,448	0.992	0.681	E	C	12,558	8,585	1.013	0.692	**F(0)**	C	**0.020**	0.011
Pomerado Rd to Rancho Bernardo Rd	NB	5+2ML	12,400	264	572	4,905	10,611	0.396	0.856	A	D	4,985	10,887	0.402	0.878	A	D	0.006	0.022
	SB	5+1A+2ML	13,600	593	404	11,009	7,506	0.809	0.552	D	B	11,237	7,629	0.826	0.561	D	B	0.017	0.009
Rancho Bernardo Rd to Bernardo Center Drive	NB	5+1A+2ML	13,600	121	261	4,874	10,544	0.358	0.775	A	C	4,946	10,792	0.364	0.794	A	C	0.005	0.018
	SB	5+2ML	12,400	271	184	10,939	7,458	0.882	0.601	D	B	11,144	7,569	0.899	0.610	D	B	0.017	0.009
Bernardo Ctr Drive to Camino Del Norte	NB	5+1A+2ML	13,600	32	70	4,988	10,792	0.367	0.794	A	C	5,053	11,015	0.372	0.810	A	D	0.005	0.016
	SB	5+1A+2ML	13,600	73	50	11,197	7,634	0.823	0.561	D	B	11,381	7,733	0.837	0.569	D	B	0.014	0.007

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TABLE 10-9 (CONTINUED)
EXISTING + CUMULATIVE PROJECTS + PLUS PROJECT FREEWAY MAINLINE OPERATIONS
(WITH MOUNTAIN MEADOW ROAD CONNECTION)

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	Cumulative Projects Peak Hour Vol [d]		Existing + Cumulative Projects [f]						Existing + Cumulative Projects + Project [f]						Δ V/C	
						Peak Hour Vol		V/C		LOS		Peak Hour Vol		V/C [b]		LOS [c]			
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
State Route 78																			
Mar Vista Rd to Sycamore Ave	WB	3	6,000	321	413	4,811	6,191	0.802	1.032	D	F(0)	4,947	6,252	0.824	1.042	D	**F(0)**	0.023	**0.010**
	EB	3	6,000	406	326	6,086	4,896	1.014	0.816	F(0)	D	6,120	5,058	1.020	0.843	**F(0)**	D	**0.006**	0.027
Sycamore Ave to Rancho Santa Fe Ave	WB	3	6,000	124	159	4,820	6,203	0.803	1.034	D	F(0)	4,874	6,227	0.812	1.038	D	F(0)	0.009	0.004
	EB	3	6,000	156	126	6,097	4,905	1.016	0.818	F(0)	D	6,110	5,067	1.018	0.845	F(0)	D	0.002	0.027
Rancho Santa Fe Ave to Las Posas Rd	WB	3 + 1A	7,200	150	173	5,647	6,508	0.784	0.904	C	D	5,701	6,532	0.792	0.907	C	D	0.007	0.003
	EB	3 + 1A	7,200	165	130	6,219	4,897	0.864	0.680	D	C	6,232	4,962	0.866	0.689	D	C	0.002	0.009
Las Posas Rd to San Marcos Blvd	WB	3	6,000	247	284	5,781	6,664	0.964	1.111	E	F(0)	5,835	6,688	0.973	1.115	E	F(0)	0.009	0.004
	EB	3	6,000	272	214	6,369	5,015	1.062	0.836	F(0)	D	6,382	5,080	1.064	0.847	F(0)	D	0.002	0.011
San Marcos Blvd to Twin Oaks Valley Rd	WB	3 + 1A	7,200	265	306	6,799	7,837	0.944	1.088	E	F(0)	6,817	7,845	0.947	1.090	E	F(0)	0.002	0.001
	EB	3 + 1A	7,200	292	230	7,491	5,898	1.040	0.819	F(0)	D	7,495	5,920	1.041	0.822	F(0)	D	0.001	0.003

Footnotes:

a. Capacity calculated at 2,000 vehicles per hour (vph) per mainline lane (M); 1,200 per Managed lane (ML); and 1,200 vph per Auxiliary (A) lane.
b. Volume / Capacity ratio.
c. Level of Service
d. Existing + Project peak hour volumes from Table 10-3
e. Cumulative Projects peak hour volumes
f. Peak Hour Existing + Project + Cumulative Projects traffic volumes
g. Existing + Projects + Cumulative Projects V/C ratio.

General Notes:

Bold indicates potential impact.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1.00
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

11.0 COUNTY OF SAN DIEGO GENERAL PLAN CONSISTENCY AND BUILDOUT ANALYSIS

The purpose of the Buildout Analysis is to determine whether the Project's proposed land uses and alternative scenarios for Deer Springs Road are consistent with the County's General Plan Mobility Element per County of San Diego guidelines, *Report Format & Content Requirements Transportation and Traffic*, August 24, 2011. Separate horizon year scenarios were conducted for the City of San Marcos roadways using the City's guidelines (see Section 12).

As described in Section 5 of this report, five different Long-Term scenarios were conducted, one scenario assuming buildout of the County's existing General Plan with no changes to the land uses for the Sierra Project Site and no changes to the County's Mobility Element roadway network, two scenarios assuming buildout of the County's General Plan with the proposed land uses for the Project Site and Deer Springs Road reclassified as proposed by the Project's Option A, and two scenarios assuming buildout of the County's General Plan with the proposed land uses for the Project Site and no changes to the existing Mobility Element classification for Deer Springs Road (i.e., Deer Springs Road is modeled as a 6.2 Prime Arterial). Finally, as explained in Section 5.1, County Network Adjustments, one of each of the scenarios addressing the different Deer Springs Road classifications (Option A vs. Existing General Plan ME classification) assumes Mountain Meadow Road is not connected, as explained in Section 5.

The following figures are included in this section:

- ***Figure 11–1*** depicts the GP 2030 Segment ADT volumes with the County Land Use buildout and without Project (i.e., buildout of the Project Site based on the Site's existing General Plan land uses).
- ***Figure 11–2*** depicts the GP 2030 Segment ADT volumes with the County Land Use buildout and with Project traffic with Deer Springs Road reclassified as proposed by Option A.
- ***Figure 11–3*** depicts the GP 2030 Segment ADT volumes with the County Land Use buildout and with Project traffic with Deer Springs Road reclassified as proposed by Option A and without the Mountain Meadow Road Connection.
- ***Figure 11–4*** depicts the GP 2030 Segment ADT volumes with the County Land Use buildout and with Project traffic with Deer Springs Road built to its ultimate classification as a 6.2 Prime Arterial.
- ***Figure 11–5*** depicts the GP 2030 Segment ADT volumes with the County Land Use buildout and with Project traffic with Deer Springs Road built to its ultimate classification as a 6.2 Prime Arterial and without the Mountain Meadow Road Connection.

11.1 Comparison of Land Uses - General Plan versus Proposed Project

Table 11–1 compares the trip generation under the County General Plan land uses for the Project site with the proposed Project trip generation. As shown in *Table 11–1*, the existing General Plan Land Uses are estimated to generate a net of 20,969 daily trips with 2,496 AM peak hour trips and 2,500 PM peak hour trips. In comparison, the proposed Project is estimated to generate a net of 22,209 daily trips with 1,601 AM peak hour trips and 2,059 PM peak hour trips. Thus, the proposed Project will generate 1,240 more daily trips than the General Plan land uses, but 895 fewer trips in the AM peak hour and 441 fewer trips in the PM peak hour.

TABLE 11–1
COMPARISON OF TRIP GENERATION - GENERAL PLAN LAND USES VERSUS PROPOSED PROJECT

Land Use	Quantity	Rate [a]	Daily Trip Ends (ADT)	AM Peak Hour		PM Peak Hour	
				% of ADT	Vol	% of ADT	Vol
A. Existing General Plan Land Uses							
Non-Residential							
General Commercial	4.64 Acres	1,200 /Acre	5,568	4%	223	10%	557
Office Professional	53.64 Acres	300 /Acre	16,092	14%	2,253	13%	2,092
Gross Non-Residential			**21,660**		**2,476**		**2,649**
Non-Residential Internal Capture & Pass-By							
Retail Internal Trips (5%) [b]			*(278)*		*(11)*		*(28)*
Passby Reduction [c] (25% Daily and AM and 40% PM of Retail only)			*(1,323)*		*(53)*		*(212)*
Net Non-Residential			**20,059**		**2,412**		**2,409**
Residential							
Residential (Estate)	99 DU [d]	12 /DU	1,188	8%	95	10%	119
Gross Residential			**1,188**		**95**		**119**
Residential Internal Capture [e]			*(278)*		*(11)*		*(28)*
Net Residential			**910**		**84**		**91**
Gross Project			**22,848**		**2,571**		**2,768**
Net Existing General Plan			**20,969**		**2,496**		**2,500**
B. Proposed Project [f]			**22,208**		**1,602**		**2,059**
Net Increase(+) / Decrease (-)			**1,240**		**-895**		**-441**

Footnotes:

a. Rates obtained from a "Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002, published by SANDAG.
b. 5% internal trips is assumed for retail.
c. Pass-by trips percentages: 25% of Daily and AM peak hour, and 40% of PM peak hour of Retail trips (post Retail internal capture).
d. DU – Dwelling Units
e. Equal reduction applies to Residential. Total internal capture for project is 556 ADT (2 x 278 ADT). Refer to Section 8.1.3 of this report for more information on calculating internal capture.
f. Please refer to *Table 8-1* for Sierra Project trip generation summary.

11.2 Segment Analysis

11.2.1 *Long-Term Without Project*

The segment analysis results using the County General Plan Update (GPU) Model (No Project/Existing General Plan) are summarized in ***Table 11–2***. The following segments are calculated to operate at LOS E or worse:

- Deer Springs Road from Twin Oaks Valley Road to San Marcos City Limits (LOS F)
- Deer Springs Road from Mesa Rock Road to I-15 SB Ramps (LOS E)
- Deer Springs Road from I-15 Ramps to Champagne Boulevard (LOS F)

11.2.2 *Long-Term County GP Buildout with Project – Deer Springs Road Reclassified Under Option A*

The Series 10 County GPU Model is no longer available for use. Therefore, the "with Project" traffic volumes were determined by adding the net increase in traffic between the site's current General Plan volumes and the Project volumes.

The change in volumes that would result by the reclassification of Deer Springs Road to a "4 lane/2-lane roadway" were determined by comparing the two SANDAG Series 12 Model runs with the only difference being the number of lanes on Deer Springs Road. The percent change was determined and utilized to estimate the volumes for Option A.

The segment analysis results for Option A are summarized in *Table 11–2*. As shown in *Table 11–2*, the following segments are calculated to operate at LOS E or worse:

- Deer Springs Road from Sarver Lane to Mesa Rock Road (LOS F)

North Centre City Parkway from Mountain Meadow Road to I-15 Ramps (LOS E)

11.2.3 *Long-Term County GP Buildout with Project – Deer Springs Road Reclassified Under Option A, Without the Mountain Meadow Road Connection*

As explained in Section 9 Cumulative Projects, the County Mobility Element includes a connection of Mountain Meadow Road to Mirar de Valle Road into Valley Center. Since this road connection would add a relatively large amount of traffic to Deer Springs Road west of I-15 and the construction of this road is speculative, a long-term analysis was completed with and without the Mountain Meadow Road connection.

As shown in *Table 11–2*, with Deer Springs Road reclassified as proposed by Option A, without the Mountain Meadow Road connection, the following segments are calculated to operate at LOS E or worse:

- Deer Springs Road from Sarver Lane to Mesa Rock Road (LOS F)
- North Centre City Parkway from Mountain Meadow Road to I-15 Ramps (LOSE)

11.2.4 *Long-Term County GP Buildout with Project – Deer Springs Road as a 6.2 Prime Arterial*

Under this scenario, Deer Springs Road would remain a 6.2 Prime Arterial (6-lane) in the Mobility Element of the County General Plan. The results are summarized in *Table 11–2*. As shown in *Table 11–2*, the following segments are calculated to operate at LOS E or worse:

- Deer Springs Road from Twin Oaks Valley Road to San Marcos City Limits (LOS F)
- Deer Springs Road from Mesa Rock Road to I-15 SB Ramps (LOS E)
- Deer Springs Road from I-15 NB Ramps to Champagne Boulevard (LOS F)

The increase in the number of LOS E / F operating locations under this scenario relative to the scenarios described in 11.2.2 and 11.2.3 above is due to the fact that if Deer Springs Road were built out as presently shown in the Mobility Element, the additional capacity available on the road is forecasted to have the effect of attracting more vehicle trips along the road, thereby resulting in lower operations on certain segments.

11.2.5 *Long-Term County GP Buildout with Project – Deer Springs Road as a 6.2 Prime Arterial, Without Mountain Meadow Road Connection*

This scenario is the same as described in 11.2.5, however it assumes that the planned eastward connection of Mountain Meadow Road (Mirar de Valle Road) is not added to the County's roadway network. As shown in Table *11–2*, without the Mountain Meadow Road connection, the following segments are calculated to operate at LOS E or worse:

- Deer Springs Road from Twin Oaks Valley Road to San Marcos City Limits (LOSE)
- Deer Springs Road from I-15 NB Ramps to Champagne Boulevard (LOS E)
- North Centre City Parkway from Mountain Meadow Road to I-15 Ramps (LOSE)

11.3 Comparison of Deer Springs Road Scenarios

As discussed above, with Deer Springs Road reclassified as proposed by Option A, two segments of Deer Springs Road are calculated to operate at LOS E or worse at buildout of the County's General Plan, both with and without the Mountain Meadow Road connection, with the two-lane segments operating at LOS F.

With Deer Springs Road remaining as a 6.2 Prime Arterial, three segments of Deer Springs Road and one segment of Twin Oaks Valley Road would operate at LOS E or F. Two of the Deer Springs Road segments are designated as four-lane major roads, and one segment is a six-lane prime arterial. Without the Mountain Meadow Road connection, the six-lane prime arterial segment would operate at LOS D, and the remaining two segments of Deer Springs Road and one segment of North Centre City Parkway would operate at LOS E or worse.

TABLE 11–2
LONG-TERM COUNTY GP BUILDOUT SEGMENT ANALYSIS

Street Segment	Mobility Element Classification [a]	LOS E Cap [b]	Existing General Plan Land Uses & Mobility Element Classifications [c] (Deer Springs Road as a 6.2 Prime Arterial)		With Project							
					Deer Springs Road Reclassified Under Option A [d]				Deer Springs Road as a 6.2 Prime Arterial [e]			
					With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection		With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection	
			Vol	LOS [f]	Vol	LOS	Vol	LOS	Vol	LOS	Vol	LOS
Deer Springs Road (Op. A Classification)												
Twin Oaks Valley Rd to San Marcos CL	4-Lane Maj Art	40,000	**40,700**	**F**	30,700	D	26,400	C	NA	NA	NA	NA
San Marcos City Limits to Sarver Ln	4.1A Maj Rd	37,000	44,000	C	32,840	D	28,240	C	NA	NA	NA	NA
Sarver Ln to Mesa Rock Rd	2.1B Com Coll	19,000	44,500	C	**29,640**	**F**	**25,490**	**F**	NA	NA	NA	NA
Mesa Rock Rd to I-15 SB Ramps	4.1A Maj Rd	37,000	**52,300**	**E**	38,190	C	32,840	B	NA	NA	NA	NA
I-15NB Ramps to N. Centre City Pkwy.	4.1 B Maj Rd	34,200	**45,100**	**F**	38,280	D	32,920	C	NA	NA	NA	NA
Deer Springs Road (6.2 Prime Arterial)												
Twin Oaks Valley Rd to San Marcos CL	4-Lane Maj Art	40,000	**40,700**	**F**	NA	NA	NA	NA	**41,130**	**F**	**35,370**	**E**
San Marcos City Limits to Sarver Ln	6.2 Prime Art	57,000	44,000	C	NA	NA	NA	NA	44,430	C	38,210	C
Sarver Ln to Mesa Rock Rd	6.2 Prime Art	57,000	44,500	C	NA	NA	NA	NA	44,720	D	38,460	C
Mesa Rock Rd to I-15 SB Ramps	6.2 Prime Art	57,000	**52,300**	**E**	NA	NA	NA	NA	**53,070**	**E**	45,640	D
I-15NB Ramps to Champagne Blvd (N. Centre City Pkwy.)	4.1 B Maj Rd	34,200	**45,100**	**F**	NA	NA	NA	NA	**45,240**	**F**	**38,910**	**E**
Mountain Meadow Road												
East of Champagne Blvd	4.1 B Maj Rd	34,200	28,600	D	27,020	C	23,240	C	28,660	D	24,650	C
Twin Oaks Valley Road												
Solar Ln to Deer Springs Rd	2.2C L Coll	19,000	4,800	C	6,730	C	5,790	C	4,810	C	4,140	C

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TABLE 11–2 (CONTINUED)
LONG-TERM COUNTY GP BUILDOUT SEGMENT ANALYSIS

Street Segment	Mobility Element Classification [a]	LOS E Cap [b]	General Plan Land Uses, Mobility Element Classification [c] (Deer Springs Road as a 6.2 Prime Arterial)		With Project							
					Deer Springs Road Reclassified Under Option A [d]				Deer Springs Road as a 6.2 Prime Arterial [e]			
					With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection		With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection	
			Vol	LOS [f]	Vol	LOS	Vol	LOS	Vol	LOS	Vol	LOS
Buena Creek Road												
S. Santa Fe Ave to Monte Vista Dr	4.1 B Maj Rd	34,200	27,000	C	24,560	C	24,560	C	27,060	C	27,060	C
Monte Vista Dr to Las Posas Rd	4.1 B Maj Rd	34,200	22,700	B	19,820	B	19,820	B	22,800	B	22,800	B
Las Posas Rd to Deer Springs Rd	4.1 B Maj Rd	34,200	27,300	C	22,610	B	22,610	B	27,490	D	27,490	D
Monte Vista Drive												
Foothill Dr to Buena Creek Rd	4.1 B Maj Rd	34,200	19,000	B	18,420	B	18,420	B	19,040	B	19,040	B
Las Posas Road												
Buena Creek Rd to Borden Rd	2.2C Lt Coll	19,000	13,200	D	12,250	D	12,250	D	13,290	D	13,290	D
Borden Rd to Santa Fe Ave	4 Ln Maj Road	40,000	20,400	B	19,730	B	19,730	B	20,490	B	20,490	B
Santa Fe Ave to SR 78 Ramps	4 Ln Maj Road	40,000	34,400	D	34,360	D	34,360	D	34,490	D	34,490	D
Mesa Rock Road												
Deer Springs Rd to N. Centre City Pkwy	2.2E Lt Col	16,200	2,900	B	2,830	B	2,430	B	2,930	B	2,930	B
Gopher Canyon Road												
West of I-15 Ramps	4.1 B Maj Rd	34,200	21,600	B	23,130	C	19,890	B	21,600	B	18,580	B
I-15 Ramps to SR 395 / Champagne Blvd	4.1 B Maj Rd	34,200	18,900	B	21,770	B	18,720	B	18,930	B	16,280	B

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TABLE 11–2 (CONTINUED)
LONG-TERM COUNTY GP BUILDOUT SEGMENT ANALYSIS

Street Segment	Functional Classification [a]	LOS E Cap [b]	General Plan Land Uses, Mobility Element Classifications [c] (Deer Springs Road as a 6.2 Prime Arterial)		With Project							
					Deer Springs Road Reclassified Under Option A [d]				Deer Springs Road as a 6.2 Prime Arterial [e]			
					With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection		With Mountain Meadow Road (Full Buildout of Road Network)		Without Mountain Meadow Road Connection	
			Vol	LOS [f]	Vol	LOS	Vol	LOS	Vol	LOS	Vol	LOS
Champagne Boulevard												
Old Castle Rd to Lawrence Welk Dr	4.1 B Maj Rd	34,200	21,300	B	19,460	B	22,770	B	21,350	B	24,980	C
Lawrence Welk Dr to Mtn Meadow Rd	4.1 B Maj Rd	34,200	21,400	B	18,700	B	21,880	B	21,460	B	25,110	C
North Centre City Parkway												
Mountain Meadow Rd to I-15 Ramps	4.1 B Maj Rd	34,200	30,700	D	**32,060**	**E**	**34,540**	**F**	30,710	D	**33,090**	**E**
I-15 Ramps to Country Club Dr	4.1 B Maj Rd	34,200	19,000	B	19,300	B	19,300	B	19,040	B	19,040	B

Footnote:

a. The roadway classification at which the facility operates.
b. Capacity of the existing roadway per the County *Table 1, Average Daily Vehicle Trips*.
c. GP 2030 (General Plan Buildout) Based on Existing General Plan Designations for Project Site
d. Option A - 4.1A Deer Springs Road and a 2.1B Community Collector with a continuous left-turn lane between Sarver Lane and Mesa Rock Road.
e. Option B - 6.2 Prime Arterial Deer Springs Road per San Diego County Mobility Element.
f. Level of Service.

General Note:

NA – Does not apply for the option.

In general, Deer Springs Road built to its ultimate General Plan Mobility Element classification as a 6.2 Prime Arterial results in a greater number of LOS E/F operating locations when compared to Deer Springs Road being built to the classifications proposed under Option A. The additional capacity available on the road (as a 6.2 Prime Arterial) is forecasted to have the effect of attracting more vehicle trips along the road, thereby resulting in reduced Levels of Service along certain segments. Additionally, whether Deer Springs Road is reclassified under Option A or built to its ultimate Mobility Element classification, with Mountain Meadow Road connected to Mirar de Valle into Valley Center, segment volumes are generally higher on the road network analyzed by the project.

11.4 Freeway Analysis

The long-term Options A and Existing County Mobility Element classification freeway mainline analysis results are summarized below.

11.4.1 *Deer Springs Road as Reclassified Under Option A*

Table 11–3 summarizes the freeway mainline analysis for Option A. As shown in *Table 11–3*, with Option A, the following segments are calculated to operate at LOS E or worse:

- All three segments of I-15 between Gopher Canyon Road and El Norte Parkway in the southbound direction during the AM peak hour and in the northbound direction during the PM peak hour.
- The westbound segment of SR 78 between Las Posas Road and San Marcos Boulevard during the PM peak hour

11.4.2 *Deer Springs Road as a 6.2 Prime Arterial*

Table 11–4 summarizes the Freeway Mainline analysis for Deer Springs Road as a 6.2 Prime Arterial. As shown in *Table 11–4*, the following segments are calculated to operate at LOS E or worse:

- All three segments of I-15 between Gopher Canyon Road and El Norte Parkway in the southbound direction during the AM peak hour and in the northbound direction during the PM peak hour.
- The westbound segment of SR 78 between Las Posas Road and San Marcos Boulevard during the PM peak hour

11.5 Comparison of Deer Springs Road Classifications, Freeway Mainline Analyses

A comparison of the freeway mainline volumes at buildout of the County's General Plan shows that with Deer Springs Road built as proposed by Option A, the freeway mainline volumes on I-15 are generally higher than with Deer Springs Road built to its ultimate existing General Plan Mobility Element classification, a 6.2 Prime Arterial. This shows that less traffic would utilize Deer Springs Road as a two-lane road as the capacity of the road would be lower, and hence the traffic on mainline I-15 is higher than if Deer Springs Road were built to its ultimate six-lane classification.

TABLE 11–3
FREEWAY MAINLINE OPERATIONS
LONG-TERM COUNTY GP BUILDOUT — DEER SPRINGS ROAD RECLASSIFIED AS PROPOSED BY OPTION A

Freeway Segment	Dir.	# of Lanes	Hourly Capacity [a]	ADT [b]	% K [c]		% D[c]		Truck Factor [d]	Peak Hour Volume [e]		V/C [f]		LOS	
					AM	PM	AM	PM		AM	PM	AM	PM	AM	PM
Interstate 15															
Gopher Canyon Rd to Deer Springs Rd	NB	4M+1ML	9,200	246,610	0.0798	0.0865	0.2417	0.6477	0.868	4,129	11,993	0.449	**1.304**	B	**F(1)**
	SB				0.0798	0.0865	0.7583	0.3523		12,953	6,523	**1.408**	0.709	**F(2)**	C
Deer Springs Rd to N. Centre City Pkwy	NB	4M+1ML	9,200	255,760	0.0798	0.0865	0.2417	0.6477	0.868	4,282	12,438	0.465	**1.352**	B	**F(2)**
	SB				0.0798	0.0865	0.7583	0.3523		13,434	6,765	1.46	0.735	**F(3)**	C
N. Centre Pkwy to El Norte Pkwy	NB	4M+1ML	9,200	256,320	0.0798	0.0865	0.2417	0.6477	0.868	4,291	12,465	0.466	**1.355**	B	**F(2)**
	SB				0.0798	0.0865	0.7583	0.3523		13,463	6,780	**1.463**	0.737	**F(3)**	C

Footnotes:

a. Capacity calculated at 2000 vph per lane, and 1200 vph per Auxiliary lane, Managed Lane (ML) and High Occupancy (HOV) lane.
b. Option A GP 2030 Volumes with Project Volumes
c. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS, 2013
d. Truck Factor from "2013 Annual Average Daily Truck Traffic on the California State Highway System".
e. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
f. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)
g. **Bold** indicates LOS E or worse operations.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

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TABLE 11–3 (CONTINUED)
FREEWAY MAINLINE OPERATIONS
LONG-TERM COUNTY GP BUILDOUT — DEER SPRINGS ROAD RECLASSIFIED AS PROPOSED BY OPTION A

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT [b]	% K [c]		% D[c]		Truck Factor [d]	Peak Hour Volume [e]		V/C [f]		LOS	
					AM	PM	AM	PM		AM	PM	AM	PM	AM	PM
SR 78															
Mar Vista Rd to Sycamore Ave	WB	3M+1HOV	7,200	154,260	0.0722	0.0780	0.4836	0.5323	0.9483	5,108	6,074	0.709	0.844	C	D
	EB				0.0722	0.0780	0.5164	0.4677		5,454	5,337	0.758	0.741	C	C
Sycamore Ave to Rancho Santa Fe Ave	WB	3M+1HOV	7,200	160,050	0.0722	0.0780	0.4836	0.5323	0.9483	5,299	6,302	0.736	0.875	C	D
	EB				0.0722	0.0780	0.5164	0.4677		5,659	5,537	0.786	0.769	C	C
Rancho Santa Fe Ave to Las Posas Rd	WB	3M+1HOV +1A	8,400	176,610	0.0722	0.0780	0.4836	0.5323	0.9483	5,848	6,954	0.696	0.828	C	D
	EB				0.0722	0.0780	0.5164	0.4677		6,244	6,110	0.743	0.727	C	C
Las Posas Rd to San Marcos Blvd	WB	3M+1HOV	7,200	178,940	0.0722	0.0780	0.4836	0.5323	0.9483	5,925	7,045	0.823	**0.979**	D	**E**
	EB				0.0722	0.0780	0.5164	0.4677		6,327	6,190	0.879	0.860	D	D
San Marcos Blvd to Twin Oaks Valley Rd	WB	3M+1HOV +1A	8,400	193,490	0.0722	0.0780	0.4836	0.5323	0.9483	6,407	7,618	0.763	0.907	C	D
	EB				0.0722	0.0780	0.5164	0.4677		6,841	6,694	0.814	0.797	D	C

Footnotes:

a. Capacity calculated at 2000 vph per lane, and 1200 vph per Auxiliary lane, Managed Lane (ML) and High Occupancy (HOV) lane.
b. Option A GP 2030 Volumes with Project Volumes
c. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS, 2013
d. Truck Factor from "2013 Annual Average Daily Truck Traffic on the California State Highway System".
e. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
h. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)
f. **Bold** indicates LOS E or worse operations.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

TABLE 11–4
FREEWAY MAINLINE OPERATIONS
LONG-TERM COUNTY GP BUILDOUT — DEER SPRINGS ROAD BUILT AS A 6.2 PRIME ARTERIAL

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT [b]	% K [c]		% D[c]		Truck Factor [d]	Peak Hour Volume [e]		V/C [f]		LOS	
					AM	PM	AM	PM		AM	PM	AM	PM	AM	PM
Interstate 15															
Gopher Canyon Rd to Deer Springs Rd	NB	4M+1ML	9,200	248,080	0.0798	0.0865	0.2417	0.6477	0.8680	4,153	12,064	0.451	**1.311**	B	**F(1)**
	SB				0.0798	0.0865	0.7583	0.3523		13,030	6,562	**1.416**	0.713	**F(2)**	C
Deer Springs Rd to N. Centre City Pkwy	NB	4M+1ML	9,200	249,420	0.0798	0.0865	0.2417	0.6477	0.8680	4,176	12,129	0.454	**1.318**	B	**F(1)**
	SB				0.0798	0.0865	0.7583	0.3523		13,101	6,598	**1.424**	0.717	**F(2)**	C
N. Centre Pkwy to El Norte Pkwy	NB	4M+1ML	9,200	249,420	0.0798	0.0865	0.2417	0.6477	0.8680	4,176	12,129	0.454	**1.318**	B	**F(1)**
	SB				0.0798	0.0865	0.7583	0.3523		13,101	6,598	**1.424**	0.717	**F(2)**	C

Footnotes:

a. Capacity calculated at 2000 vph per lane, and 1200 vph per Auxiliary lane, Managed Lane (ML) and High Occupancy (HOV) lane.
b. Option A GP 2030 Volumes with Project Volumes
c. Peak Hour Percentage (K) and Direction Split (D) from CALTRANS, 2013
d. Truck Factor from "2013 Annual Average Daily Truck Traffic on the California State Highway System".
e. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
i. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)
f. **Bold** indicates LOS E or worse operations.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

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TABLE 11–4 (CONTINUED)
FREEWAY MAINLINE OPERATIONS
LONG-TERM COUNTY GP BUILDOUT — DEER SPRINGS ROAD Built as a 6.2 Prime Arterial

Freeway Segment	Dir.	# of Lanes	Hourly Capacity[a]	ADT [b]	% K [c]		% D[c]		Truck Factor [d]	Peak Hour Volume [e]		V/C [f]		LOS	
					AM	PM	AM	PM		AM	PM	AM	PM	AM	PM
SR 78															
Mar Vista Rd to Sycamore Ave	WB	3M+1HOV	7,200	154,160	0.0722	0.0780	0.4836	0.5323	0.9483	5,104	6,070	0.709	0.843	C	D
	EB				0.0722	0.0780	0.5164	0.4677		5,451	5,333	0.757	0.741	C	C
Sycamore Ave to Rancho Santa Fe Ave	WB	3M+1HOV	7,200	159,050	0.0722	0.0780	0.4836	0.5323	0.9483	5,266	6,262	0.731	0.870	C	D
	EB				0.0722	0.0780	0.5164	0.4677		5,623	5,502	0.781	0.764	C	C
Rancho Santa Fe Ave to Las Posas Rd	WB	3M+1HOV +1A	8,400	175,050	0.0722	0.0780	0.4836	0.5323	0.9483	5,796	6,892	0.690	0.821	C	D
	EB				0.0722	0.0780	0.5164	0.4677		6,189	6,056	0.737	0.721	C	C
Las Posas Rd to San Marcos Blvd	WB	3M+1HOV	7,200	176,050	0.0722	0.0780	0.4836	0.5323	0.9483	5,829	6,932	0.810	**0.963**	D	**E**
	EB				0.0722	0.0780	0.5164	0.4677		6,225	6,090	0.865	0.846	D	D
San Marcos Blvd to Twin Oaks Valley Rd	WB	3M+1HOV +1A	8,400	191,010	0.0722	0.0780	0.4836	0.5323	0.9483	6,324	7,521	0.753	0.895	C	D
	EB				0.0722	0.0780	0.5164	0.4677		6,753	6,608	0.804	0.787	D	C

Footnotes:

a. Capacity calculated at 2000 vph per lane, and 1200 vph per Auxiliary lane, Managed Lane (ML) and High Occupancy (HOV) lane.
b. Option A GP 2030 Volumes with Project Volumes
c. Peak Hour Percentage (K) and Direction Split (D) from Caltrans, 2013
d. Truck Factor from "2013 Annual Average Daily Truck Traffic on the California State Highway System".
e. Peak Hour Volume = ((ADT)(K)(D)/Truck Factor)
j. V/C = ((ADT)(K)(D)/Truck Factor/Capacity)
f. **Bold** indicates LOS E or worse operations.

LOS	v/c
A	<0.41
B	0.62
C	0.8
D	0.92
E	1
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

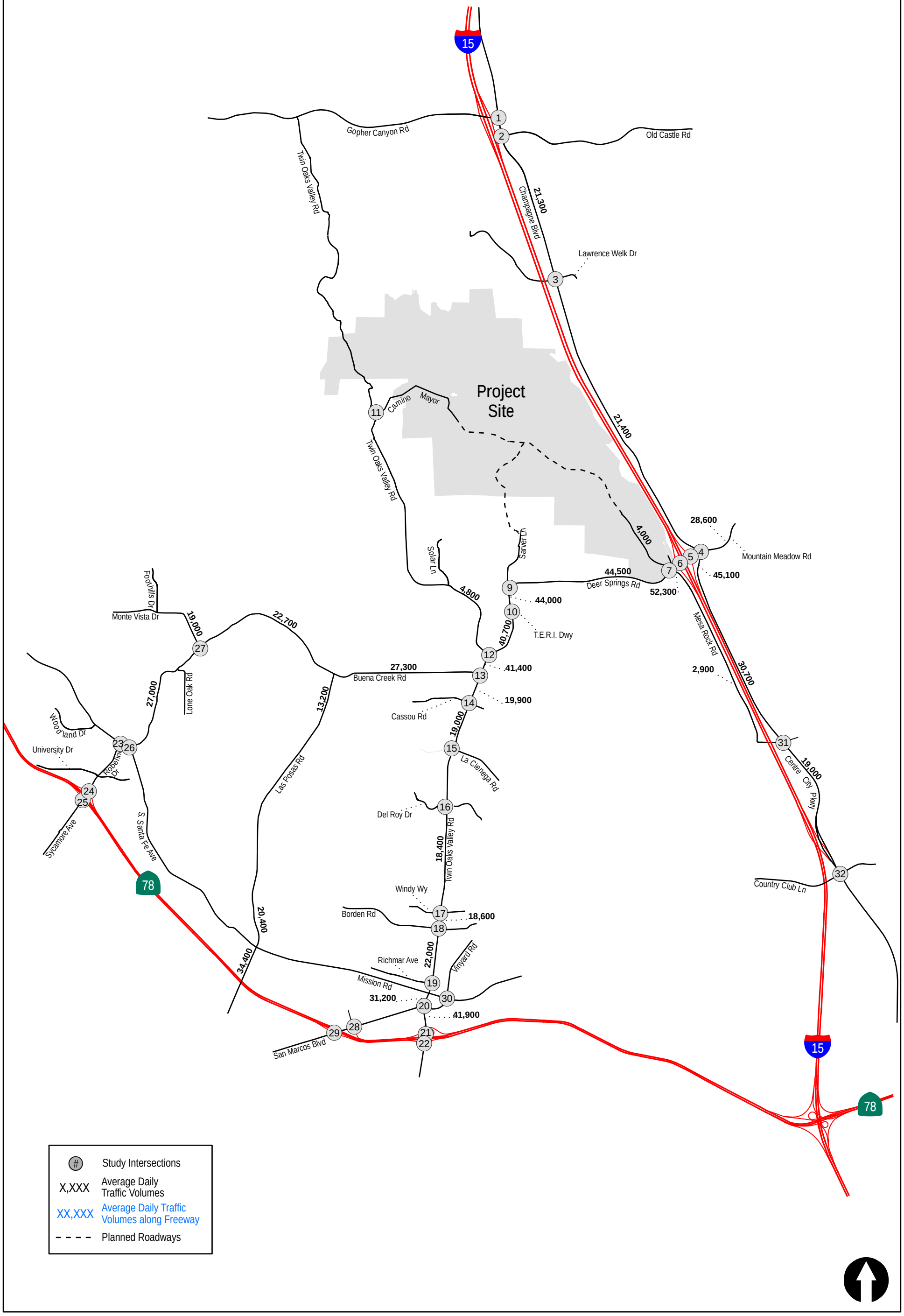

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Figure 11-1

Long-Term County GP Buildout Segment Volumes

Without Project

SIERRA

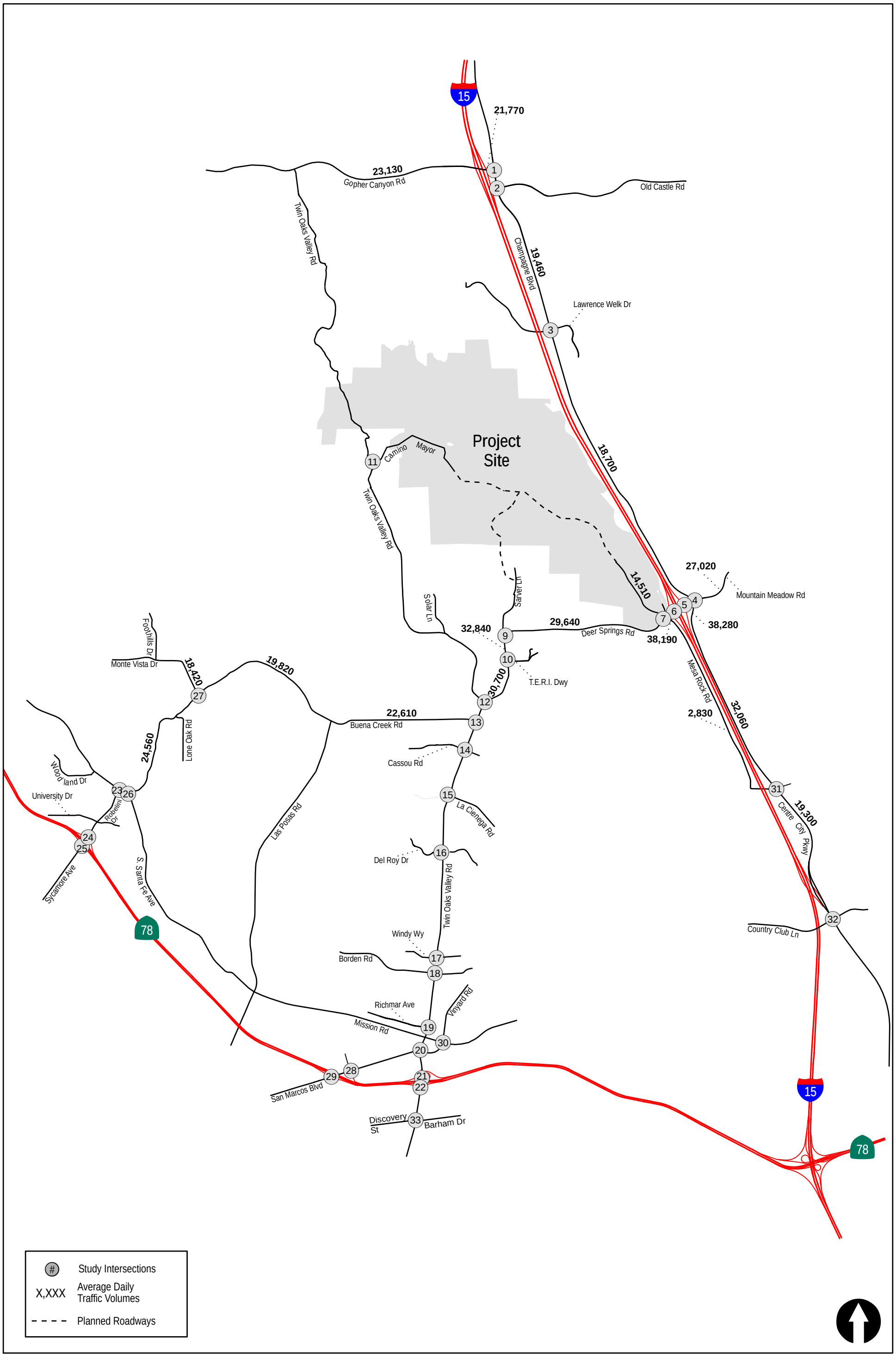

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Figure 11-2

Long-Term County GP Buildout with Project Segment Volumes

Deer Springs Road Reclassfied Under Option A

SIERRA

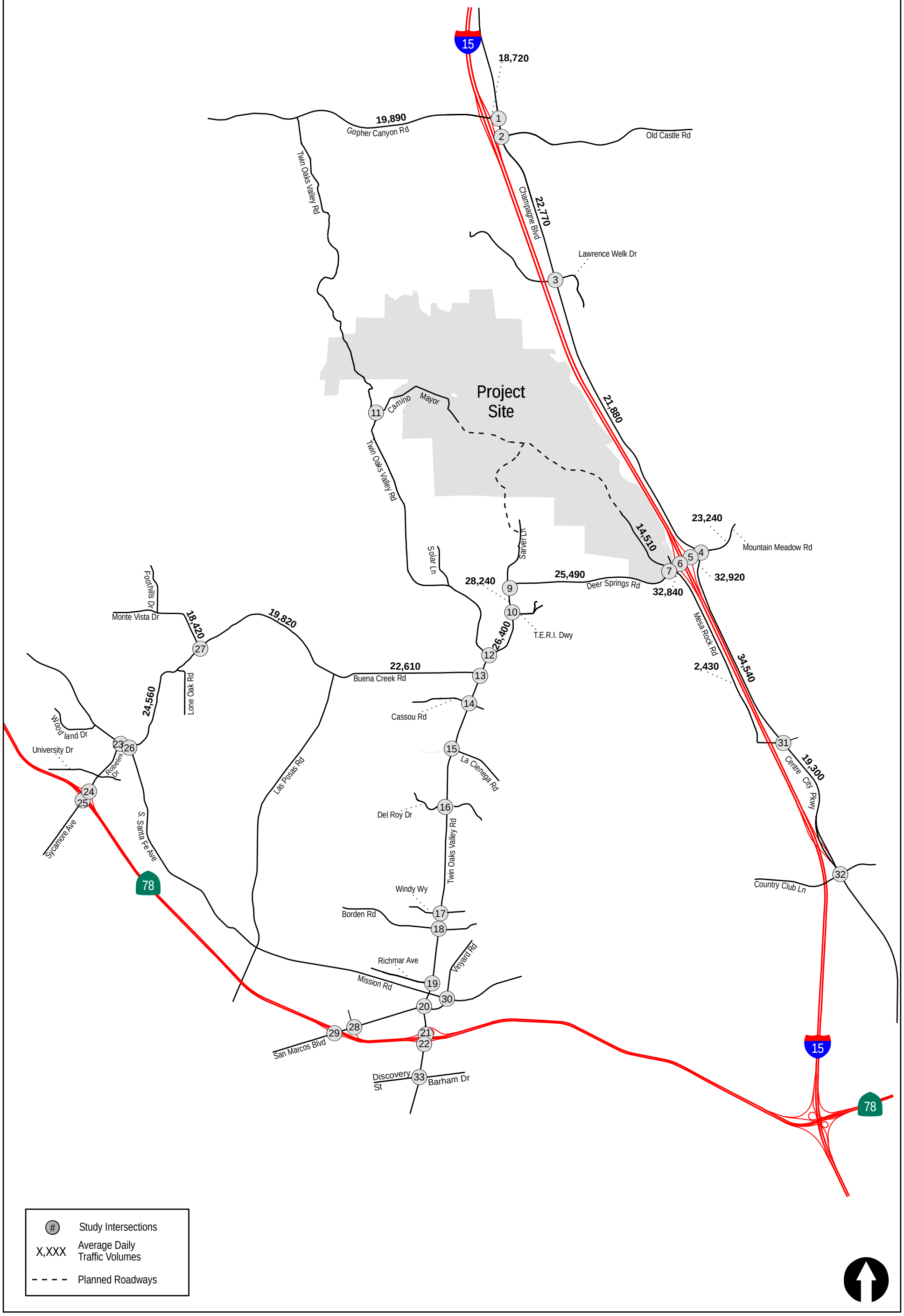

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Figure 11-3

Long-Term County GP Buildout with Project Segment Volumes

Deer Springs Road Reclassified Under Option A, Without Mountain Meadow Road Connection

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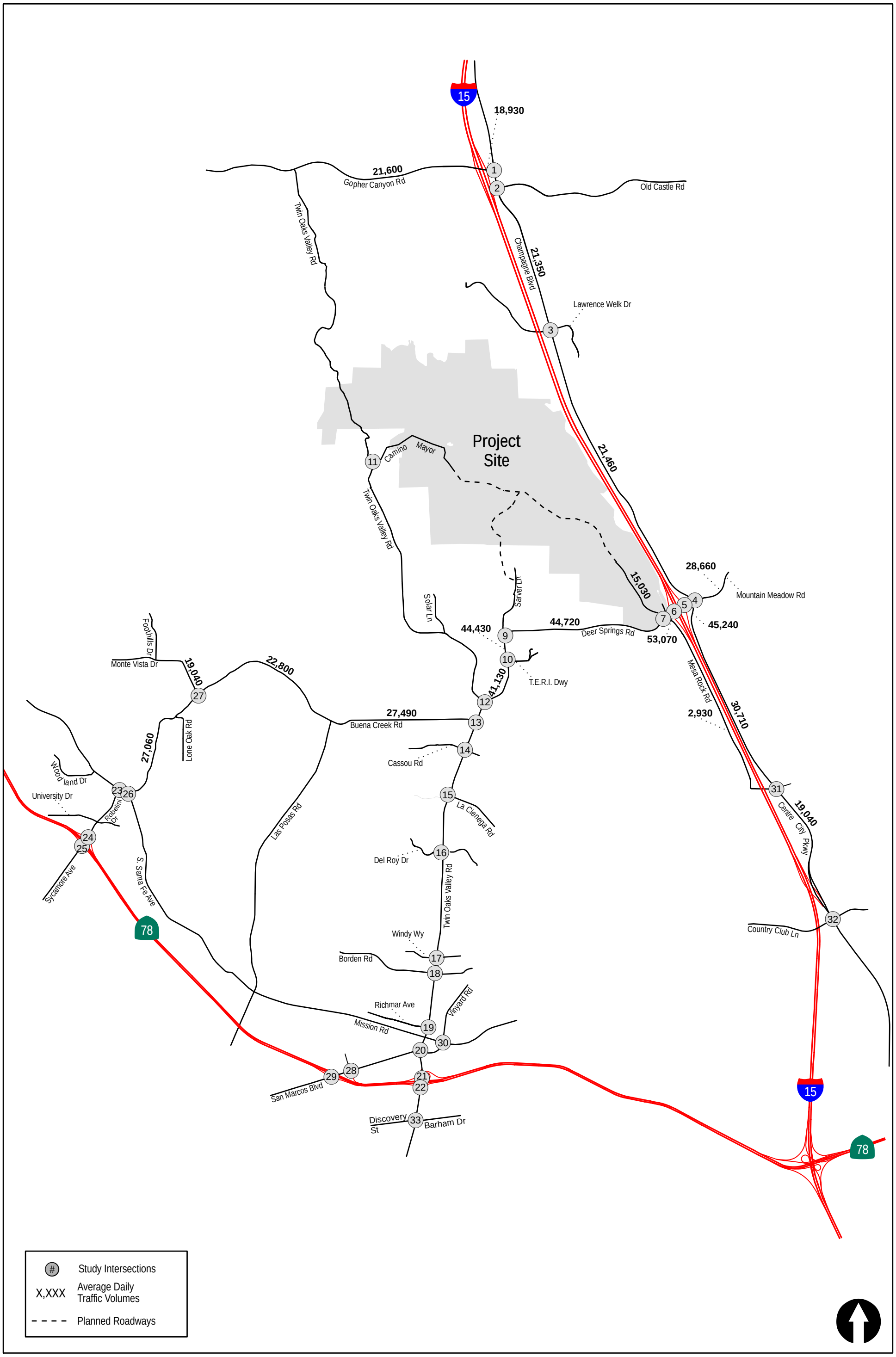

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Figure 11-4

Long-Term County GP Buildout with Project Segment Volumes

Deer Springs Road as a 6.2 Prime Arterial

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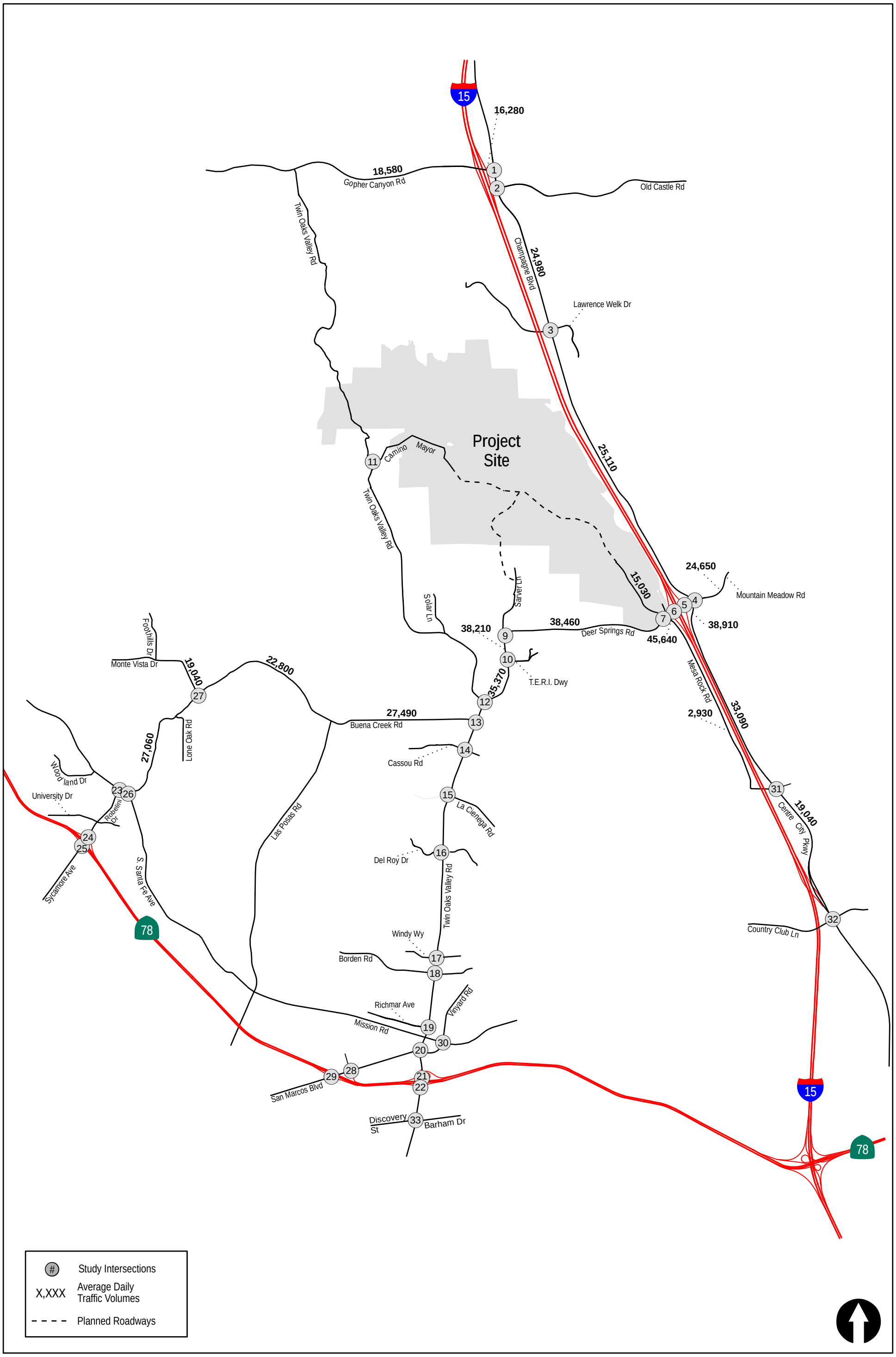

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Figure 11-5

Long-Term County GP Buildout with Project Segment Volumes

Deer Springs Road as a 6.2 Prime Arterial, Without Mountain Meadow Road Connection

SIERRA

12.0 CITY OF SAN MARCOS HORIZON YEAR ANALYSES

A Horizon Year analysis of City of San Marcos roadways was conducted using City of San Marcos guidelines. The intersections and segments located within the jurisdiction of the City of San Marcos were analyzed separately in this section using SANDAG's Series 12 Year 2035 buildout scenario for the City of San Marcos.

12.1 City of San Marcos Horizon Year 2035 With Project, Full Road Network Buildout

12.1.1 *Horizon Year Volumes*

A Series 12 Year 2035 model with the Sierra Project land uses was obtained from SANDAG. The volumes from this model are used in the Horizon Year analysis. Project volumes were removed from the corresponding segment volumes to obtain the Horizon Year Volumes "without the Project".

The SANDAG model outputs daily segment and peak hour volumes. However, the SANDAG model output is not as accurate in determining peak hour intersection turn movements. Therefore, Year 2035 peak hour turning movement volumes (without the Project) were estimated using the relationship between existing peak hour turn movements and the existing ADT volumes. This same relationship can be assumed to generally continue in the future. For example, if the segment ADT on the roadway is forecast to double by the Year 2035, it is reasonable to assume that the peak hour intersection turning movement volumes will generally double. The Sierra Project peak hour volumes were added to the Horizon Year 2035 "without Sierra Project volumes to obtain the Horizon Year "With the Project" peak hour volumes.

The following figures are included in this section:

- ***Figure 12–1*** depicts the Horizon Year 2035 Without the Project Segment ADT volumes.
- ***Figure 12–2*** depicts the Horizon Year 2035 Without the Project AM / PM Peak Hour Volumes.
- ***Figure 12–3*** depicts the Horizon Year 2035 With the Project Segment ADT volumes.
- ***Figure 12–4*** depicts the Horizon Year 2035 With the Project AM / PM Peak Hour Volumes.

12.1.2 *Horizon Year Without Project Analysis*

The Horizon Year 2035 Without Project intersection and segment operations are described in the sections below.

Peak Hour Intersection Operations

Table 12-1 summarizes the Horizon Year 2035 Without Project peak hour intersection operations. As seen in *Table 12-1*, all intersections within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year without Sierra Project except the following:

- Twin Oaks Valley Road / San Marcos Boulevard (LOS E during the PM peak hour)

- Twin Oaks Valley Road / Barham Drive / Discovery Street (LOS E during the AM peak hour and LOS F during the PM peak hour)

The Horizon Year Without Project peak hour intersection analysis worksheets are included in ***Appendix I-1***.

Segment Operations

Table 12-2 summarizes the Horizon Year 2035 Without Project peak hour intersection operations. As seen in *Table 12-2*, all segments within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year without Sierra Project, except the following:

- Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road (LOS F)

12.1.3 *Horizon Year With Project Analysis*

The Horizon Year 2035 With Project intersection and segment operations are described below.

Peak Hour Intersection Operations

Table 12-1 summarizes the Horizon Year 2035 With Project peak hour intersection operations. As seen in *Table 12-1*, with the addition of project traffic, all intersections within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year with Sierra Project, except the following:

- Twin Oaks Valley Road / San Marcos Boulevard (LOS E during the PM peak hour)
- Twin Oaks Valley Road / Barham Drive / Discovery Street (LOS E during the AM peak hour and LOS F during the PM peak hour)

Although these intersections would operate at a deficient LOS with the Project, the increase in delay due to Project traffic is less than 2 seconds and hence, no significant impacts are determined at the above two intersections.

The Horizon Year With Project peak hour intersection analysis worksheets are included in ***Appendix I-2***.

Segment Operations

Table 12-2 summarizes the Horizon Year 2035 Without Project peak hour intersection operations. As seen in *Table 12-2*, with the addition of Project traffic, all segments within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year with Sierra Project, except the following:

- **Twin Oaks Valley Road:** Deer Springs Road to Buena Creek Road (LOS F)

TABLE 12–1
CITY OF SAN MARCOS HORIZON YEAR 2035 WITH PROJECT, FULL ROAD NETWORK BUILDOUT
INTERSECTION OPERATIONS

Intersection	Traffic Control	Peak Hour	Horizon Year Without Project		Horizon Year With Project		Δ Delay [c]	Impact Type
			Delay [a]	LOS [b]	Delay	LOS		
12. Twin Oaks Valley Rd / Deer Springs Rd	Signal	AM	17.6	B	23.5	C	5.9	None
		PM	14.3	B	20.0	B	5.7	None
13. Twin Oaks Valley Rd / Buena Creek Rd	Signal	AM	24.2	C	35.2	D	11.0	None
		PM	33.6	C	53.8	D	20.2	None
14. Twin Oaks Valley Rd / Cassou Rd	Signal	AM	26.2	C	28.4	C	2.2	None
		PM	15.5	B	16.1	B	0.6	None
15. Twin Oaks Valley Rd / La Cienega Rd	Signal	AM	15.3	B	16.5	B	1.2	None
		PM	13.0	B	16.2	B	3.2	None
16. Twin Oaks Valley Rd / Del Roy Dr	Signal	AM	18.3	B	19.5	B	1.2	None
		PM	16.2	B	16.8	B	0.6	None
17. Twin Oaks Valley Rd / Windy Wy	Signal	AM	9.0	A	9.6	A	0.6	None
		PM	7.6	A	7.8	A	0.2	None
18. Twin Oaks Valley Rd / Borden Rd	Signal	AM	39.1	D	40.7	D	1.6	None
		PM	34.6	C	39.0	D	4.4	None
19. Twin Oaks Valley Rd / Richmar Ave	Signal	AM	35.9	D	40.3	D	4.4	None
		PM	51.1	D	54.0	D	2.9	None
20. Twin Oaks Valley Rd / San Marcos Blvd	Signal	AM	48.9	D	52.3	D	3.4	None
		PM	110.8	F	112.6	F	1.8	None [d]
21. Twin Oaks Valley Rd / SR 78 WB Ramps	Signal	AM	15.2	B	15.2	B	0.0	None
		PM	18.9	B	19.2	B	0.3	None
22. Twin Oaks Valley Rd / SR 78 EB Ramps	Signal	AM	37.4	D	37.8	D	0.4	None
		PM	48.0	D	49.1	D	1.1	None
28. San Marcos Blvd / Knoll Rd/SR 78 WB Ramps	Signal	AM	43.9	D	44.1	D	0.2	None
		PM	45.9	D	46.6	D	0.7	None

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TABLE 12–1 (CONTINUED)
CITY OF SAN MARCOS HORIZON YEAR 2035 WITH PROJECT, FULL ROAD NETWORK BUILDOUT
INTERSECTION OPERATIONS

Intersection	Traffic Control	Peak Hour	Horizon Year Without Project		Horizon Year With Project		Δ Delay [c]	Impact Type
			Delay [a]	LOS [b]	Delay	LOS		
29. San Marcos Blvd / SR 78 EB Ramps	Signal	AM	16.8	B	16.8	B	0.0	None
		PM	15.5	B	16.3	B	0.8	None
30. Mission Rd / Vineyard Rd	Signal	AM	28.4	C	28.6	C	0.2	None
		PM	34.8	C	36.4	D	1.6	None
33. Twin Oaks Valley Rd / Barham Dr / Discovery St	Signal	AM	64.9	E	66.3	E	1.4	None [d]
		PM	111.0	F	112.7	F	1.7	None [d]

Footnotes:

a. Delay in seconds per vehicle.
b. Level of Service
c. Increase in delay due to project traffic.
d. Not a significant impact since increase in delay due to Project traffic is less than 2 seconds.

TABLE 12-2
CITY OF SAN MARCOS HORIZON YEAR 2035 WITH PROJECT, FULL ROAD NETWORK BUILDOUT SEGMENT OPERATIONS

Street Segment	Mobility Element Classification [a]	LOS E Cap [b]	Year 2035 Without Project			Year 2035 With Project			Δ V/C [f]	Impact Type
			Volume [c]	LOS [d]	V/C [e]	Volume	LOS	V/C		
Twin Oaks Valley Road										
Deer Springs Rd to Buena Creek Rd	4 Lane Major Art	40,000	**37,600**	**F**	**0.940**	**45,600**	**F**	**1.140**	**0.200**	**Cumulative**
Buena Creek Rd to Cassou Rd	4 Lane Major Art	40,000	13,360	B	0.334	17,400	C	0.435	0.101	None
Cassou Rd to La Cienega Rd	4 Lane Major Art	40,000	14,550	C	0.364	18,000	C	0.450	0.086	None
La Cienega Rd to Windy Wy	4 Lane Major Art	40,000	24,630	C	0.616	27,800	C	0.695	0.079	None
Windy Wy to Borden Rd	4 Lane Major Art	40,000	25,230	C	0.631	28,200	C	0.705	0.074	None
Borden Rd to Richmar Ave	4 Lane Major Art	40,000	25,000	C	0.625	27,900	C	0.698	0.073	None
Richmar Ave to San Marcos Blvd	4 Lane Major Art	40,000	29,860	C	0.747	32,300	D	0.808	0.061	None
San Marcos Blvd to SR 78	6 Ln Prime Arterial	60,000	43,780	C	0.730	45,300	C	0.755	0.025	None
SR 78 to Barham Dr / Discovery St	6 Ln Prime Art	70,000	55,080	C	0.787	56,600	C	0.809	0.022	None
Las Posas Road										
Buena Creek Rd to Borden Rd	2.2C Light Collector	19,000	8,440	C	0.444	10,200	D	0.537	0.093	None
Borden Rd to Santa Fe Ave	4 Lane Major Road	40,000	22,640	C	0.566	24,400	C	0.610	0.044	None
Santa Fe Ave to SR 78 Ramps	4 Lane Major Road	40,000	25,040	C	0.626	26,800	C	0.670	0.044	None

Footnote:

a. The Mobility Element roadway classification.
b. Capacity of the roadway per the City Roadway Capacity *Table.*
c. Horizon Year 2035 Without Project segment volumes (SANDAG Series 12)
d. Level of Service.
e. Volume / capacity ratio.
f. Increase in V/C ratio due to Project traffic.

12.2 City of San Marcos Horizon Year 2035, Modified Road Network Buildout

12.2.1 *Network Modifications*

There are several major future road network improvements within the vicinity of the Project for which no or limited funding presently exists and, in certain cases, environmental and land use constraints may present significant challenges to improving the road to its General Plan classification. Removal of these network improvements would be expected to cause traffic along Twin Oaks Valley Road to increase in the Horizon Year comparted to full buildout of the road network for the same area. Hence, a separate "Alternate Horizon Year" analysis was conducted without these network improvements.

These three network improvements are described below:

Buena Creek Road

The County General Plan Mobility Element classifies Buena Creek Road as a 4.1B Major Road. However, this road is currently constructed as a two-lane rural collector between Twin Oaks Valley Road and S. Santa Fe Avenue. For this "Alternative Horizon Year" Analysis, it is assumed that the improvement to a 4.1B Major Road would not be completed.

Las Posas Road Connection from San Marcos City Limits to Buena Creek Road

Buildout of the County's Mobility Element assumes Las Posas Road is extended from San Marcos City Limits to Buena Creek Road as a 2.2C Light Collector. For this "Alternative Horizon Year" Analysis, it is assumed that this extension from San Marcos City Limits to Buena Creek Road will not be completed.

Richmar Avenue Bridge Connection from Twin Oaks Valley Road to Woodward Street

Buildout of the City of San Marcos's road network assumes the Richmar Avenue Bridge is built, connecting Twin Oaks Valley Road to Woodward Street. This Project was removed from the City's latest Capital Improvement Program. For this "Alternative Horizon Year" Analysis, it is assumed that the Richmar Avenue Bridge connection between Twin Oaks Valley Road and Woodward Street would not be completed.

12.2.2 *Horizon Year 2035, Modified Road Network Buildout Volumes*

A Series 12 Year 2035 "Alternate Horizon Year" model with the Sierra Project land uses and without the three network improvements described above was obtained from SANDAG. The volumes from this model are used in the analysis presented herein. The Project volumes were removed from the corresponding segment volumes to obtain the Alternate Horizon Year Volumes "without the Project". Peak hour intersection volumes were estimated as described previously in this section.

The following figures are included in this section:

- ***Figure 12–5*** depicts the Alternate Horizon Year 2035 Without the Project Segment ADT volumes.

- ***Figure 12–6*** depicts the Alternate Horizon Year 2035 Without the Project AM / PM Peak Hour Volumes.
- ***Figure 12–7*** depicts the Alternate Horizon Year 2035 With the Project Segment ADT volumes.
- ***Figure 12–8*** depicts the Alternate Horizon Year 2035 With the Project AM / PM Peak Hour Volumes.

12.2.3 *Horizon Year 2035, Modified Road Network Buildout Without Project Analysis*

The Horizon Year 2035 Without Project intersection and segment operations are described in the sections below.

Peak Hour Intersection Operations

Table 12-3 summarizes the Horizon Year 2035 Without Project peak hour intersection operations. As seen in *Table 12-3*, all intersections within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year without Sierra Project except the following:

- Twin Oaks Valley Road / Richmar Avenue (LOS E during the PM peak hour)
- Twin Oaks Valley Road / San Marcos Boulevard (LOS E during the PM peak hour)
- Twin Oaks Valley Road / Barham Drive / Discovery Street (LOS E during the AM peak hour and LOS F during the PM peak hour)

The Horizon Year Without Project peak hour intersection analysis worksheets are included in ***Appendix J-1***.

Segment Operations

Table 12-4 summarizes the Horizon Year 2035 Without Project peak hour intersection operations. As seen in *Table 12-4*, all segments within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year without Sierra Project.

12.2.4 *Horizon Year 2035, Modified Road Network Buildout With Project Analysis*

The Horizon Year 2035 With Project intersection and segment operations are described below.

Peak Hour Intersection Operations

Table 12-3 summarizes the Horizon Year 2035 With Project peak hour intersection operations. As seen in *Table 12-3*, with the addition of project traffic, all intersections within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year with Sierra Project, except the following:

- Twin Oaks Valley Road / Richmar Avenue (LOS E during the PM peak hour)
- Twin Oaks Valley Road / San Marcos Boulevard (LOS E during the PM peak hour)
- Twin Oaks Valley Road / Barham Drive / Discovery Street (LOS E during the AM peak hour and LOS F during the PM peak hour)

Although these intersections would operate at a deficient LOS with the Project, the increase in delay due to Project traffic is less than 2 seconds and hence, no significant impacts are determined at the above two intersections.

The Horizon Year With Project peak hour intersection analysis worksheets are included in ***Appendix J-2***.

Segment Operations

Table 12-4 summarizes the Horizon Year 2035 With Project peak hour intersection operations. As seen in *Table 12-4*, with the addition of Project traffic, all segments within the City of San Marcos are calculated to operate at LOS D or better in the Horizon Year with Sierra Project, except the following:

- **Twin Oaks Valley Road:** Deer Springs Road to Buena Creek Road (LOS F)

TABLE 12–3
CITY OF SAN MARCOS HORIZON YEAR 2035, MODIFIED ROAD NETWORK BUILDOUT INTERSECTION OPERATIONS

Intersection	Traffic Control	Peak Hour	Horizon Year Without Project		Horizon Year With Project		Δ Delay [c]	Impact Type
			Delay [a]	LOS [b]	Delay	LOS		
12. Twin Oaks Valley Rd / Deer Springs Rd	Signal	AM	16.1	B	19.8	B	3.7	None
		PM	12.9	B	14.5	B	1.6	None
13. Twin Oaks Valley Rd / Buena Creek Rd	Signal	AM	18.4	B	21.8	C	3.4	None
		PM	20.8	C	28.1	C	7.3	None
14. Twin Oaks Valley Rd / Cassou Rd	Signal	AM	28.2	C	30.9	C	2.7	None
		PM	15.4	B	16.5	B	1.1	None
15. Twin Oaks Valley Rd / La Cienega Rd	Signal	AM	16.8	B	18.5	B	1.7	None
		PM	15.2	B	17.9	B	2.7	None
16. Twin Oaks Valley Rd / Del Roy Dr	Signal	AM	20.6	C	24.7	C	4.1	None
		PM	17.2	B	18.4	B	1.2	None
17. Twin Oaks Valley Rd / Windy Wy	Signal	AM	10.3	B	11.9	B	1.6	None
		PM	8.0	A	8.1	A	0.1	None

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TABLE 12–3 (CONTINUED)
CITY OF SAN MARCOS HORIZON YEAR 2035, MODIFIED ROAD NETWORK BUILDOUT INTERSECTION OPERATIONS

Intersection	Traffic Control	Peak Hour	Horizon Year Without Project		Horizon Year With Project		Δ Delay [c]	Impact Type
			Delay [a]	LOS [b]	Delay	LOS		
18. Twin Oaks Valley Rd / Borden Rd	Signal	AM	46.0	D	48.6	D	2.6	None
		PM	41.4	D	48.0	D	6.6	None
19. Twin Oaks Valley Rd / Richmar Ave	Signal	AM	36.9	D	46.4	D	9.5	None
		PM	**59.0**	**E**	**65.8**	**E**	**6.8**	**Cumulative**
20. Twin Oaks Valley Rd / San Marcos Blvd	Signal	AM	48.0	D	51.1	D	3.1	None
		PM	104.8	F	106.6	F	1.8	None
21. Twin Oaks Valley Rd / SR 78 WB Ramps	Signal	AM	15.5	B	15.5	B	0.0	None
		PM	19.3	B	19.6	B	0.3	None
22. Twin Oaks Valley Rd / SR 78 EB Ramps	Signal	AM	39.2	D	39.8	D	0.6	None
		PM	46.3	D	47.7	D	1.4	None
28. San Marcos Blvd / Knoll Rd/WB Ramps	Signal	AM	41.9	D	42.0	D	0.1	None
		PM	41.0	D	41.3	D	0.3	None
29. San Marcos Blvd / EB Ramps	Signal	AM	14.7	B	14.7	B	0.0	None
		PM	14.2	B	14.8	B	0.6	None
30. Mission Rd / Vineyard Rd	Signal	AM	29.1	C	29.2	C	0.1	None
		PM	37.0	D	37.9	D	0.9	None
33. Twin Oaks Valley Rd / Barham Dr / Discovery St	Signal	AM	66.7	E	68.5	E	1.8	None
		PM	114.7	F	116.6	F	1.9	None

Footnotes:

a. Delay in seconds per vehicle.
b. Level of Service
c. Increase in delay due to project traffic.
d. Not a significant impact since increase in delay due to Project traffic is less than 2 seconds.

TABLE 12-4
CITY OF SAN MARCOS HORIZON YEAR 2035, MODIFIED ROAD NETWORK BUILDOUT SEGMENT OPERATIONS

Street Segment	Mobility Element Classification [a]	LOS E Cap [b]	Year 2035 Without Project			Year 2035 With Project			Δ V/C [f]	Impact Type
			Volume [c]	LOS [d]	V/C [e]	Volume	LOS	V/C		
Twin Oaks Valley Road										
Deer Springs Rd to Buena Creek Rd	4 Lane Major Art	40,000	28,300	C	0.708	**36,300**	**E**	**0.908**	**0.200**	**Cumulative**
Buena Creek Rd to Cassou Rd	4 Lane Major Art	40,000	18,560	B	0.464	22,600	C	0.565	0.101	None
Cassou Rd to La Cienega Rd	4 Lane Major Art	40,000	20,250	B	0.506	23,700	C	0.593	0.086	None
La Cienega Rd to Windy Wy	4 Lane Major Art	40,000	29,830	C	0.746	33,000	D	0.825	0.079	None
Windy Wy to Borden Rd	4 Lane Major Art	40,000	31,430	D	0.786	34,400	D	0.860	0.074	None
Borden Rd to Richmar Ave	4 Lane Major Art	40,000	29,200	C	0.730	32,100	D	0.803	0.073	None
Richmar Ave to San Marcos Blvd	4 Lane Major Art	40,000	28,960	C	0.724	31,400	D	0.785	0.061	None
San Marcos Blvd to SR 78	6 Ln Prime Art	60,000	44,480	C	0.741	46,000	C	0.767	0.025	None
SR 78 to Barham Dr / Discovery St	6 Ln Prime Art	70,000	46,880	C	0.670	48,400	C	0.691	0.022	None
Las Posas Road										
Buena Creek Rd to Borden Rd	2.2C Light Collector	19,000	DNE [g]	DNE	DNE	DNE	DNE	DNE	DNE	None
Borden Rd to Santa Fe Ave	4 Lane Major Road	40,000	22,640	C	0.566	24,400	C	0.610	0.044	None
Santa Fe Ave to SR 78 Ramps	4 Lane Major Road	40,000	25,040	C	0.626	26,800	C	0.670	0.044	None

Footnote:

a. The Mobility Element roadway classification.
b. Capacity of the roadway per the City Roadway Capacity *Table.*
c. Horizon Year 2035 Without Project segment volumes (SANDAG Series 12)
d. Level of Service.
e. Volume / capacity ratio.
f. Increase in V/C ratio due to Project traffic.
g. Does Not Exist (DNE).

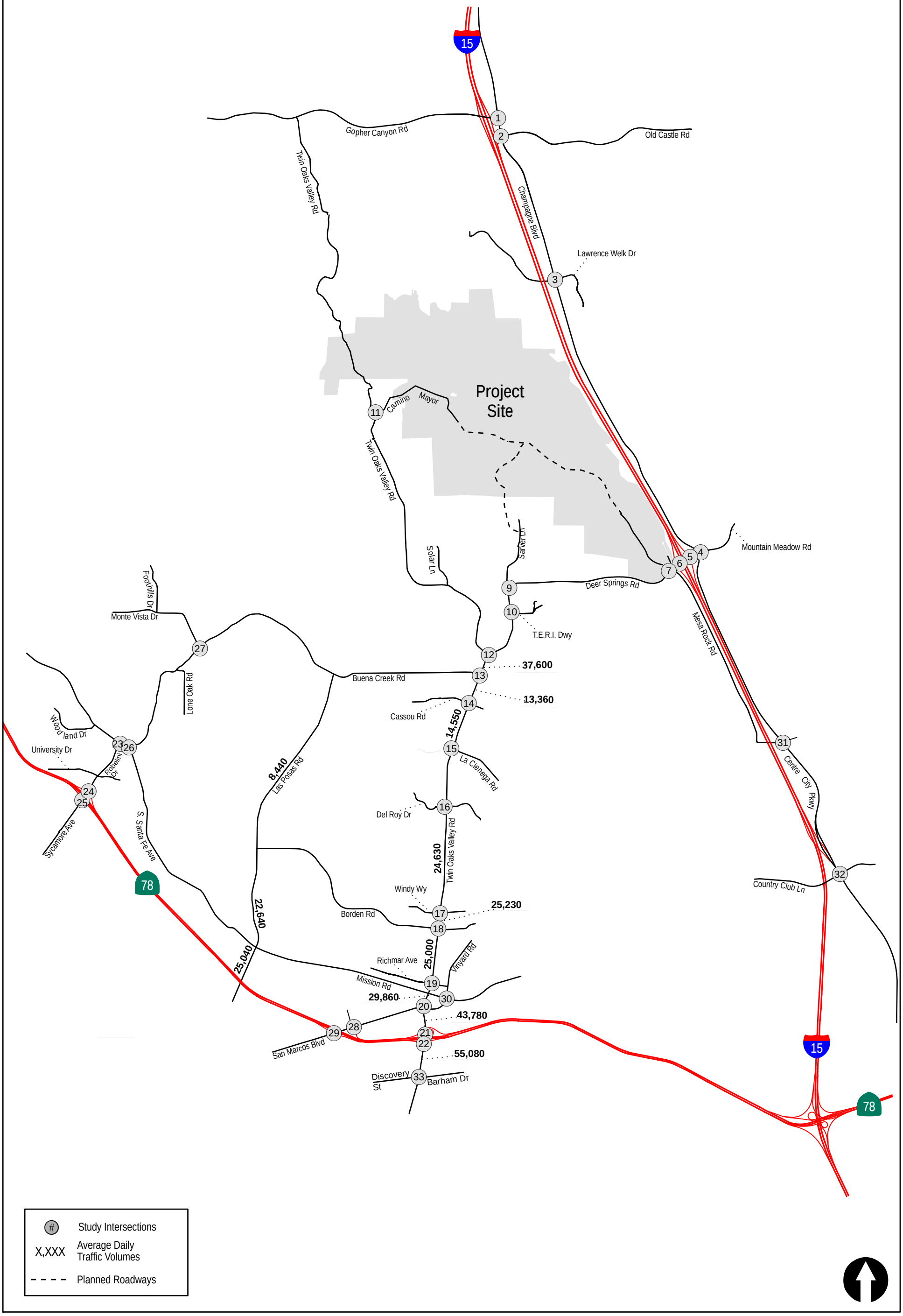

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Figure 12-1

City of San Marcos Horizon Year 2035 Without Project Segment Volumes

Full Road Network

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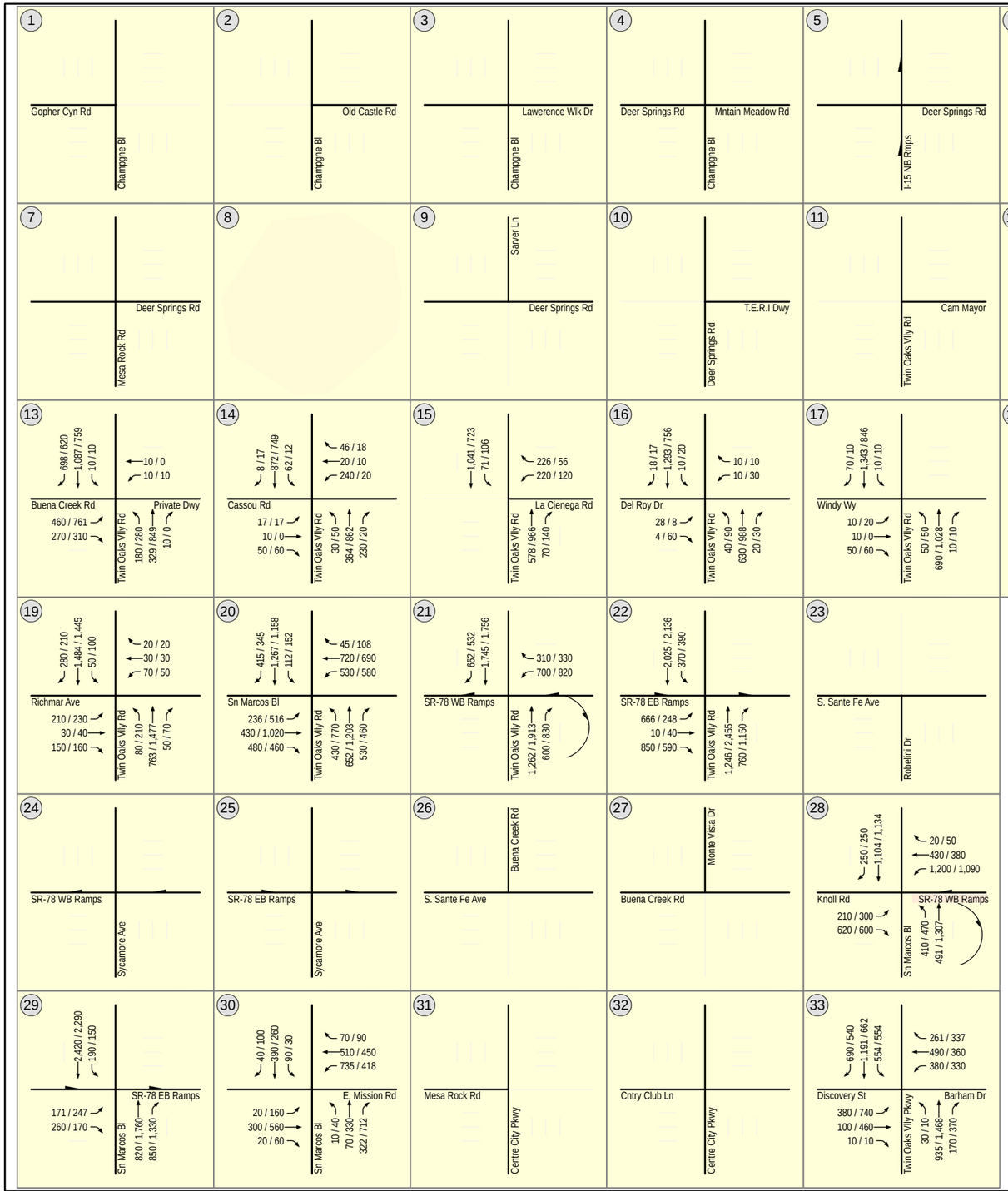

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Figure 12-2

City of San Marcos Horizon Year 2035 Without Project AM / PM Peak Hour Traffic Volumes

Full Road Network

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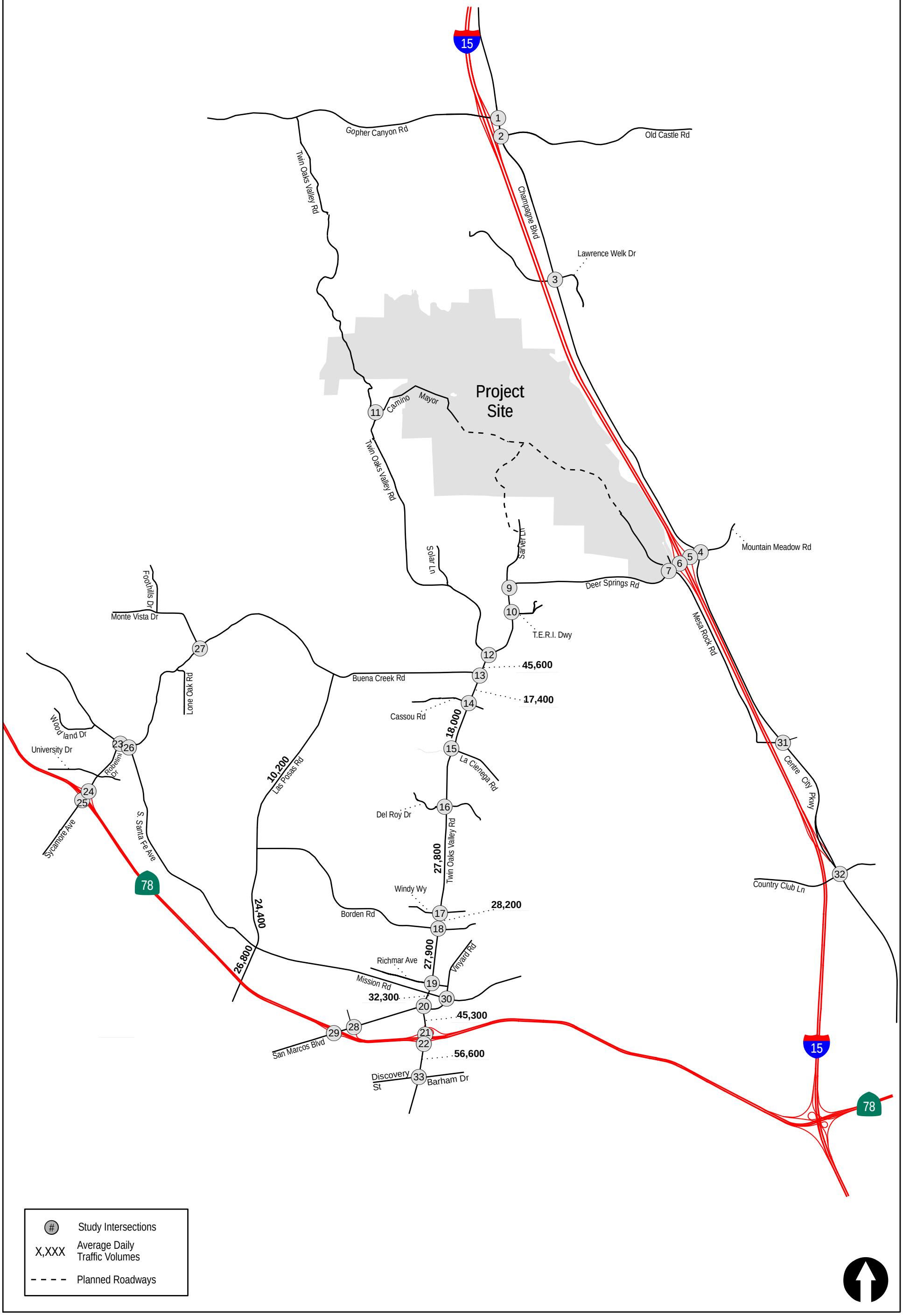

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Figure 12-3

City of San Marcos Horizon Year 2035 With Project Segment Volumes

Full Road Network

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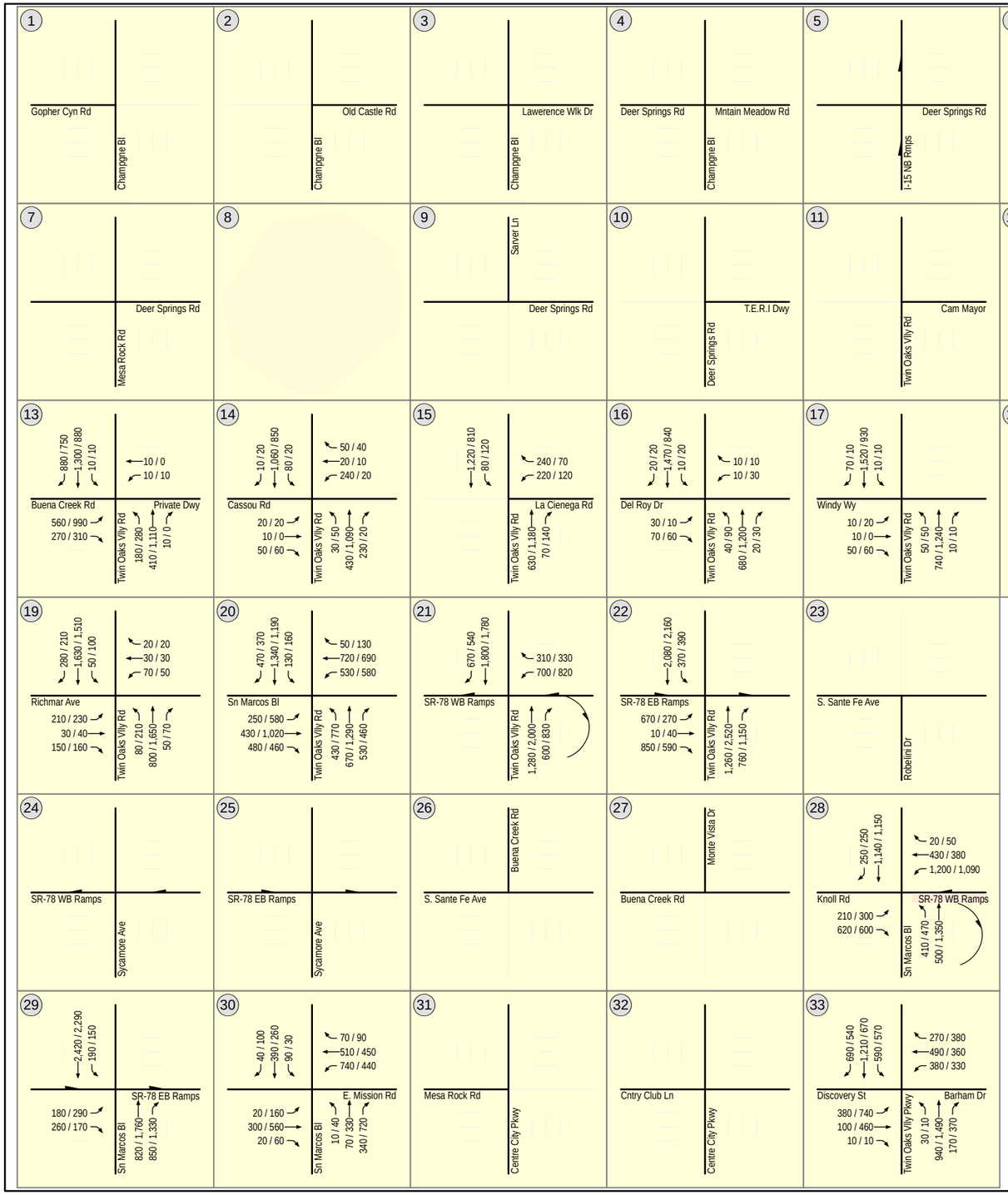

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Figure 12-4

City of San Marcos Horizon Year 2035 With Project AM / PM Peak Hour Traffic Volumes

Full Road Network

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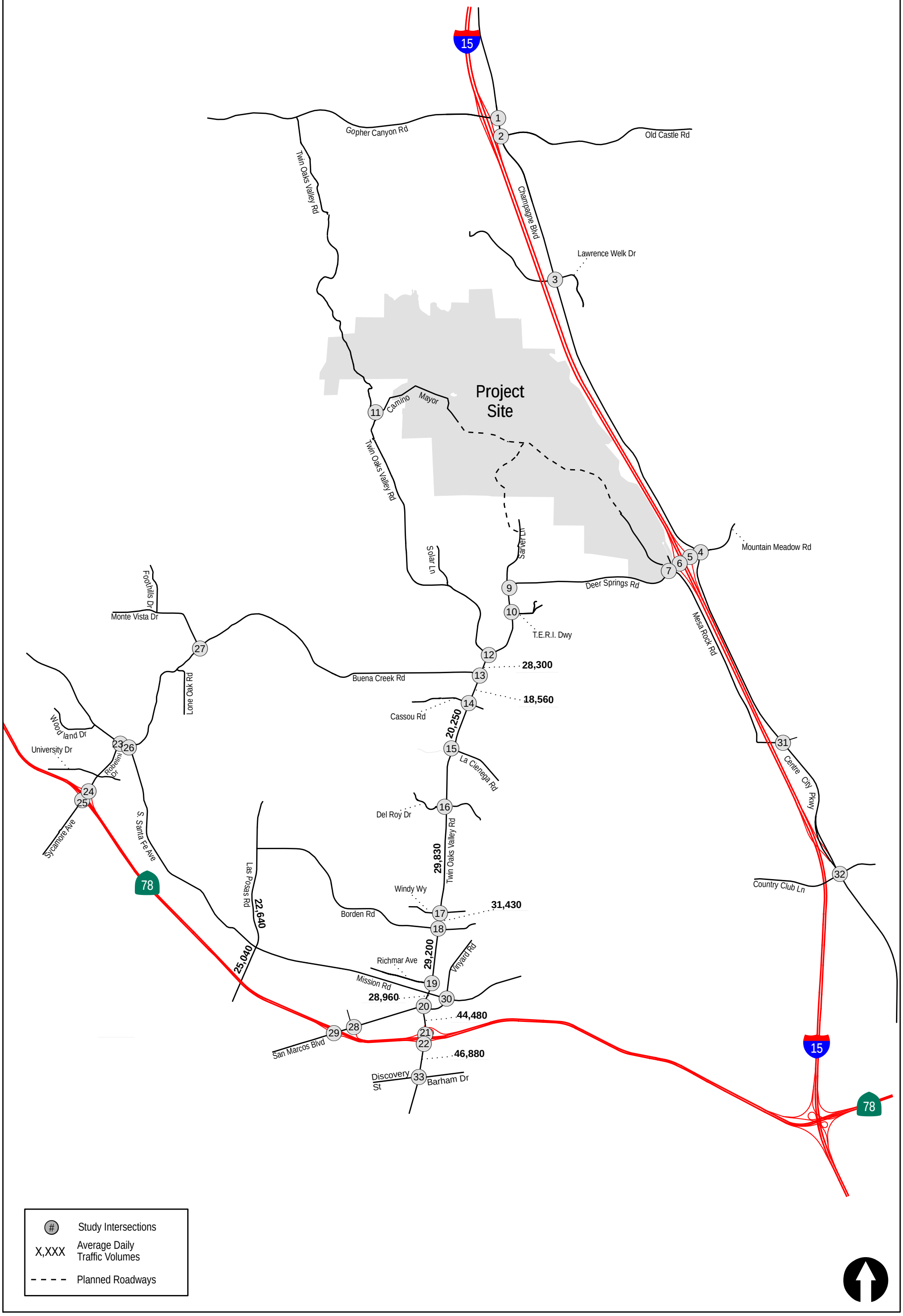

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Figure 12-5

City of San Marcos Horizon Year 2035 Without Project Segment Volumes

Modified Road Network

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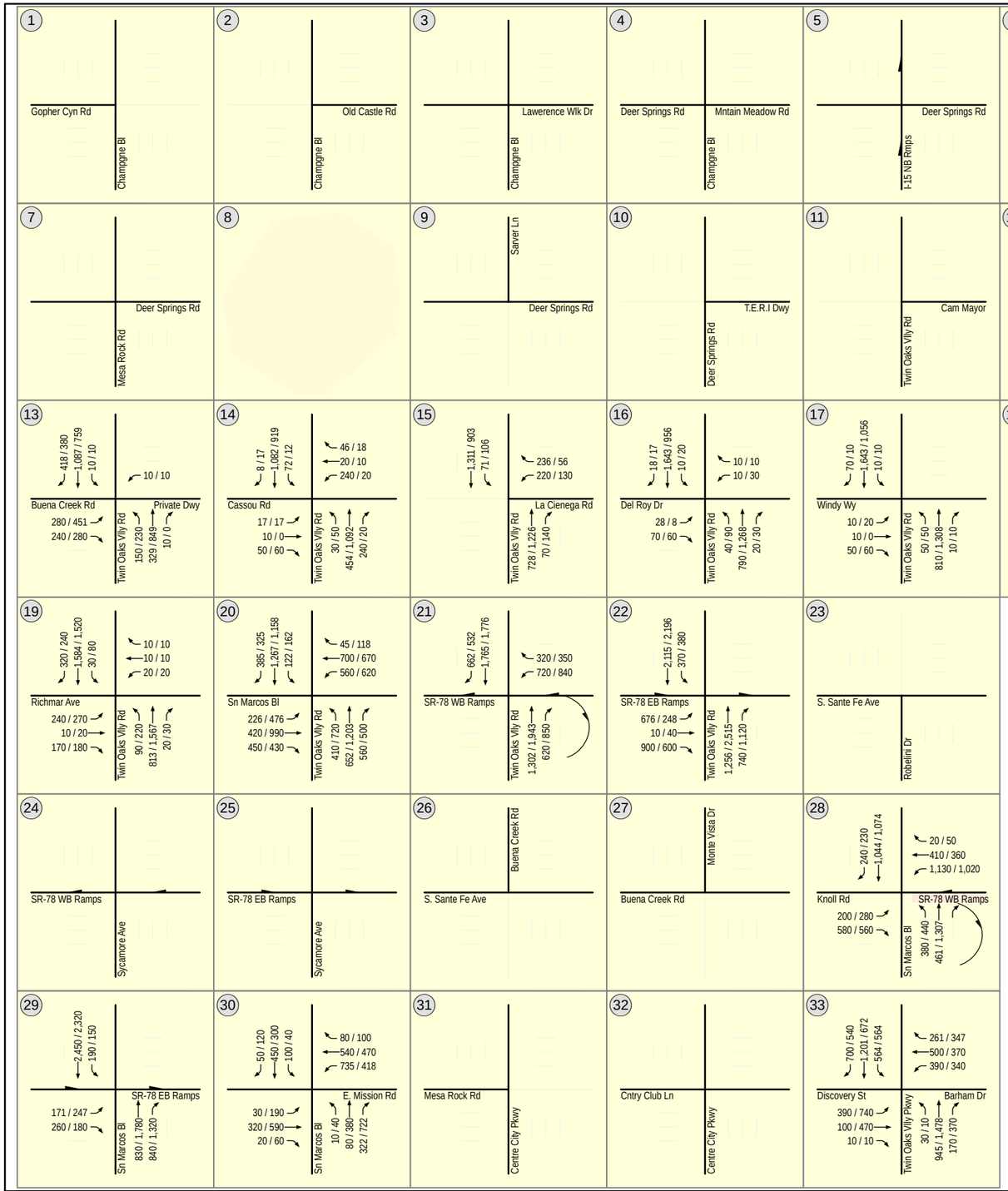

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Figure 12-6

City of San Marcos Horizon Year 2035 Without Project AM / PM Peak Hour Traffic Volumes

Modified Road Network

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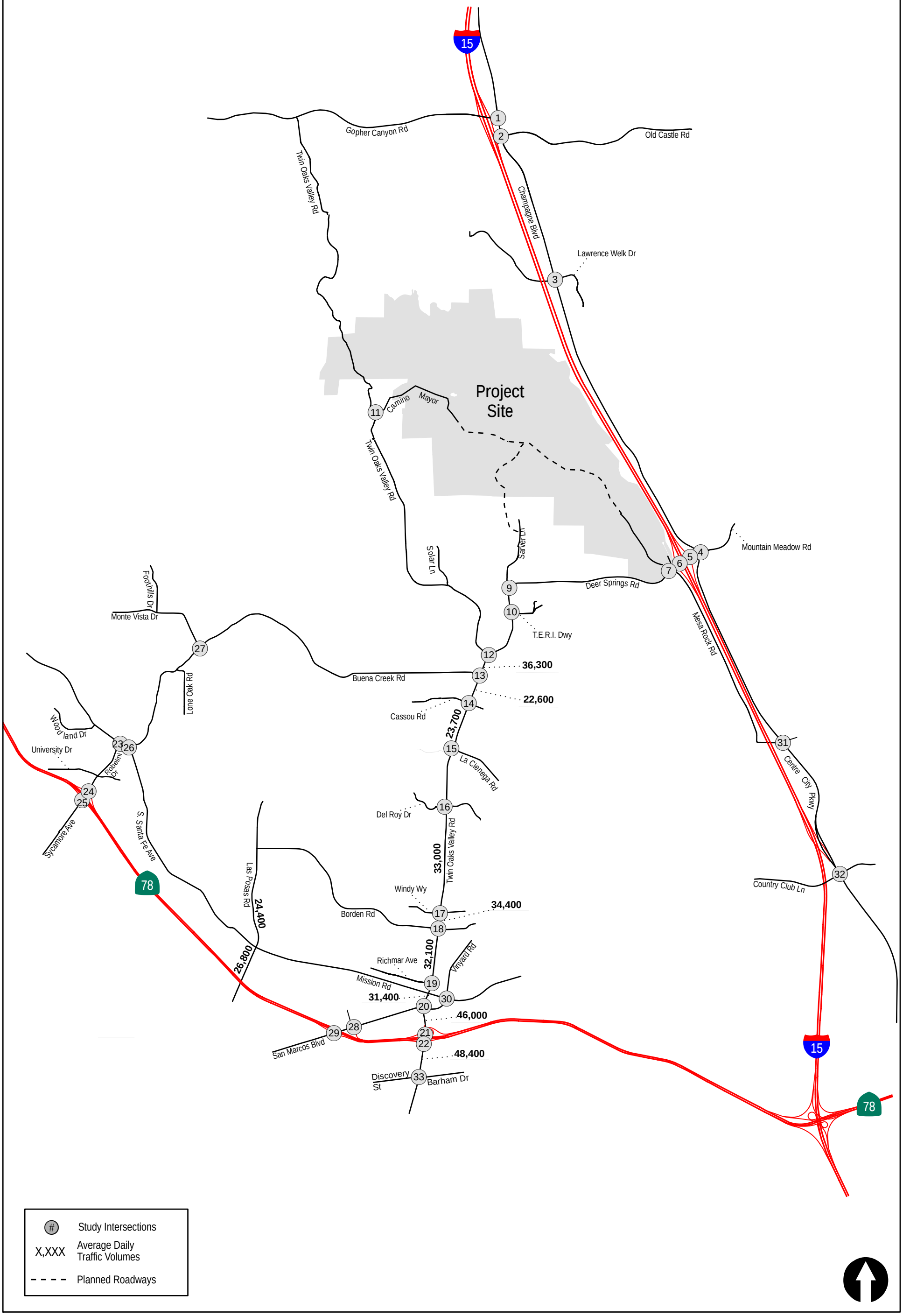

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Figure 12-7

City of San Marcos Horizon Year 2035 With Project Segment Volumes

Modified Road Network

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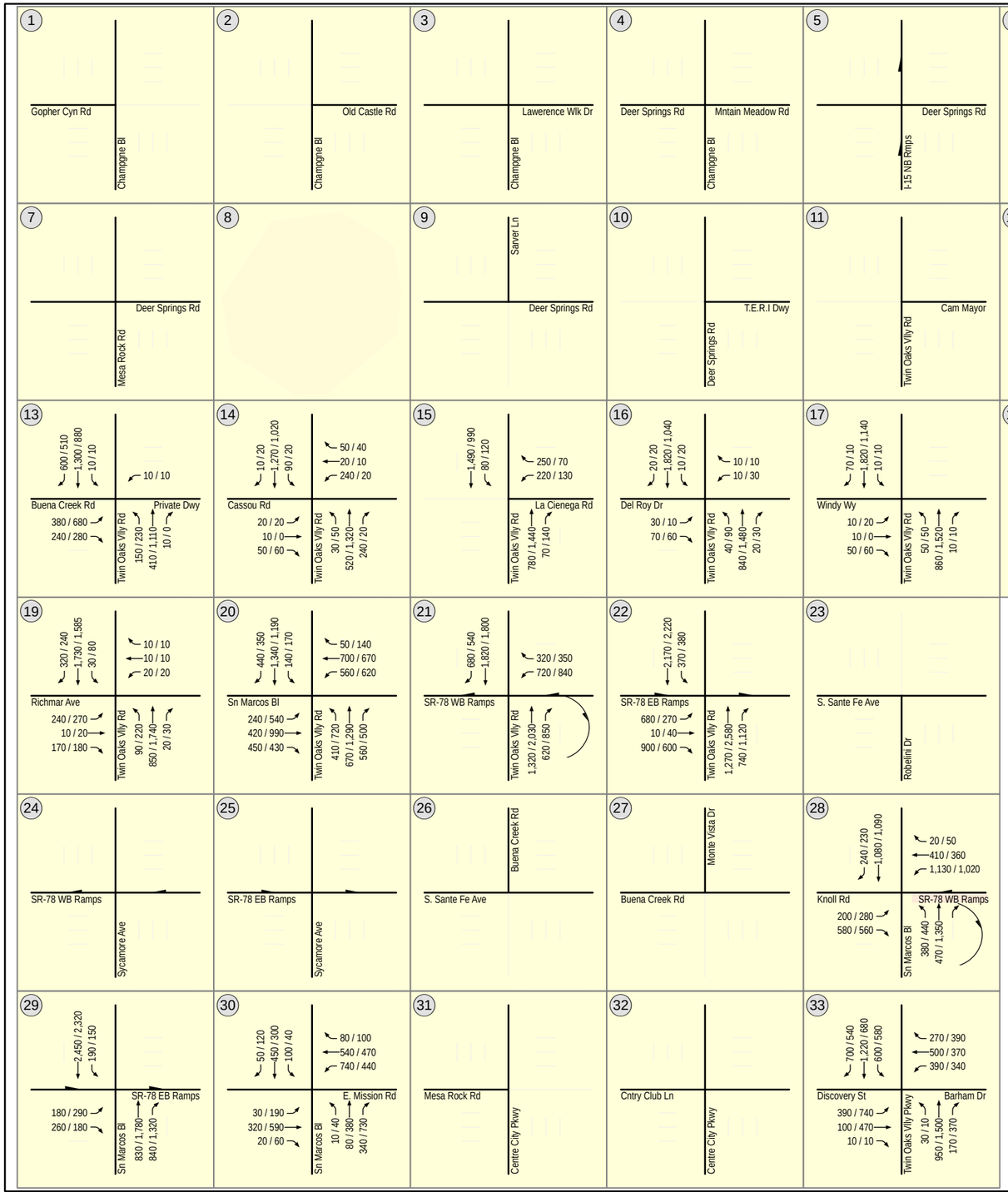

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Figure 12-8

City of San Marcos Horizon Year 2035 With Project AM / PM Peak Hour Traffic Volumes

Modified Road Network

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13.0 ACCESS AND INTERNAL CIRCULATION ACCESS

Three access points to the Project are planned. The first is the main access point via the north leg of the Deer Springs Road / Mesa Rock Road intersection in the southeast portion of the Project Site with access to Deer Springs Road. The second access is via the Deer Springs Road / Sarver Lane intersection towards the southwest portion of the Project Site. The third and minor access is located in the northeast portion of the Project Site with access to Twin Oaks Valley Road via Camino Mayor. ***Figure 13–1*** depicts the proposed Project access points on Deer Springs Road at Mesa Rock Road and Sarver Lane and Twin Oaks Valley Road at Camino Mayor.

13.1.1 *Mesa Rock Road*

The existing Mesa Rock Road north of Deer Springs Road will be improved and realigned to provide the main access to the site. The commercial portion of this Project (Sierra Town Center) will be located along this access. Mesa Rock Road will provide direct access to Sierra Town Center, Sierra Terraces, Sierra Hillside, Sierra Mesa, Sierra Knoll and Sierra Summit.

13.1.2 *Sarver Lane*

The existing Sarver Lane north of Deer Springs Road will be improved and connected to the Mesa Rock Road extension to provide the main access to the site for residential traffic. Sarver Lane will provide direct access to Sierra Valley, Sierra Knoll and Sierra Summit.

13.1.3 *Camino Mayor*

The existing Camino Mayor east of Twin Oaks Valley Road will be improved and connected to the Mesa Rock Road extension. The analysis shows that acceptable levels of service can be maintained at all three access points. It is therefore concluded that adequate access to the site will be provided.

13.2 Internal Circulation

13.2.1 *Intersection Operations*

The operations of the onsite internal intersections were determined at Project buildout. The Project residential and non-residential traffic was assigned individually for each neighborhood and added to obtain the total peak hour intersection traffic. All onsite intersections except two are assumed to be Minor Street STOP Controlled (MSSC). The Mesa Rock Road / Sarver Lane and Mesa Rock Road / Street "TC-3" intersections are analyzed as All way Stop Controlled (AWSC) intersections and the Mesa Rock Road / Street "TC-2" and Mesa Rock Road / Street "TC-1" are analyzed as signalized intersections. Mesa Rock Way will be a one-way (eastbound) street with only northbound right-turns permitted from Mesa Rock Road.

Table 13–1 summarizes the operation of the onsite internal intersections. *Figure 13–1* depicts the recommended intersection geometry and traffic control at each of the onsite internal intersections. As shown in *Table 13–1*, with the recommended geometry and traffic control, all onsite intersections are calculated to operate at LOS D or better during the AM and PM peak hours. Hence adequate intersection geometry would be provided at all internal intersections. ***Appendix J*** contains the peak hour analysis worksheets for the internal intersections.

TABLE 13–1
INTERNAL INTERSECTION OPERATIONS

	Intersection	Traffic Control	Peak Hour	Delay [a]	LOS [b]
1.	Mesa Rock Road / Street "K-10"	MSSC [c]	AM	8.5	A
			PM	8.4	A
2.	Mesa Rock Road / Street "S-1"	MSSC	AM	9.3	A
			PM	9.4	A
3.	Mesa Rock Road / Street "K-9"	MSSC	AM	9.2	A
			PM	8.9	A
4.	Mesa Rock Road / Street "K-1"	MSSC	AM	9.6	A
			PM	9.1	A
5.	Mesa Rock Road / Street "M-2"	MSSC	AM	11.6	B
			PM	12.5	B
6.	Mesa Rock Road / Sarver Lane	AWSC [d]	AM	9.7	A
			PM	11.7	B
7.	Sarver Lane / Street "V-3"	MSSC	AM	11.5	B
			PM	11.3	B
8.	Sarver Lane / Street "V-5"	MSSC	AM	12.9	B
			PM	12.5	B
9.	Sarver Lane / Street "V-1"	MSSC	AM	11.8	B
			PM	10.9	B
10.	Mesa Rock Road / Street "H-2"	MSSC	AM	12.0	B
			PM	14.3	B
11.	Mesa Rock Road / Street "H-1"	MSSC	AM	14.9	B
			PM	19.2	C
12.	Mesa Rock Road / Street "T-1" North	MSSC	AM	12.4	B
			PM	10.3	B

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TABLE 13–1 (CONTINUED)
INTERNAL INTERSECTION OPERATIONS

Intersection	Traffic Control	Peak Hour	Delay [a]	LOS [b]
13. Mesa Rock Road / Street "T-1" South	MSSC	AM	17.5	C
		PM	11.6	B
14. Mesa Rock Road / Street "TC-3"	MSSC	AM	27.2	D
		PM	32.4	D
15. Mesa Rock Road / Street "TC-2"	Signal	AM	8.1	A
		PM	13.2	B
16. Mesa Rock Road / Street "TC-1"	Signal	AM	10.7	B
		PM	19.2	B
17. Mesa Rock Road / Mesa Rock Way	MSSC	AM	9.7	A
		PM	13.2	B

Footnotes:
a. Average delay per vehicle in seconds
b. Level of Service
c. Minor Street STOP Control – Minor street left-turn delay and LOS reported.
d. All-way Stop Control. Average delay and LOS reported.

13.2.2 *Segment Operations*

Figure 13–2 depicts the total Project traffic on the on-site roadways and ***Table 13–2*** summarizes the estimated Project traffic on the internal roadway segments. As shown in *Table 13–2*, based on the estimated Project traffic on the internal roadways, Camino Mayor and Sarver Lane are estimated to carry minimal traffic, while Mesa Rock Road Extension is estimated to carry most of the traffic. All segments of the internal roads are calculated to operate at LOS D or better.

Table 13–2 summarizes the internal roadway segment analysis. The capacities of these internal roadways are reduced by 10% since reduced shoulder widths are assumed, though the pavement width is not reduced and standard lane widths are provided. The reduced shoulder widths will serve as bicycle lanes with parking restrictions within the Project Site. As shown in *Table 13–2*, all internal roadways are calculated to operate at LOS D or better. Hence adequate internal circulation roadways would be provided.

TABLE 13–2
INTERNAL ROADWAYS SEGMENT ANALYSIS

Segment	Functional Classification	LOS E Capacity [b]	Volume	LOS
Camino Mayor				
Twin Oaks Valley Rd to Sierra Summit	Modified 2.2 E Light Collector	14,600	200	A
Mesa Rock Road				
Sierra Summit to Sierra Knolls	Modified 2.2 E Light Collector	14,600	1,200	A
Sierra Knolls to Sarver Ln	Modified 2.2 E Light Collector	14,600	4,900	C
Sarver Ln to Sierra Hillside	Modified 2.2 E Light Collector	14,600	5,900	C
Sierra Hillside to Sierra Terraces	Modified 2.2 E Light Collector	14,600	6,600	D
Sierra Terraces to Sierra Town Center	Modified 4.2 B Boulevard [c]	27,000	10,300	D
Sierra Town Center to Deer Springs Rd	Mod 4.2 B Boulevard w/ median	27,000	19,300	C
Sarver Lane				
Mesa Rock Rd to Sierra Valley	2.2 Light Collector	16,200	4,600	C
Sierra Valley to Deer Springs Rd	2.2 Light Collector	16,200	6,300	C

Footnotes:
a. Classification of the roadway.
b. Capacity of the roadway. A lower (90%) capacity is assumed since it is a modified roadway.
c. Mod 4.2 B Boulevard with intermittent turn lane.

13.3 Pedestrian, Bicycle and Transit

The Project is designed to be pedestrian and bicycle friendly. As shown in *Figure 2–4*, multi-use paths are planned along the main roads through the site, trails are provided through open space, pedestrian paths are provided within neighborhoods and sidewalks are also provided in some area. Thus, there several safe options are available for pedestrians and bicyclists. A multi-use path is also planned along Deer Springs Road.

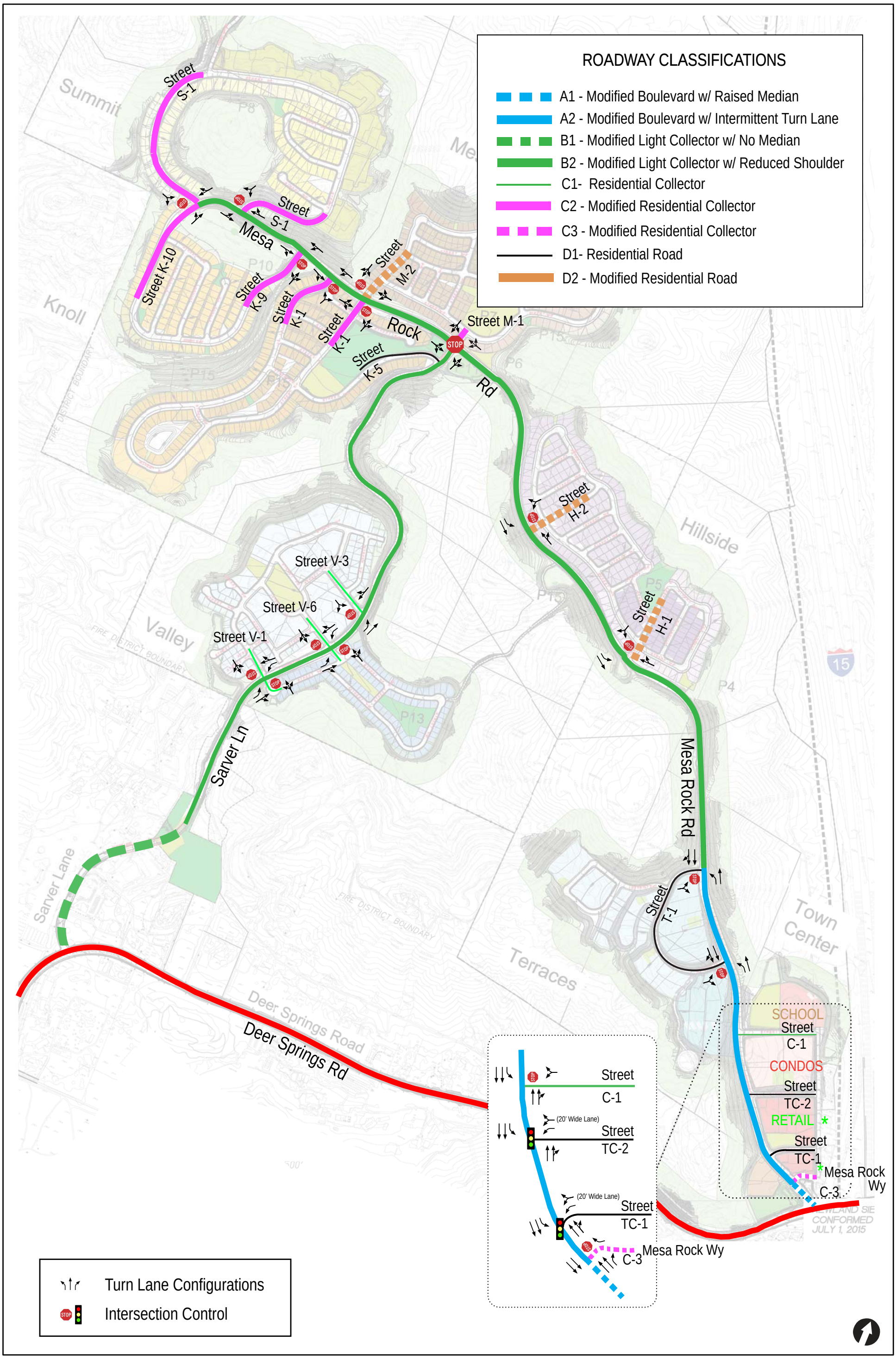

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Figure 13-1

Internal Roadways - Geometry & Traffic Control

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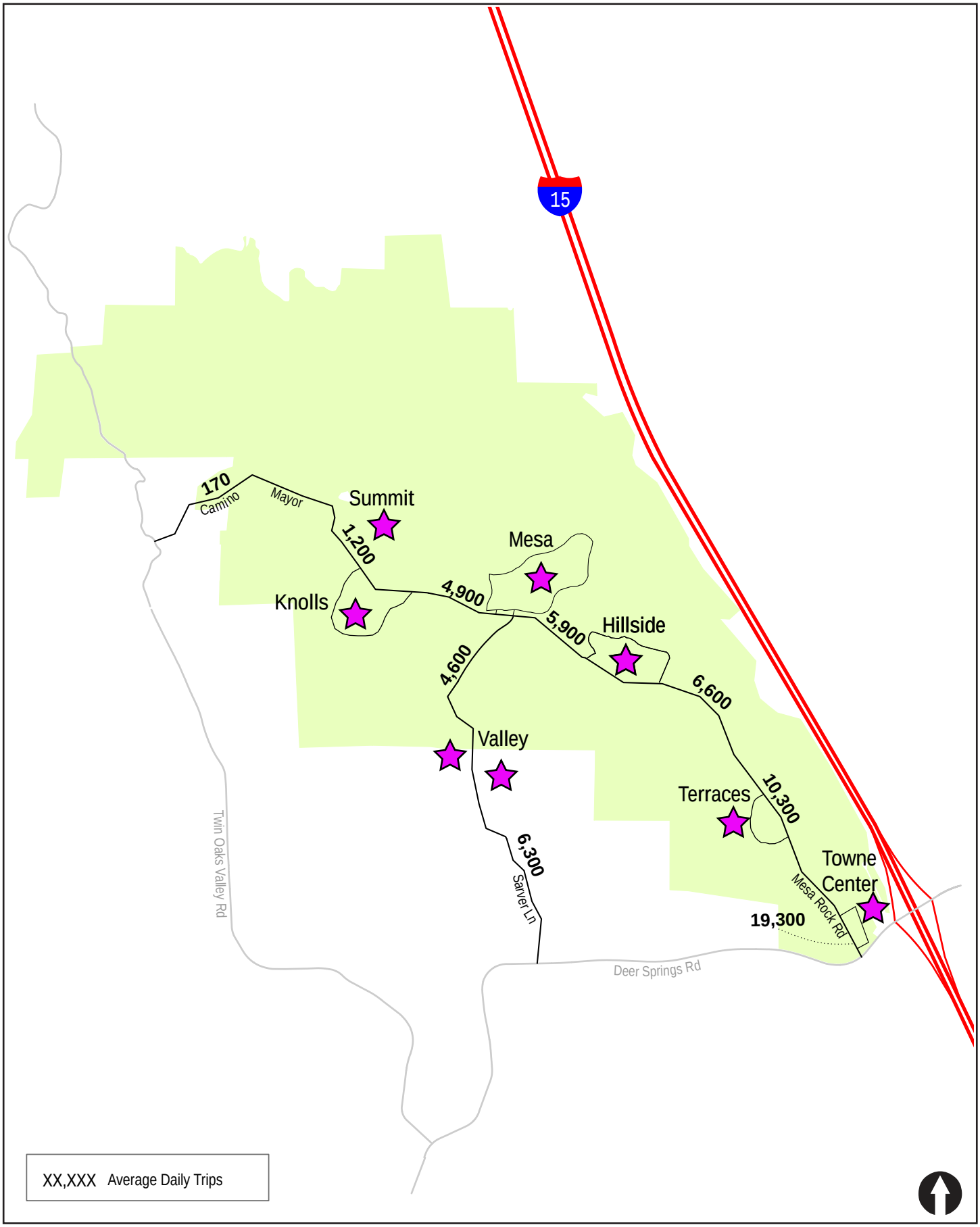

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Figure 13-2

Internal Roads Segment Volumes

SIERRA

14.0 TRANSPORTATION DEMAND MANAGEMENT PROGRAM

The Project would include a Transportation Demand Management (TDM) Program that will reduce the Project's impacts on the surrounding street network while striving to achieve countywide air quality/greenhouse gas reduction goals. The TDM Program is organized into three main types of strategies along with the establishment of a "transportation coordinator" through Project implementation and long-term operation. The Project's TDM Program includes land use strategies, commute/travel services for residents, and commute/travel services for employees. Key TDM measures include a land use strategy that provides a mix of uses within the project to reduce external trips, a comprehensive network of trails and bicycle lanes, an electric bike-share program for the project's residents to move around the Community without reliance on a car, and a demand responsive shuttle service that would provide access throughout the Project site, to the offsite Park-and-Ride lots at the I-15/Deer Springs Road interchange, and to the Escondido Transit Center.

15.0 CONSTRUCTION TRAFFIC ANALYSIS

15.1 Purpose

This section provides a general overview of the project's onsite and offsite grading and construction activities, an analysis of the project's estimated construction traffic impacts, and the measures that will be incorporated into Construction Traffic Control Plans (TCPs) required for the project's onsite and offsite improvements.

15.2 Project Overview

Onsite grading and construction of backbone infrastructure will occur in two major phases. Construction activities will include demolition, clearing and grubbing, blasting, screening, and grading necessary to grade roads and lots and install backbone infrastructure. Construction-related traffic, including construction worker traffic, will be required to access the Project Site through either Mesa Rock Road or Sarver Lane.

Roadway improvements along Deer Springs Road will be required prior to issuance of a certificate of occupancy for the first dwelling unit in the Project. Significant construction impacts would be limited to the period of time during the widening of Deer Springs Road and the construction of a new interchange at the I-15/Deer Springs Road interchange. Throughout this period of construction activity, two lanes of travel will be maintained on Deer Springs Road.

The Deer Springs Road construction traffic would overlap with the initial part of the Newland Sierra Phase I construction traffic, however, the majority of construction trips would be generated during the housing construction phases of the project, after Deer Springs Road has been widened and improved.

15.3 General Traffic Control Content and Requirements

The California Manual on Uniform Traffic Control Devices (MUTCD) states that the TCP "provides for the reasonably safe and efficient movement of road users through or around temporary traffic control zones while reasonably protecting workers, responders to traffic incidents, and equipment." TCPs define the locations of all roads that would need to be temporarily closed due to construction activities, including hauling of oversized loads by truck, truck routes, and permitted hours for construction vehicles to be operating. The TCPs define the use of warning signs, lights, barricades, cones, direction of travel, posted speed limit, location of temporary barricades, no parking restrictions, etc., according to standard guidelines outlined in the Caltrans Traffic Manual for Construction and Maintenance Work Zones (1996 edition, Revision 2), the Standard Specifications for Public Works Construction, the MUTCD, and the Work Area Traffic Control Handbook (WATCH).

15.4 Onsite Construction Activities

To minimize the impact of haul trucks on the offsite road network and avoiding the need to import or export dirt, grading for the Project has been designed to achieve an overall earthwork balance (i.e., the volume of cut within the Project area, including offsite improvements, equals the volume of fill). The widening of Deer Springs Road requires the removal of approximately 102,800 cubic yards of cut material and transport of that material to the Project site. The transport of that material to the Project

site will remain confined to construction work area established for Deer Springs Road to avoid impacts to through traffic on the road.

Onsite construction of dwelling units, commercial building, and a school site is shown on ***Figure 15-1***. This onsite construction would take place in two major phases, subject to market demand. Phase 1 is anticipated to take place over a four-year period. This phase will consist of 1,151 residential units in the Hillside neighborhood and portions of the Mesa, Valley, Knolls, and Terraces neighborhoods. Phase 2 is anticipated to occur over a three-year period and will include the Summit and Town Center neighborhoods and the balance of the Mesa, Valley, Knolls, and Terraces neighborhoods, which would result in the development of 984 residential units, the school, and 81,000 SF of general commercial.

15.5 Offsite Construction Activities

15.5.1 *Deer Springs Road*

The improvements to Deer Springs Road that would be constructed as part of the project would extend between the Deer Springs Road/Mesa Rock Road intersection to approximately 400 feet south of the Deer Springs Road/Twin Oaks Valley Road intersection.

Deer Springs Road will be built in three phases. The first phase will include the north side of the road and utilities, the second phase will include the south side of the road and utilities, and the third phase will complete the construction on the north side by removing temporary paving and finishing other details. The construction phases will be separated by K-rail barriers or other traffic control measures where necessary.

The majority of the "cut" will be generated from the removal of the slope west of the Deer Springs Road/Mesa Rock Road intersection and will occur in the first phase of work along the north side of Deer Springs Road. Part of this material will be used as fill for other portions of the road improvements and the balance, approximately 102,800 cubic yards, will be transported to the Project site.

Once the first phase is completed, traffic will be routed onto the north side of Deer Springs Road and Phase II will commence on the south side of the road. It is expected that grading for the south side of Deer Springs Road will be close to a cut/fill balance. However, it may be necessary to transport “fill” across the operational side of Deer Springs Road during the construction of improvements along the south side of the road, in which case, these trips would be confined to non-peak hours as part of the TCP.

The third phase of construction will remove temporary pavement on the north side of the road and construct the final northerly curbing, pathway, and driveway connections. The total timeframe for the improvements to Deer Springs Road from the I-15/Deer Springs Road interchange are anticipated to take between one year and 18 months to complete.

As stated above, the transport of cut material to the Project site will remain confined to construction work area established for Deer Springs Road to avoid impacts to through traffic on the road. Where possible, construction vehicles, contractors, and workers will use the work area for movement

throughout the construction zone to minimize impacts on those portions of the road that remain open to through traffic.

15.5.2 *Twin Oaks Valley Road:*

The improvements to Twin Oaks Valley Road that would be constructed as part of the project extend between approximately 400 feet south of the Deer Springs Road/Twin Oaks Valley Road intersection to approximately 1,000 feet south of the Cassou Road intersection. Twin Oaks Valley Road would be built in two phases. Only minor grading for the widening, shoulder, and roadbed is anticipated for these improvements.

During the first phase of the construction schedule, the outer lanes and shoulder improvements would be constructed. Traffic flow would continue on the existing pavement. Once the pavement and curb improvements constructed as part of the first phase are complete, northbound and southbound traffic would be routed onto the east and west sides of Twin Oaks Valley Road, respectively, so that construction of the inside lanes and median could commence under the second phase of the construction schedule.

Where possible, construction vehicles, contractors, and workers will use the work area for movement throughout the construction zone to minimize impacts on those portions of the road that remain open to through traffic. The total timeframe for the improvements to Twin Oaks Valley Road are anticipated to take between nine and 15 months to complete.

15.5.3 *Buena Creek Road/Monte Vista Drive and Buena Creek Road/S. Santa Fe Ave Intersection Improvements:*

The limits of construction related to these two intersections are approximately 300 to 400 feet on each leg of the intersection proposed for improvements by the project. Appropriate traffic controls measures (e.g., K-rails, etc.) will be placed where needed to implement the necessary improvements. Only minor grading for the widening, shoulder, and roadbed improvements is anticipated for these intersection improvements. Where possible, construction vehicles, contractors, and workers will be required to use the work area for movement throughout the construction zone to minimize impacts on those portions of the road that remain open to through traffic. These improvements are anticipated to take between six to nine months.

15.5.4 *I-15/Deer Springs Road Interchange Improvements:*

As described in Section 2.6.1, the project's improvements to the Interchange will be governed by a separate three-phase process under the jurisdiction of Caltrans. It is anticipated that appropriate traffic controls measures (e.g., K-rails, etc.) will be required throughout the construction process to implement the necessary improvements. It is also anticipated that grading and related improvements will be required for the relocation of the interchange ramps and the construction of a new overpass and associated improvements. The detailed construction, staging, and traffic control requirements will be addressed through the separate three-phase process under Caltrans' jurisdiction based on the ultimate interchange configuration chosen by Caltrans. Where possible, construction vehicles, contractors, and workers will use the work area for movement throughout the construction zone to

minimize impacts on those portions of the road that remain open to through traffic. It is anticipated that construction of a new interchange will take between 18 months and 2 years.

15.6 Construction Traffic Trip Generation

Table 15-1 summarizes the maximum average daily construction trips. *Table 15-1* indicates the duration of each activity in number of days. While all the activities will not occur simultaneously, some of them will.

Haul trucks utilized in site preparation, grading, and reservoir construction activities will operate on-site only and not operate on the county roadway network and hence are not included in the trip generation calculations.

Based on the proposed construction schedule (***Appendix K***), during Phase 1 construction, a maximum of 1,580 daily trips (1,416 daily worker trips and 164 daily vendor trips) is estimated to occur.

During Phase 2 construction, a maximum of 708 trips (616 worker trips and 92 vendor trips) are estimated for a period of 65 days. Fewer construction trips may be generated for longer periods (five quarters or 380 working days).

15.7 Project-Specific Traffic Control Measures

Each TCP for the project will be prepared consistent with the MUTCD, Caltrans Manual, Greenbook, and WATCH, and, where applicable, shall incorporate the following specific measures:

- During peak periods of construction activity, construction shifts shall be staggered to the extent feasible such that worker and contractor arrivals and departures from the project Site avoid the peak hours of the day (i.e., arrive by 7:00 a.m. and leave by 4:00 p.m.).
- The TCP shall identify delivery vehicle routes for all vehicles delivering materials and equipment to the project Site or offsite work zones. Unless directed otherwise by the Director of Public Works, heavy trucks and the delivery of heavy equipment shall use the nearest interchange and/or arterial road (e.g., the Deer Springs Road/I-15 interchange) to gain access to and from the project Site and offsite construction zones. To the extent feasible, the delivery of materials and equipment shall occur outside the AM and PM peak hours of traffic.
- In offsite construction zones, where possible, construction vehicles, contractors, and workers shall remain confined to active work areas for movement throughout the construction zone to minimize impacts on those portions of the road that remain open to through traffic.
- Vehicular access to nearby communities shall be maintained at all times. To the extent feasible, one lane in each direction on all roadways subject to construction shall remain open at all times. In the event that temporary lane closures require that only a single lane can be open for traffic in both directions, such a condition shall be limited to off peak hours and temporary traffic signals/stop lights and flaggers shall be used as a traffic control measure.

- Where applicable, the TCP shall include traffic control measures specific to each phase or sub-phase of work associated with the improvements.
- The TCP shall identify sufficiently sized staging areas and construction worker parking areas. Construction worker parking along offsite roads (outside of designated construction worker parking areas as described in the TCP) shall be prohibited.
- Construction activities requiring travel on local roads, including worker commute trips, shall be limited to off-peak hours to the extent possible.
- Temporary traffic signals/stop lights, if necessary, shall be installed in the event traffic volumes and safety concerns warrant such an installation.
- Signage for advance noticing of pending major construction activities or any temporary lane closures shall be placed along affected roadways in accordance with the Traffic Control Plan at least two weeks prior to the start of construction.
- The disruption of use for any pedestrians and/or bicyclists along the affected roadway shall be limited to the extent feasible. Along roads with existing sidewalk improvements, safe, through pedestrian access shall be maintained on one side of the affected roadway at all times. Temporary closures of pedestrian access along both sides of a roadway shall be limited to the hours of 10 pm and 6 am. Permanent pedestrian access improvements shall be constructed as soon as is feasible in the construction process.

15.8 Construction Traffic Impact Analysis

Phase 1 work would begin with the widening of Deer Springs Road from Twin Oaks Valley Road to the I-15/Deer Springs Road interchange and with the site preparation and grading work within the Project site, during which period only a fraction of the maximum daily trips as shown in Table 15-1 would occur. During Phase 1, the majority of these construction-related trips would occur outside of the peak hours of the day and would enter and exit the project site at the Deer Springs Road/Mesa Rock Road intersection, which is operating at an acceptable LOS in the AM peak period. Construction traffic coming from I-15 would not utilize the segment of Deer Springs Road between Sarver Lane and Mesa Rock Road and construction traffic coming from San Marcos would be traveling in the opposite direction of the predominant flow of traffic in the morning and evening periods for the roadway. Those specific construction-related worker trips involved with the widening of Deer Springs Road and Twin Oaks Valley Road would utilize the active work areas to access this construction zone, thereby avoiding travel within the open/improved portions of the road used by local and regional traffic. The higher construction-related trips estimated under Phase 1 would occur after these key road improvements are completed. In light of these specific circumstances and through implementation of the project-specific traffic control measures identified above, construction-related trips during Phase 1 would have a **less than significant impact** on the affected intersections and road segments.

By the time the project enters Phase 2, the project's improvements to Deer Springs Road, Twin Oaks Valley Road, the I-15/Deer Springs Road interchange, and other offsite road improvements identified as mitigation in this report are reasonably anticipated to be completed. Therefore, construction-related trips during Phase 2 would have a **less than significant impact** on the affected intersections and road segments.

TABLE 15-1
SUMMARY OF DAILY CONSTRUCTION TRIPS

Construction Phase	Worker Trips		Vender Trips		Haul Trucks [a]		Total Trips (Construction Activities Occurring simultaneously)	Duration (Days)
	# of Workers (per day)	Daily Worker Trips	# of Vendor Trucks (per day)	Daily Vendor Trips	# of Haul Trucks (per day)	Daily Truck Trips		
Phase 1								
Site Preparation [a]	12	24	4	8	180	360		26
Grading [a]	75	150	18	36	889	1,778		742
Trenching	39	78	16	32	—	—		545
Reservoir Construction [a]	22	44	2	4	645	1,290		657
Brush Management	96	192	14	28	—	—		135
Paving	18	36	10	20	—	—		701
Building Construction	400	800	20	40	—	—		1,231
Architectural Coatings	80	160	4	8	—	—		1,145
Average Phase 1		**1,416**		**164**			**1,580**	**130**
Phase 2								
Site Preparation [a]	18	36	4	8	192	384		21
Grading [a]	48	96	14	28	574	1,148		480
Trenching	22	44	12	24	—	—		413
Brush Management	48	96	8	16	—	—		581
Paving	12	24	8	16	—	—		719
Building Construction	200	400	16	32	—	—		737
Architectural Coatings	40	80	4	8	—	—		608
Average Phase 2		**616**		**92**			**708**	**65**

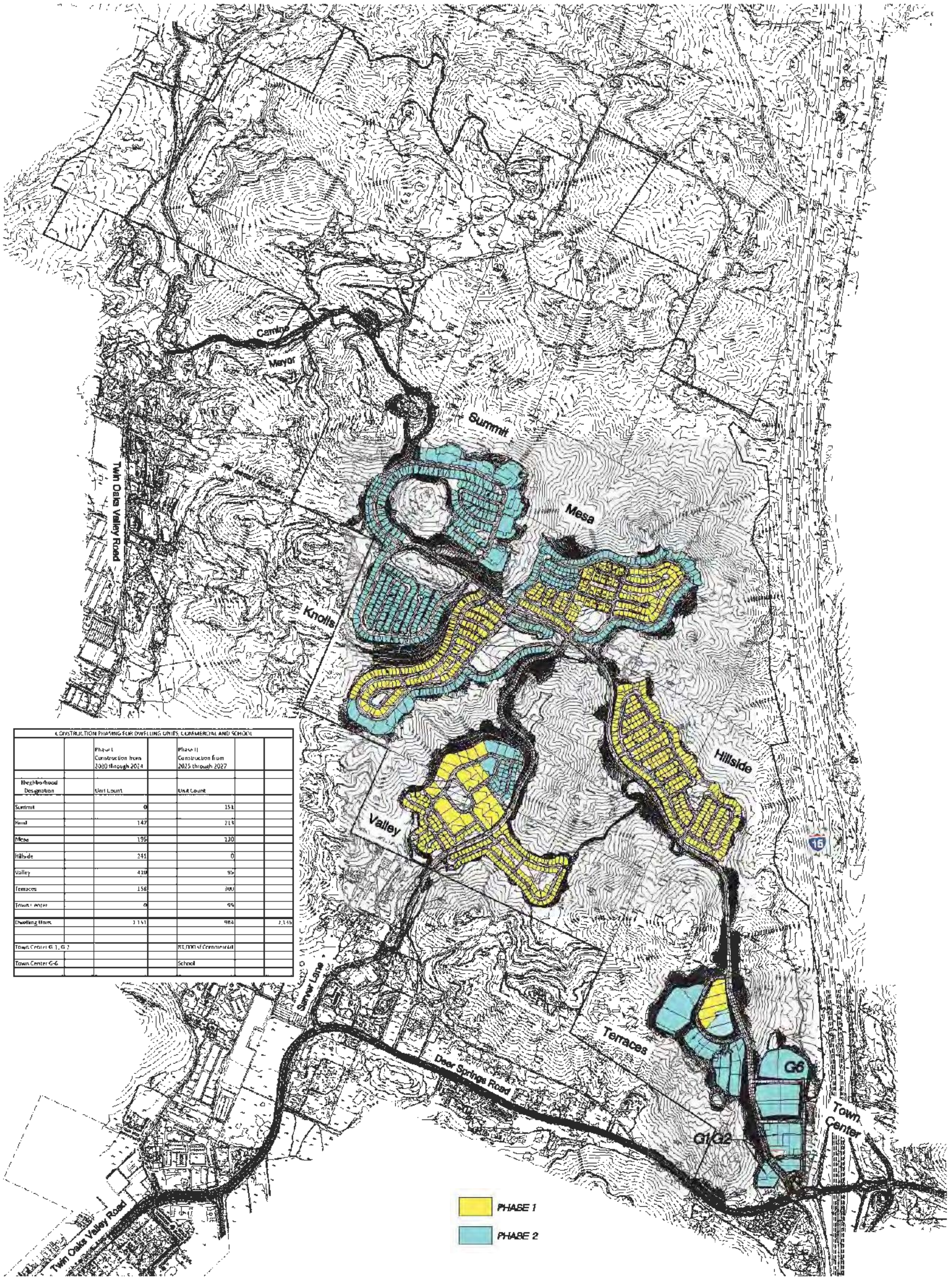
Footnotes:

a. The truck trips associated with these activities are internal (on-site) and will not utilize the roadway network. Hence, they ae not included in the Construction trips.

General Notes:

Activities occurring simultaneously in Phase 1

Activities occurring simultaneously in Phase 2



CONSTRUCTION PHASING FOR DWELLING UNITS, COMMERCIAL AND SCHOOL

Neighborhood Designation	Phase I Construction from 2020 through 2024 Unit Count	Phase II Construction from 2025 through 2027 Unit Count	
Summit	0	151	
Knoll	147	213	
Mesa	195	130	
Hillside	241	0	
Valley	419	95	
Terraces	158	300	
Town Center	0	95	
Dwelling Units	1,161	984	2,145
Town Center G-1, G-2		81,000 sf Commercial	
Town Center G-6		School	

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Date: 12/13/16

Figure 15-1

Project Phasing

SIERRA

16.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

16.1 Significance of Impacts

Based on the established significance criteria, the analyses of the study area intersections, segments, freeway mainline segments and metered ramps, the following direct and cumulative impacts are determined.

16.1.1 *Direct Impacts*

Intersections

D-1. Deer Springs Road / I-15 NB Ramps (Caltrans / San Diego County)
D-2. Deer Springs Road / I-15 SB Ramps (Caltrans / San Diego County)
D-3. Deer Springs Road / Mesa Rock Road (San Diego County)
D-4. Deer Springs Road / Sarver Lane (San Diego County)
D-5. Twin Oaks Valley Road / Deer Springs Road (City of San Marcos)
D-6. Twin Oaks Valley Road / Buena Creek Road (City of San Marcos)
D-7. Buena Creek Road/South Santa Fe Avenue (San Diego County)
D-8. Robelini Drive/South Santa Fe Avenue (San Diego County)
D-9. Buena Creek Road/Monte Vista Drive (San Diego County)

Segments

D-10. Deer Springs Road: Twin Oaks Valley Road to Sarver Lane (City of San Marcos / San Diego County)
D-11. Deer Springs Road: Sarver Lane to Mesa Rock Road (San Diego County)
D-12. Deer Springs Road: Mesa Rock Road to I-15 (San Diego County)
D-13. Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road (City of San Marcos)
D-14. Twin Oaks Valley Road: Buena Creek Road to Cassou Road (City of San Marcos)
D-15. Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive (San Diego County)
D-16. Buena Creek Road: Monte Vista Drive to Twin Oaks Valley Road (San Diego County)
D-17. Robelini Drive: Sycamore Avenue to South Santa Fe Avenue (San Diego County)
D-18. South Santa Fe Avenue: Woodland Drive to Buena Creek Road (San Diego County)

Freeway Mainline

D-19. I-15: Deer Springs Road to Pomerado Road

16.1.2 *Cumulative Impacts*

Cumulative analysis was conducted both without and with the Mountain Meadow Road connection. While intersection and segment volumes are greater under the cumulative scenario where Mountain Meadow Road is connected, this scenario does not result in any new impacts to intersections or segments when compared to the cumulative scenario without Mountain Meadow Road connected. Therefore, the cumulative scenario where Mountain Meadow Road is connected being the more

conservative analysis (i.e., results in lower EDU thresholds at which point cumulative impacts occur), it was used for the purposes of assessing impacts and identifying mitigation. Accordingly, the results are summarized below.

Intersection

C-1. Deer Springs Road / I-15 NB Ramps (Caltrans / San Diego County)
C-2. Deer Springs Road / I-15 SB Ramps (Caltrans / San Diego County)
C-3. Deer Springs Road / Mesa Rock Road (San Diego County)
C-4. Deer Springs Road / Sarver Lane (San Diego County)
C-5. Deer Springs Road / Sycamore Road (San Diego County)
C-6. Twin Oaks Valley Road / Deer Springs Road (City of San Marcos)
C-7. Twin Oaks Valley Road / Buena Creek Road (City of San Marcos)
C-8. Twin Oaks Valley Road / San Marcos Boulevard (City of San Marcos)
C-9. Buena Creek Road/South Santa Fe Avenue (San Diego County)
C-10. Robelini Drive/South Santa Fe Avenue (San Diego County)
C-11. Buena Creek Road/Monte Vista Drive (San Diego County)

Segments

C-12. Deer Springs Road: Twin Oaks Valley Road to Sarver Lane (City of San Marcos / San Diego County)
C-13. Deer Springs Road: Sarver Lane to Mesa Rock Road (San Diego County)
C-14. Deer Springs Road: Mesa Rock Road to I-15 (San Diego County)
C-15. Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road (City of San Marcos)
C-16. Twin Oaks Valley Road: Buena Creek Road to Cassou Road (City of San Marcos)
C-17. Twin Oaks Valley Road: Richmar Avenue to San Marcos Boulevard (City of San Marcos)
C-18. Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive (San Diego County)
C-19. Buena Creek Road: Monte Vista Drive to Twin Oaks Valley Road (San Diego County)
C-20. Monte Vista Drive: Foothill Drive to Buena Creek Road (San Diego County)
C-21. Gopher Canyon Road: Little Gopher Canyon Road to I-15 Ramps (San Diego County)
C-22. Robelini Drive: Sycamore Avenue to South Santa Fe Avenue (San Diego County)
C-23. South Santa Fe Avenue: Woodland Drive to Buena Creek Road (San Diego County)

Freeway Mainline Segments

C-24. I-15: Old Highway 395 to Pomerado Road
C-25. SR 78: Mar Vista Road to Sycamore Avenue

Horizon Year 2035 (City of San Marcos)

H-1. Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road

Alternate Horizon Year 2035 (City of San Marcos)

AH-1. Twin Oaks Valley Road / Richmar Avenue

AH-2. Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road

16.2 Mitigation Measures

16.2.1 *Direct Impacts*

This section identifies the mitigation measures, including road improvements, necessary to mitigate the Project's identified significant impacts. The timing of implementing each mitigation measure is based on the number of "Equivalent Dwelling Units" (EDU) that would trigger the significant impact. EDU is defined in further detail in Section 17.5.

For each significant impact that would occur in the City of San Marcos or to Caltrans facilities, implementation of the recommended mitigation is outside the jurisdiction and control of the County of San Diego. However, in the case of San Marcos, , the Project applicant has presented information to the City on the project's traffic impacts and proposed mitigation to Twin Oaks Valley Road segments and intersections that would mitigate these impacts to less than significant. Upon receiving concurrence and approval from the City of San Marcos, the project applicant can move forward with implementing the proposed mitigation and, by so doing, the project's traffic impacts along Twin Oaks Valley Road in the City of San Marcos would be mitigated to less than significant.

In the case of Caltrans, as previously explained in Section 2.6.1, Project applicant has initiated the PID process with Caltrans for the preparation of aProject Study Report-Project Development Support (PSR-PDS) document for the design and construction of interchange improvements at Deer Springs Road and I-15 that would mitigate the Project's impacts at the interchange to less than significant.

Nevertheless, while the Project applicant is working with the City of San Marcos and Caltrans towards implementation of those road improvements necessary to mitigate the Project's identified significant impacts within the respective jurisdiction, because the County does not have jurisdiction and control over the construction of these improvements, the County cannot be assured of their timely and effective implementation. As such, for purposes of this EIR, significant impacts within the City of San Marcos and Caltrans jurisdictions are considered **significant and unavoidable**.

The following are those mitigation measures recommended to mitigate the Project's identified significant impacts; the applicable jurisdiction with control over the improvements is listed in (parentheses):

Intersections

D-1. **Deer Springs Road / I-15 NB Ramps** (Caltrans / San Diego County)

As explained in Section 2.6.1 of this report and above, the Project applicant has initiated a three-phase process with Caltrans for the design and ultimate construction of improvements at the Deer Springs Road/I-15 interchange that would mitigate the Project's identified significant impacts. As part of that coordination, the Project applicant shall construct the necessary improvements.

With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of Caltrans and, thereby, subject to their concurrence and approval, for the purposes of this EIR, this impact is considered **significant and unavoidable**.

D-2. **Deer Springs Road / I-15 SB Ramps** (Caltrans / San Diego County)

As explained in Section 2.6.1 of this report and above, the Project applicant has initiated a three-phase process with Caltrans for the design and ultimate construction of improvements at the Deer Springs Road/I-15 interchange that would mitigate the Project's identified significant impacts. As part of that coordination, the Project applicant shall construct the necessary improvements

With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of Caltrans and, thereby, subject to their concurrence and approval, for the purposes of this EIR, this impact is considered **significant and unavoidable**.

D-3. **Deer Springs Road / Mesa Rock Road** (San Diego County)

Prior to the issuance of the certificate of occupancy for the 900th EDU, the Project applicant, or its designee, shall reconstruct the intersection to provide the following intersection configuration:

SB – Two left-turn lanes, one shared through/right lane

WB – One right-turn lane, one shared through/right lane, one through lane, and one left-turn lane

NB – One through lane, one right-turn lane and one left-turn lane

EB – Two left-turn lanes, one through lane, and one through/right lane

(It is noted that the specific lane configuration could change based on the results of the Deer Springs Road/I-15 interchange Project Study Report presently being prepared by Caltrans for improvements to the interchange.) These improvements will mitigate the corresponding impact to less than significant.

D-4. **Deer Springs Road / Sarver Lane** (San Diego County)

Prior to the issuance of the certificate of occupancy for the 350th EDU, the Project applicant, or its designee, shall install a traffic signal at this intersection and reconstruct the intersection to provide the following intersection configuration:

SB – One left-turn lane and one right-turn lane

WB - One shared through/right lane and one through lane

EB – Two through lanes and one left-turn lane

These improvements will mitigate the corresponding impact to less than significant.

D-5. **Twin Oaks Valley Road / Deer Springs Road** (City of San Marcos)

Prior to the issuance of the certificate of occupancy for the 280th EDU, the Project applicant, or its designee, shall reconstruct the intersection to provide the following intersection configuration.

SB – Two through lanes and one right-turn lane

NB – One left-turn lane and two through lanes

EB – One left-turn lane and one right-turn lane

With implementation of the these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, this impact is considered **significant and unavoidable.**

D-6. **Twin Oaks Valley Road / Buena Creek Road** (City of San Marcos)

Prior to the issuance of the certificate of occupancy for the 80th EDU, the Project applicant, or its designee, shall reconstruct the intersection to provide the following intersection configuration.

SB – One left-turn lane, two through lanes, and one right-turn lane

WB - One shared left/through/right lane

NB – One left-turn lane, one through lane and one shared through/right lane

EB - Two left-turn lanes and one shared through/right lane

With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, this impact is considered **significant and unavoidable**.

D-7. **Buena Creek Road/South Santa Fe Avenue** (San Diego County)

Prior to the issuance of the certificate of occupancy for the 273rd EDU, the Project applicant, or its designee, shall improve the South Santa Fe Avenue/Buena Creek Road intersection to provide dedicated right-turn and left-turn lanes on southbound Buena Creek Road. With this improvement, this impact will be mitigated to less than significant.

D-8. **Robelini Drive/South Santa Fe Avenue** (San Diego County)

A second lane along S. Santa Fe Avenue would be required to mitigate this impact to less than significant. A detailed review of the constraints to provide additional lanes at the intersection was conducted. Adding a second lane on S. Santa Fe Avenue approaching Robelini Drive would be necessary to mitigate the impact. These improvements would require widening S. Santa Fe Avenue where right-of-way does

not exist and significant impacts to private property would result to acquire the necessary right-of-way. The increase in volume at this intersection due to the project is approximately 8%. Therefore, the required improvements would not be proportional to the level of impact the project has on this segment, which is located over 5 miles from the Project site. Based on these factors, improvements at the Robelini Drive/S. Santa Fe Avenue intersection are considered infeasible.

It should be noted that the S. Santa Fe Avenue intersections with Buena Creek Road and Robelini Drive operate under a single traffic controller. The improvements at the Buena Creek Road /S. Santa Fe Avenue intersection identified above would partially mitigate the project's impacts to the Robelini Drive/S. Santa Fe Avenue intersection. As additional mitigation, the signal timing plan could be modified and the intersection signal equipment could be upgraded to accommodate advanced signal timing plan operations at this intersection to relieve some of the congestion. However, the combination of these mitigation measure would not fully mitigate the impact. Therefore, this impact is considered **significant and unavoidable**.

D-9. **Buena Creek Road/Monte Vista Drive** (San Diego County)

Prior to the issuance of the certificate of occupancy for the 165th EDU, the Project applicant, or its designee, shall implement one of the following mitigation measures:

1. Provide a traffic signal and the following lane configuration improvements:

   SB – One shared left/right lane

   WB – One through lane and one right-turn lane with right-turn-overlap phasing

   EB – One left-turn lane and one through lane

2. Build a roundabout at this intersection.

Both of these mitigation options would provide adequate peak hour operations and mitigate the corresponding impact to less than significant.

Segments

D-10. **Deer Springs Road: Twin Oaks Valley Road to Sarver Lane** (City of San Marcos / San Diego County)

This segment of Deer Springs Road includes sections both within the County of San Diego and the City of San Marcos. Prior to the issuance of the certificate of occupancy for the 40th EDU, the Project applicant, or its designee, shall widen Deer Springs Road to City of San Marcos 4-Lane Arterial standards between Twin Oaks Valley Road and the City Limits, and to San Diego County 4.1A Major Road standards between the City Limits and Sarver Lane.

The improvements to the Deer Springs Road section within San Diego County will mitigate the corresponding impact to less than significant. As to the segment within the City of San Marcos, with implementation of these improvements, this impact would

be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, these impacts are considered **significant and unavoidable.**

D-11. **Deer Springs Road: Sarver Lane to Mesa Rock Road** (San Diego County)

Two alternate mitigation measures are recommended for this impact. The actual mitigation measure ultimately implemented will be based on whether the Option A or Option B roadway network is approved for Deer Springs Road.

If Option A is approved, prior to the issuance of the certificate of occupancy for the 58th EDU, the Project applicant, or its designee, shall widen Deer Springs Road between Sarver Lane and Mesa Rock Road to a San Diego County 2.1B Community Collector with a two-way center turn lane standards. Under Option A, this significant impact would not be fully mitigated; the impact would remain **significant and unavoidable.**

Or,

If Option B is approved, prior to the issuance of the certificate of occupancy for the 58th EDU, the Project applicant, or its designee, shall widen Deer Springs Road to San Diego County 4.1B Major Road standards between Sarver Lane and Mesa Rock Road. Under Option B, the impact would be mitigated to less than significant.

D-12. **Deer Springs Road: Mesa Rock Road to I-15** (Caltrans)

Prior to the issuance of the certificate of occupancy for the 24th EDU, the Project applicant, or its designee, shall widen Deer Springs Road to San Diego County 4.1A Major Road standards with auxiliary lanes between Mesa Rock Road and I-15 consistent with the requirements set forth by Caltrans for the Deer Springs Road/I-15 interchange.

The Project applicant presently is coordinating with Caltrans on the preparation of a Project Study Report-Project Development Support (PSR-PDS) document for the design and ultimate construction of improvements at the I-15/ Deer Springs Road interchange that, once implemented, would mitigate the Project's identified significant impacts. As part of that coordination, the Project applicant will construct the necessary improvements. The improvements required to mitigate the project's impacts to this segment of Deer Springs Road would be done in coordination with the planning and construction of the new interchange. With implementation of these improvements, this impact would be mitigated to less than significant.

However, as the timing and implementation of these improvements are partially under the jurisdiction and control of Caltrans and, thereby, subject to their concurrence and

approval, for the purposes of this EIR, this impact is considered **significant and unavoidable.**

D-13. **Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road** (City of San Marcos)

Prior to the issuance of the certificate of occupancy for the 41st EDU, the Project applicant, or its designee, shall widen Twin Oaks Valley Road to City of San Marcos 4-Lane Arterial standards between Deer Springs Road and Buena Creek Road. With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, these impacts are considered **significant and unavoidable**.

D-14. **Twin Oaks Valley Road: Buena Creek Road to Cassou Road** (City of San Marcos)

Prior to issuance of a certificate of occupancy for the 80th EDU, the Project applicant, or its designee shall construct intersection improvement Mitigation #D-6 identified above. In addition, while not required to mitigate an identified significant impact, the Project applicant has agreed, as a public benefit, to also pay a fair share to the City of San Marcos towards widening this segment of Twin Oaks Valley Road to a 4-Lane Arterial standard.

With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, these impacts are considered **Significant and Unavoidable**.

D-15. **Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive** (San Diego County)

The Project applicant or its designee shall construct the intersection improvements identified above as Mitigation #D-7 (Buena Creek Road/South Santa Fe) and #D-8 (Buena Creek Road/Monte Vista Drive) to mitigate this segment impact to less than significant by providing additional capacity at the signalized intersections at either end of this segment.

Since the two identified intersections are the only controlled locations along this segment of Buena Creek Road, (i.e. the only locations where traffic on Buena Creek Road must stop), additional capacity at these two constraining intersections would mitigate the identified segment impact to less than significant. *Please refer to Table 16-4*, which contains the arterial analysis showing how the intersection improvements mitigate the segment impact.

D-16. **Buena Creek Road: Monte Vista Drive to Twin Oaks Valley Road** (San Diego County)

The Project applicant or its designee shall construct the intersection improvements identified above as Mitigation #D-6 (Twin Oaks Valley Road/Buena Creek Road) & #D-9 (Buena Creek Road/Monte Vista Drive) to mitigate this segment impact to a level below significance by providing additional capacity at the signalized intersections at either end of this segment.

Since the two identified intersections are the only controlled locations along this segment of Buena Creek Road, (i.e. the only locations where traffic on Buena Creek Road must stop), additional lanes at these two constraining intersections would mitigate the identified segment impact to less than significant. Please refer to *Table 16-4*, which contains the arterial analysis showing how the intersection improvements mitigate the segment impact.

With implementation of these improvements, this impact would be mitigated to less than significant. However, as the timing and implementation of the Mitigation #D-6 improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this TIA, the impacts to this segment of Buena Creek Road are considered Significant and Unavoidable.

D-17. **Robelini Drive: Sycamore Avenue to South Santa Fe Avenue** (San Diego County)

Widening Robelini Drive to four lanes would be required to mitigate this impact. Robelini Drive in its existing condition is a two-lane road within a 50-foot-wide right-of-way approximately one quarter mile (0.25 mi.) in length. Improvement to four lanes would require acquisition of a minimum of 48 feet of additional right-of-way to meet the County's 4.1A Major Road standard from a combination of close to 20 residential and commercial property owners. Road widening would impact private improvements, mature trees and landscaping, drainage structures and overhead utility lines, and would likely require the demolition of multiple existing residences. Improvements at the Robelini Drive/S. Santa Fe Avenue intersection are also considered infeasible since adding turn lanes on northbound Robelini Drive at S. Santa Fe Avenue would require widening S. Santa Fe Avenue (which also has right-of-way constraints) to provide receiving lanes (refer to D-8 above).

Under current conditions, Robelini Drive operates over capacity without the Project traffic and the project increases the ADT by only about 10%. Therefore, the widening of Robelini Drive by the Project is not proportional to the Project's impact. In addition, Sycamore Avenue (which becomes Robelini Drive and thereby connects to S. Santa Fe Avenue) is proposed to be realigned opposite Buena Creek Road as part of the County's S. Santa Fe Avenue CIP project. Therefore, any improvements to Robelini Drive would potentially also be in conflict with the County's CIP project.

It should be noted that the S. Santa Fe Avenue intersections with Buena Creek Road and Robelini Drive operate under a single traffic controller. The improvements at the Buena Creek Road/S. Santa Fe Avenue intersection identified above would partially mitigate the project's impacts to the Robelini Drive/S. Santa Fe Avenue intersection. As additional mitigation, the signal timing plan could be modified and the intersection signal equipment could be upgraded to accommodate advanced signal timing plan operations at this intersection to relieve some of the congestion. However, the combination of these mitigation measures would not fully mitigate the impact. Therefore, this impact is considered **significant and unavoidable.**

D-18. **South Santa Fe Avenue: Robelini Drive to Buena Creek Road** (San Diego County)

As stated above, a review of the right-of-way constraints along this section of South Santa Fe Avenue indicates widening the road to add lanes would result in significant impacts to private property. In addition, the increase in volume on S. Santa Fe Avenue due to the Project is less than 13%. Therefore, the widening of South Santa Fe Avenue, which is over 5 miles from the Project site, is not proportional to the Project's impact.

It should be noted that the South Santa Fe Avenue intersections with Buena Creek Road and Robelini Drive operate under a single traffic controller. The improvements at the Buena Creek Road/Santa Fe Avenue intersection identified above would partially mitigate the project's impacts to the Robelini Drive/South Santa Fe Avenue intersection. As additional mitigation, the signal timing plan could be modified and the intersection signal equipment could be upgraded to accommodate advanced signal timing plan operations at these combined intersections to relieve some of the congestion. However, the combination of these mitigation measure would not fully mitigate the impact. Therefore, this impact is considered **significant and unavoidable**.

D-19. **I-15: Deer Springs Road to Pomerado Road** (Caltrans)

The improvement necessary to mitigate the identified impact is to provide additional mainline capacity along this stretch of I-15. However, there is no Caltrans program in place to provide funding and implement the necessary improvement into which the Project could contribute a fair share, and, thus, there is no feasible mitigation that would reduce the identified impact to less than significant. Therefore, the impact is considered **significant and unavoidable**.

16.2.2 *Cumulative Impacts*

The County Traffic Impact Fee (TIF) Program is a comprehensive road program to collect impact fees from new development and construct new or expanded road, highway, interchange, and intersection facilities in the unincorporated County necessary to accommodate new development. In so doing, the TIF Program is an impact fee program designed to facilitate compliance with CEQA by providing a funding mechanism for these new facilities which serve to mitigate the indirect, cumulative traffic

impacts created by new development. The County TIF program fee requirement applies to all new development resulting in new/added traffic. The primary purpose of the TIF is twofold:

(1) To fund the construction of identified roadway facilities needed to reduce, or mitigate, projected cumulative traffic impacts resulting from future development within the County; and

(2) To allocate the costs of these roadway facilities proportionally among future developing properties based upon their individual cumulative traffic impacts.

TIF fees are deposited into local Community Planning Area accounts, regional accounts, and regional freeway ramp accounts. TIF funds are only used to pay for improvements to roadway facilities identified for inclusion in the TIF program, which includes both County roads and Caltrans highway facilities. TIF funds collected for a specific local or regional area must be spent in the same area. By ensuring TIF funds are spent for the specific roadway improvements identified in the TIF program, the CEQA mitigation requirement is satisfied, and the Mitigation Fee Act nexus is met.

As part of the TIF program process, the transportation infrastructure needs are characterized as existing deficiencies, direct impacts of future development, or indirect (cumulative) impacts of future development. Existing roadway deficiencies are the responsibility of existing developed land uses and government agencies and cannot be addressed using impact fees. The TIF program is not intended to mitigate direct impacts, which will continue to be the responsibility of individual development projects. The TIF program, therefore, is designed to address only the cumulative impacts associated with new growth on TIF eligible facilities. However, when projects make improvements for direct impacts to TIF eligible facilities, those projects can receive fee credits based on the value of those improvements against their TIF obligation.

The County's TIF Program also includes an impact fee component collected for the Regional Transportation Congestion Improvement Program (RTCIP). The RTCIP is an approximately $1 billion funding source established with the 2004 extension of the TransNet Program. Effective July 1, 2008, the RTCIP requires the 18 cities and the County to collect a development impact fee for every new market-rate single family and multifamily home built in the County to fund improvements to the Regional Arterial System (RAS). The RAS is primarily a list of roads, highways, and freeway interchanges that require capacity enhancements, including widening, realignment, and signalization to accommodate existing and future growth through the year 2050.

The RTCIP impact fee was established as new development's fair share contribution to these improvements and also serves as a funding source for other transportation projects including railroad grade separation projects and improvements required for regional express bus ("Bus Rapid Transit" along the I-15 Corridor) and rail transit. In November of 2007, SANDAG completed a nexus study for the RTCIP fee entitled the "RTCIP Impact Fee Nexus Report—Final Report" establishing the nexus between the RTCIP fee and new development's impact on the Regional Arterial System as required by the Mitigation Fee Act, California Government Code §§ 66000, et seq.

As is typical with development impact fees, the RTCIP fee amount is adjusted on July 1st of each year based on an analysis of construction cost indices, such as the Engineering News Record, and the Caltrans Construction Cost Index (CCI), but by no less than 2 percent. The purpose of this annual adjustment is to ensure that the RTCIP retains its purchasing power to improve the RAS.

All local jurisdictions, including the County of San Diego, are required to implement the RTCIP. In addition to complying with the annual adjustment as described above, each year, the 18 cities within San Diego County and the County are required to submit a report to SANDAG demonstrating their implementation of the RTCIP and to meet reporting requirements including fee collection and accounting information, identification of projects on which the fees where expended, construction timing for improvements, and other related reporting requirements. Every two years, SANDAG adopts an updated five-year Regional Transportation Improvement Program with a detailed list of and funding reports on completed and planned improvements to the RAS along with other regionally significant and federal highway projects.

For each impact located in the City of San Marcos and Caltrans jurisdictions, the improvements are outside the jurisdiction and control of the County of San Diego. Thus, the County cannot be assured of their timely and effective implementation. As such, for purposes of this EIR, each impact within the City of San Marcos and Caltrans jurisdictions is considered **significant and unavoidable**.

Intersections

C-1. **Deer Springs Road / I-15 NB Ramps** (Caltrans / San Diego County)
If implemented, intersection improvement Mitigation # D-1 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-1 is within the jurisdiction and control of Caltrans and, therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-2. **Deer Springs Road / I-15 SB Ramps** (Caltrans / San Diego County)
If implemented, intersection improvement Mitigation # D-2 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-2 is within the jurisdiction and control of Caltrans and, therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-3. **Deer Springs Road / Mesa Rock Road** (San Diego County)
Intersection improvement Mitigation # D-3 identified above will mitigate this impact to less than significant and no further mitigation is required.

C-4. **Deer Springs Road / Sarver Lane** (San Diego County)
Intersection improvement Mitigation # D-4 identified above will mitigate this impact to less than significant and no further mitigation is required.

C-5. **Deer Springs Road / Sycamore Road** (San Diego County)

The Project applicant, or its designee, shall signalize this intersection if the intersection is not yet signalized by issuance of the certificate of occupancy for the 40th EDU. Signalization of this intersection will mitigate the corresponding impact to less than significant.

C-6. **Twin Oaks Valley Road / Deer Springs Road** (City of San Marcos)

If implemented, intersection improvement Mitigation D-5 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-5 is within the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-7. **Twin Oaks Valley Road / Buena Creek Road** (City of San Marcos)

If implemented, intersection improvement Mitigation D-6 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-6 is within the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-8. **Twin Oaks Valley Road / San Marcos Boulevard** (City of San Marcos)

Contribute a fair share towards installing a dedicated southbound right-turn lane and a third westbound left-turn lane at this intersection, with appropriate signal modifications would mitigate this impact to less than significant. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for the purposes of this TIA, the impacts to this intersection are considered **Significant and Unavoidable**.

C-9. **Buena Creek Road/South Santa Fe Avenue** (San Diego County)

Intersection improvement Mitigation # D-7 identified above will mitigate this impact to less than significant and no further mitigation is required.

C-10. **Robelini Drive/South Santa Fe Avenue (San Diego County)**

As explained previously, there are no feasible improvements that fully mitigate the project's direct impact to this intersection. However, with the implementation of the S. Santa Fe Avenue CIP Project, this impact will be eliminated with the realignment of Sycamore Avenue to connect directly to Buena Creek Road, thereby rerouting traffic off of Robelini Drive and through this new intersection connecting Buena Creek Road and S. Santa Fe Avenue traffic directly to Sycamore Avenue. S. Santa Fe Avenue and the new intersection connecting Sycamore Avenue directly to Buena Creek Road are

County TIF Program Eligible Facilities and part of the Regional Arterial System (RAS). To mitigate this cumulative impact, the Project applicant, or its designee, shall participate in the County TIF Program which will mitigate this impact to less than significant.

C-11. **Buena Creek Road/Monte Vista Drive** (San Diego County)

Intersection improvement Mitigation # D-9 identified above will mitigate this impact to less than significant and no further mitigation is required.

Segments

C-12. **Deer Springs Road: Twin Oaks Valley Road to Sarver Lane** (City of San Marcos / San Diego County)

Segment improvement D-10 identified above will mitigate this impact to less than significant and no further mitigation is required. For the section within the City of San Marcos, if implemented, Mitigation D-9 identified above will mitigate the corresponding impact. However, as explained above, Mitigation D-10 is within the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, the impact within the City of San Marcos is considered **significant and unavoidable**.

C-13. **Deer Springs Road: Sarver Lane to Mesa Rock Road** (San Diego County)

Segment improvement Mitigation D-11 identified above will mitigate this impact to less than significant and no further mitigation is required.

C-14. **Deer Springs Road: Mesa Rock Road to I-15** (Caltrans)

If implemented, segment improvement Mitigation D-12 identified above will mitigate this impact to less than significant and no further mitigation is required. . However, as explained above, Mitigation D-12 is within the jurisdiction and control of Caltrans and, therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-15. **Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road** (City of San Marcos)

If implemented, segment improvement Mitigation D-13 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-13 is within the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-16. **Twin Oaks Valley Road: Buena Creek Road to Cassou Road** (City of San Marcos)

If implemented, segment improvement Mitigation D-14 identified above will mitigate this impact to less than significant and no further mitigation is required. However, as explained above, Mitigation D-14 is within the jurisdiction and control of the City of

San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-17. **Twin Oaks Valley Road: Richmar Avenue to San Marcos Boulevard** (City of San Marcos)

If implemented, intersection Mitigation #C-8 (Twin Oaks Valley Road / San Marcos Boulevard intersection) identified above would mitigate this impact to the segment to less than significant by improving arterial speeds and no further mitigation is required. Please refer to *Table 16-7,* which contains the arterial analysis showing how the intersection improvement mitigates the segment impact. However, as explained above, Mitigation C-8 is within the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval. Therefore, for purposes of this TIA, this impact is considered **significant and unavoidable**.

C-18. **Buena Creek Road: S. Santa Fe Avenue to Monte Vista Drive** (San Diego County)

Intersection improvements Mitigation #D-7 and #D-9 identified above will mitigate this segment impact to less than significant by providing additional capacity at the signalized intersections at either end of this segment. Since these are the only controlled locations along this segment of Buena Creek Road, (i.e. the only locations where traffic on Buena Creek Road must stop), additional lanes at these two constraining intersections mitigate this impact. Please refer to *Table 16-7,* which contains the arterial analysis showing how the intersection improvement mitigates the segment impact.

C-19. **Buena Creek Road: Monte Vista Drive to Twin Oaks Valley Road** (San Diego County)

If implemented, intersection improvements Mitigation #D-6 (Buena Creek Road/Twin Oaks Valley Road) & #D-9 (Buena Creek Road/Monte Vista Drive) identified above will mitigate this segment impact to less than significant by providing additional capacity at the signalized intersections at either end of this segment. Please refer to *Table 16-7*, which contains the arterial analysis showing how the intersection improvement mitigates the segment impact. However, as the timing and implementation of a portion of these improvements (#D-6) are under the jurisdiction and control of City of San Marcos and, thereby, subject to their concurrence and approval, for the purposes of this EIR, this impact is considered **significant and unavoidable.**

C-20. **Monte Vista Drive: Foothill Drive to Buena Creek Road** (San Diego County)

Intersection improvement Mitigation D-9 identified above will mitigate the impact to less than significant by providing additional lanes at the key intersection along Monte Vista Drive. Please refer to *Table 16-7,* which contains the arterial analysis showing how the intersection improvement mitigates the segment impact.

C-21. **Gopher Canyon Road: Little Gopher Canyon Road to I-15 Ramps** (San Diego County)

This segment of Gopher Canyon Road is a County TIF Program Eligible Facility and is part of the Regional Arterial System (RAS). To mitigate this cumulative impact, the Project applicant, or its designee, shall participate in the County TIF Program which will mitigate this impact to less than significant.

C-22. **Robelini Drive: Sycamore Avenue to South Santa Fe Avenue** (San Diego County)

As explained previously, there are no feasible improvements that fully mitigate the project's direct impact to this segment. However, with the implementation of the S. Santa Fe Avenue CIP Project, this impact will be eliminated with the realignment of Sycamore Avenue to connect directly to Buena Creek Road, thereby rerouting traffic off of Robelini Drive and through this new intersection connecting Buena Creek Road and S. Santa Fe Avenue traffic directly to Sycamore Avenue. This segment of S. Santa Fe Avenue and the new intersection connecting Sycamore Avenue directly to Buena Creek Road are County TIF Program Eligible Facilities and part of the Regional Arterial System (RAS). To mitigate this cumulative impact, the Project applicant, or its designee, shall participate in the County TIF Program which will mitigate this impact to less than significant.

C-23. **South Santa Fe Avenue: Robelini Drive to Buena Creek Road** (San Diego County)

This segment of S. Santa Fe Avenue is a County TIF Program Eligible Facility. To mitigate this cumulative impact, the Project applicant, or its designee, shall participate in the County TIF Program which will mitigate this impact to less than significant.

Freeway Mainline Segments

C-24. **I-15: Old Highway 395 to Pomerado Road** (Caltrans)

This impact would be mitigated by providing additional mainline capacity along this stretch of I-15. However, there is no Caltrans program in place to implement the necessary improvements into which the project could contribute a fair share and, thus, there is no feasible mitigation that would reduce the identified impact to less than significant. Therefore, the impact is considered **significant and unavoidable**.

C-25. **SR 78: Mar Vista Road to Sycamore Avenue** (Caltrans)

This impact would be mitigated by payment of a fair share contribution to Caltrans for the planned improvement to add high-occupancy-vehicle (HOV) lanes in both directions on State Route 78. However, as the timing and implementation of these improvements are under the jurisdiction and control of Caltrans and, thereby, subject to their concurrence and approval, for purposes of this TIA, this impact is considered **significant and unavoidable**.

Horizon Year 2035 Analysis (City of San Marcos)

H-1. **Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road** (City of San Marcos)

Contribute a fair share towards providing a third southbound lane on Twin Oaks Valley Road between Deer Springs Road and Buena Creek Road. This lane would trap as a right-turn only lane at Buena Creek Road. With this improvement, there will be five lanes between Deer Springs Road and Buena Creek Road, thus providing additional capacity. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for purposes of this TIA, this impact is considered **significant and unavoidable**.

Alternate Network Horizon Year 2035 Analysis (City of San Marcos)

AH-1. **Twin Oaks Valley Road / Richmar Avenue** (City of San Marcos)

Contribute a fair share towards providing a dedicated southbound right-turn lane on Twin Oaks Valley Road at Richmar Avenue. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for purposes of this TIA, this impact is considered **significant and unavoidable**.

AH-2. **Twin Oaks Valley Road: Deer Springs Road to Buena Creek Road** (City of San Marcos)

Contribute a fair share towards providing a third southbound lane on Twin Oaks Valley Road between Deer Springs Road and Buena Creek Road. This lane would trap as a right-turn only lane at Buena Creek Road. With this improvement, there will be five lanes between Deer Springs Road and Buena Creek Road, thus providing additional capacity. However, as the timing and implementation of these improvements are under the jurisdiction and control of the City of San Marcos and, thereby, subject to their concurrence and approval, for purposes of this TIA, this impact is considered **significant and unavoidable**.

16.3 Near-Term Mitigation Analysis

A post mitigation analysis was conducted to demonstrate that the recommended mitigation measures would mitigate Project impacts to below a level of significance.

16.3.1 *Direct Impacts*

Intersections

Table 16–1 summarizes the pre and post mitigation levels of service and delays at the intersections with direct Project impacts. As shown in *Table 16–1*, all intersections that are directly impacted are

calculated to operate at LOS D or better with the implementation of the recommended mitigation measures. The analysis worksheets of the mitigated intersections are included in ***Appendix M***.

Segments

The following demonstrates how with the implementation of mitigation improvements at intersections along the impacted segments mitigate the impacts to a level below significance. The speed of vehicles on urban streets is influenced by three main factors: street environment, interaction among vehicles, and traffic control. As a result, these factors affect quality of service. There is a distinct set of urban street LOS for each urban street class. Levels of service based on prevailing speeds and class of arterials determine the operations of arterials. The Arterial Class is calculated automatically by the Synchro software used for this analysis based on the distances between intersections and the link speeds.

Table 16–2 is based on FHWA research that shows longer running times on networks with short segments. This will cause longer travel times and lower LOS than using the free flow speeds.

Travel Time = Running Time + Signal Delay (intersection delay)

Arterial Speed = Total Distance / Total Travel Time

Segment Distance = Total Distance / Number of Segments

Flow Speed = Free Flow Speed (FFS) / Link.

Thus, the following arterial analyses were conducted:

- On *Twin Oaks Valley Road* between Deer Springs Road and San Marcos Boulevard with the mitigation measures recommended along Twin Oaks Valley Road, at the Twin Oaks Valley Road / Deer Springs Road, Twin Oaks Valley Road / Buena Creek Road and Twin Oaks Valley Road / San Marcos Boulevard intersections.
- On *Buena Creek Road* between Twin Oaks Valley Road and S. Santa Fe Avenue with the mitigation measures recommended at the Twin Oaks Valley Road / Buena Creek Road, Monte Vista Drive / Buena Creek Road and the South Santa Fe Avenue / Buena Creek Road intersections.
- On *Monte Vista Drive* between Foothill Drive and Buena Creek Road, with the mitigation measures recommended at the Buena Creek Road / Monte Vista Drive intersection.
- On *S. Santa Fe Avenue* between Buena Creek Road and Robelini Drive, with the recommended intersection improvements at the S. Santa Fe Avenue / Robelini Drive South Santa Fe Avenue / Buena Creek Road intersections intersection.

TABLE 16–1
EXISTING + PROJECT MITIGATION ANALYSIS - INTERSECTIONS

Intersection	Traffic Control [a]	Peak Hour	Pre Mitigation [b]		Post Mitigation [c]	
			Delay	LOS	Delay	LOS
5. Deer Springs Rd / I-15 NB Ramps	Signal	PM	>100.0	F	[d]	[d]
6. Deer Springs Rd / I-15 SB Ramps	Signal	PM	85.1	F	[d]	[d]
7. Deer Springs Rd / Mesa Rock Rd	Signal	AM	>100.0	F	30.4	C
		PM	99.1	F	28.0	C
9. Deer Springs Rd / Sarver Ln	**Signal**	AM	>100.0	F	22.8	C
		PM	>100.0	F	18.7	B
12. Deer Springs Rd/Twin Oaks Valley Rd	Signal	AM	>100.0	F	14.0	B
		PM	>100.0	F	11.9	B
13. Buena Creek Rd/ Twin Oaks Valley Rd	Signal	AM	57.2	E	15.4	B
		PM	69.7	E	17.0	B
26. Buena Creek Rd/South Santa Fe Ave	Signal	PM	75.8	E	51.8	D
					54.6	D
27. Buena Creek Rd/Monte Vista Dr	**Signal**	AM	94.2	F	15.8	B
		PM	>100.0	F	24.3	C

Footnotes:
a. Mitigated traffic control shown in **Bold**.
b. Delay and level of service without Project traffic, prior to the implementation of mitigation.
c. Delay and level of service with Project traffic and mitigation.
d. The specific mitigation for the ramp intersections will be known only after the PSR/PDS document being prepared for this interchange is approved by Caltrans.

TABLE 16–2
ARTERIAL ANALYSIS DEFINITIONS

Speed (mph)	Segment Distance	Class
1 to 29	Any	IV
30 to 35	< 2000 ft	IV
30 to 35	>/= 2000 ft	III
36 to 45	Any	II
above 45	Any	I

Table 16–3 summarizes the post-mitigation analysis of segments directly impacted by the Project. Intersection improvements were recommended as mitigation for the Buena Creek Road, Robelini Drive and South Santa Fe Avenue impacts. As shown in *Table 16–3*, all segments of Deer Springs Road are calculated to operate at LOS D or better except the segment between Sarver Lane and Mesa Rock Road. With improvement to a 2.1B Community Collector, this segment is calculated to operate at LOS E and thus remains unmitigated even with the improvement. With improvement to a 4.1B Major Road, it is calculated to operate at an acceptable LOS C. and is therefore mitigated.

Table 16–4 summarizes the travel speed and level of service on Twin Oaks Valley Road, Buena Creek Road, Monte Vista Drive and S. Santa Fe Avenue with the mitigation measures for the Existing + Project scenario. As shown in *Table 16–4*, with the mitigation measures at the adjacent intersections, the segments of Buena Creek Road, Robelini Drive and S. Santa Fe Avenue are calculated to operate at LOS D or better and / or higher speed with the corresponding intersection improvements, as compared to the existing LOS / speed during the AM and PM peak hours and hence, the intersection improvements mitigate the segment impact.

TABLE 16–3
EXISTING + PROJECT MITIGATION ANALYSIS - SEGMENTS

Street Segment	Prior to Mitigation [a]				Post Mitigation [b]			
	Functional Classification [c]	LOS E Capacity [d]	Volume [e]	LOS [f]	Roadway Classification [g]	LOS E Capacity	Volume	LOS
Deer Springs Road								
Twin Oaks Valley Rd to Sarver Ln	2 Ln Coll/2.2E	15,000	26,990	F	4 Ln Major Art/4.1A Major Rd	40,000	26,990	C
Sarver Ln to Mesa Rock Rd								
Option A	2.2E Lt Coll	16,200	25,000	F	2.1B Comm Coll	19,000	25,000	F [h]
Option B	2.2E Lt Coll	16,200	25,000	F	4.1 B Major Road	34,200	25,000	C
Mesa Rock Rd to I-15 SB Ramps	2.2E Lt Coll	16,200	35,950	F	4.1 A Major Road (w/Aux Ln) [i]	46,250	35,950	C
Twin Oaks Valley Road								
Deer Springs Rd to Buena Creek Rd	2 Lane Collector	15,000	28,700	F	4 Lane Major Road	40,000	28,700	C
Buena Creek Rd to Cassou Rd	2 Lane Collector	15,000	22,440	F	4 Lane Major Road	40,000	22,440	C
Robelini Drive								
Sycamore Avenue to S. Santa Fe Ave	2.2E Lt Coll [f]	16,200	18,580	F	[j]	-	-	-
S. Santa Fe Avenue								
Woodward Ave to Buena Creek Rd	2.1 B Com Coll [f]	19,000	17,880	E	[j]	-	-	-

Footnote:

a. Delay and level of service without Project traffic, prior to the implementation of mitigation.
b. Delay and level of service with Project traffic and mitigation.
c. The existing roadway classification at which the facility operates, prior to mitigation.
d. Capacity of the roadway per the County *Table 1, Average Daily Vehicle Trips.*
e. Existing volume (without Project traffic)
f. Level of Service.
g. The mitigated roadway classification.
h. Segment impact not mitigated.
i. A westbound auxiliary lane is recommended between Mesa Rock Road and I-15 Ramps. Therefore, a higher LOS E capacity of this segment was assumed (an additional 25% capacity of a Major Road)
j. There is no feasible mitigation. Therefore, these impacts are partially or not mitigated and are unavoidable. This is explained in greater detail in the text.

TABLE 16–4
EXISTING + PROJECT MITIGATED ARTERIAL OPERATIONS

MM#	Street Segment	Road Class	Dir.	Existing				Existing + Project				Existing + Project *Mitigated*			
				AM		PM		AM		PM		AM		PM	
				Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
City of San Marcos															
D-14, C-16 & C-17	**Twin Oaks Valley Road:** Deer Springs Rd to San Marcos Blvd	I	NB	30.6	C	27.7	C	30.2	C	17.8	E	30.5	C	27.6	C
			SB	24.1	D	22.9	D	20.3	E	21.3	D	25.5	D	24.4	D
San Diego County															
D-15 & C-18	**Buena Creek Road:** S. Santa Fe Ave to Monte Vista Dr	II	EB	35.2	A	20.7	D	34.3	B	12.2	F	36.2	A	35.0	A
			WB	16.7	E	23.6	C	12.1	F	19.1	D	32.5	B	27.2	C
D-16 & C-18	**Buena Creek Road:** Monte Vista Dr to Twin Oaks Valley Rd	II	EB	34.2	B	33.4	B	33.0	B	21.7	D	36.8	A	36.8	A
			WB	33.9	B	31.7	B	24.3	C	24.4	C	37.7	A	35.9	A
C-20	**Monte Vista Drive:** Foothill Dr to Buena Creek Rd	II	NB	35.1	A	34.3	B	35.1	A	34.3	B	35.1	A	34.3	B
			SB	26.3	C	24.1	C	22.8	C	19.3	D	26.5	C	25.1	C

16.3.2 *Cumulative Impacts*

The fair share payment (City of San Marcos) and TIF payment (San Diego County) are towards the implementation of the Planned Mobility Element and associated intersection improvements. Hence the operations and levels of service after implementation of the Mobility Element at the intersections and roadway segments are shown below.

Intersections

Table 16–5 summarizes the levels of service and delays at the intersections with significant cumulative impacts assuming the mitigation measures are in place. As shown in *Table 16–5*, all intersections that are cumulatively impacted are calculated to operate at LOS D or better with the implementation of the recommended mitigation measures except the San Marcos Boulevard / Twin Oaks Valley Road and the Buena Creek Road / S. Santa Fe Avenue intersections, which is calculated to operate at LOS F even with the mitigation measures. However, the delay with the mitigation is less than the delay without the mitigation and without the Project at the San Marcos Boulevard / Twin Oaks Valley Road intersection and the delay with the mitigation is less than the existing delay at the Buena Creek Road / S. Santa Fe Avenue intersection. Hence, the recommended mitigation measures will mitigate the significant impact at these intersections.

The analysis worksheets of the mitigated intersections are included in *Appendix K*.

Segments

Table 16–6 summarizes the segment operations with the recommended mitigation measures in place. As shown in *Table 16–6*, all segments are calculated to operate at LOS D or better except the segment of Deer Springs Road between Sarver Lane and Mesa Rock Road. With improvement to a 2.1B Community Collector, this segment is calculated to operate at LOS E and thus remains unmitigated even with the improvement. With Option B, with improvement to a 4.1B Major Road, it is calculated to operate at an acceptable LOS C. and is therefore mitigated.

Intersection improvements were recommended as mitigation for the Twin Oaks Valley Road, Buena Creek Road Monte Vista Drive and S. Santa Fe Avenue impacts. Any payments of TIF for impacts on S. Santa Fe Avenue and Buena Creek Road could be utilized towards the partial cost of the CIP for providing the ultimate connection of Sycamore Avenue as a 6-Lane Prime Arterial to Buena Creek Road / S. Santa Fe Avenue. With this connection, traffic will be diverted from Robelini Avenue and thus mitigate the impact on Robelini Drive. As explained previously, since there is no funding for this CIP project, the cumulative impact on Robelini Drive is significant and unmitigable.

Table 16–7 summarizes the travel speed and level of service on Twin Oaks Valley Road, Buena Creek Road, Monte Vista Drive and S. Santa Fe Avenue with the mitigation measures for the Existing + Project + Cumulative Projects scenario. As shown in *Table 16–7*, with the mitigation measures at the adjacent intersections, the segments of Buena Creek Road, Robelini Drive and S. Santa Fe Avenue are calculated to operate at LOS D or better and / or higher speed with the corresponding intersection improvements, as compared to the existing LOS / speed during the AM and PM peak hours and hence, the intersection improvements mitigate the segment impact.

TABLE 16–5
EXISTING + PROJECT + CUMULATIVE PROJECTS: MITIGATED OPERATIONS - INTERSECTIONS

	Intersection	Traffic Control [a]	Peak Hour	Delay [b]	LOS [b]
5.	Deer Springs Rd / I-15 NB Ramps	Signal	AM	[c]	[c]
			PM	[c]	[c]
6.	Deer Springs Rd / I-15 SB Ramps	Signal	AM	[c]	[c]
			PM	[c]	[c]
7.	Deer Springs Rd / Mesa Rock Rd	Signal	AM	43.2	D
			PM	39.0	D
9.	Deer Springs Rd / Sarver Ln	**Signal**	AM	23.4	C
			PM	18.6	B
10.	Deer Springs Rd / Sycamore Rd	**Signal**	AM	6.0	A
			PM	3.5	A
12.	Deer Springs Rd / Twin Oaks Valley Rd	Signal	AM	24.3	B
			PM	19.2	B
13.	Buena Creek Rd / Twin Oaks Valley Rd	Signal	AM	26.3	B
			PM	33.2	C
20.	San Marcos Blvd / Twin Oaks Valley Rd	Signal	AM	50.5	D
			PM	93.0	F
26.	Buena Creek Rd / S Santa Fe Ave	Signal	AM	91.7	F
			PM	40.4	D
27.	Buena Creek Rd / Monte Vista Dr	**Signal**	AM	16.5	B
			PM	24.0	C

Footnotes:

a. Mitigated traffic control shown in **Bold**.

b. Delay and level of service with mitigation.

c. Mitigation for the ramp intersections will be known only after the PSR/PDS document being prepared for this interchange is approved by Caltrans.

TABLE 16–6
EXISTING + PROJECT + CUMULATIVE PROJECTS: MITIGATED OPERATIONS - SEGMENTS

Street Segment	Recommended Mitigation [a]	LOS E Capacity	Volume [b]	LOS [c]
Deer Springs Road				
Twin Oaks Valley Rd to San Marcos Limits	4-Lane Major Art	40,000	30,190	D
Sarver Ln to Mesa Rock Rd				
Option A	2.1B Comm Coll	19,000	27,600	F [d]
Option B	4.1 B Major Rd	37,000	27,600	D
Mesa Rock Rd to I-15 SB Ramps	4.1 A Major Rd [e]	46,250	36,750	C
Twin Oaks Valley Road				
Deer Springs Rd to Buena Creek Rd	4-Lane Major Art	40,000	30,400	D
Buena Creek Rd to Cassou Rd	4-Lane Major Art	40,000	23,040	C
Gopher Canyon Road				
Little Gopher Canyon Rd to I-15	4.1 B Major Rd [f]	34,200	17,110	B
Robelini Drive				
Sycamore Avenue to S. Santa Fe Ave	2.2E Light Coll [f]	16,200	19,680	F
S. Santa Fe Avenue				
Woodward Ave to Buena Creek Rd	4.1 A Major Rd [f]	37,000	18,480	B

Footnote:

a. The mitigated roadway classification. The fair share (City of San Marcos) and TIF payments (San Diego County) are towards the implementation of the Mobility Element. Hence the level of service after implementation of the Mobility Element is shown.
b. Existing + Project + Cumulative Projects volumes from *Table 10-6.*
c. Level of Service.
d. Segment impact not mitigated. A westbound auxiliary lane is recommended between Mesa Rock Road and I-15 Ramps. Therefore, a higher LOS E capacity of this segment was assumed (an additional 25% capacity of a Major Road). Payment of TIF to General Plan Mobility Element.
e. With implementation of the S. Santa Fe Ave. CIP Project, a TIF Program Eligible Project, Robelini Drive will be removed from the Mobility Element, become a cul de sac, and open to local traffic only. Therefore, the volume shown is not representative of the future condition with implementation of this CIP project. Instead, the future volume would be a product of local traffic only and is expected to be substantially lower.

TABLE 16–7
EXISTING + PROJECT + CUMULATIVE PROJECTS MITIGATED ARTERIAL OPERATIONS

MM#	Street Segment	Class	Dir.	Existing				Existing + Project + Cumulative Projects				Existing + Project + Cumulative Projects *Mitigated*			
				AM		PM		AM		PM		AM		PM	
				Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS	Speed	LOS
City of San Marcos															
D-14, C-16 & C-17	**Twin Oaks Valley Road:** Deer Springs Rd to San Marcos Blvd	I	NB	30.6	C	27.7	C	29.1	C	15.1	F	30.2	C	27.1	C
			SB	24.1	D	22.9	D	15.7	F	16.6	E	24.3	D	21.8	D
San Diego County															
D-15 & C-18	**Buena Creek Road:** S. Santa Fe Ave to Monte Vista Dr	II	EB	35.2	A	20.7	D	32.5	B	8.4	F	35.5	A	34.7	B
			WB	16.7	E	23.6	C	6.1	F	8.7	F	31.7	B	30.9	B
D-16 & C-19	**Buena Creek Road:** Monte Vista Dr to Twin Oaks Valley Rd	II	EB	34.2	B	33.4	B	31.4	B	21.5	D	36.3	A	34.9	B
			WB	33.9	B	31.7	B	17.2	D	19.0	D	36.8	A	35.6	A
C-20	**Monte Vista Drive:** Foothill Dr to Buena Creek Rd	II	NB	35.1	A	34.3	B	35.1	A	34.3	B	35.1	A	34.3	B
			SB	26.3	C	24.1	C	13.9	E	13.1	E	24.5	C	24.3	C

16.4 Horizon Year Mitigation Analysis (San Marcos)

16.4.1 *Intersection Mitigation*

Table 16–8 summarizes the Horizon Year post-mitigation intersection analysis. As seen in *Table 16-8*, the recommended mitigation of providing a dedicated southbound right-turn lane on Twin Oaks Valley Road at Richmar Avenue will mitigate the impact. Therefore, this impact is mitigated below a level of significance.

16.4.2 *Segment Mitigation*

Table 16–9 summarizes the Horizon Year post-mitigation segment analysis for both the Full Road Network and the Modified Road Network.

Full Road Network

With the Full Road Network, the recommended mitigation of providing a third southbound lane on Twin Oaks Valley Road between Deer Springs Road and Buena Creek Road will increase the capacity of this segment to 50,000 ADT. With this mitigation, the segment is calculated to operate with a V/C of 0.912, which is 0.28 less than the V/C without the Project. Therefore, this impact on this segment is mitigated below a level of significance.

Modified Road Network

With the Modified Road Network, the recommended mitigation of providing a third southbound lane on Twin Oaks Valley Road between Deer Springs Road and Buena Creek Road will provide sufficient capacity so that the segment will operate at LOS C. Therefore, this impact on this segment is mitigated below a level of significance.

TABLE 16–8
CITY OF SAN MARCOS HORIZON YEAR 2035 WITH PROJECT
MODIFIED ROAD NETWORK MITIGATION ANALYSIS - INTERSECTIONS

Intersection	Traffic Control	Peak Hour	Pre Mitigation [a]		Post Mitigation [b]	
			Delay	LOS	Delay	LOS
19. Richmar Ave / Twin Oaks Valley Rd	Signal	PM	65.8	E	46.7	D

Footnotes:

a. Delay and level of service without Project traffic, prior to the implementation of mitigation.
b. Delay and level of service with Project traffic and mitigation.

TABLE 16–9
CITY OF SAN MARCOS HORIZON YEAR 2035 WITH PROJECT MITIGATED OPERATIONS - SEGMENTS

Street Segment	Pre-Mitigation [a]							Post Mitigation [b]				
	LOS E Cap	2035 Without Project			2035 With Project			Recommended Mitigation	LOS E Cap	Volume	V/C	LOS
		Volume	LOS [c]	V/C	Volume	LOS	V/C					
FULL ROAD NETWORK												
Twin Oaks Valley Road												
Deer Springs Rd to Buena Creek Rd	40,000	37,600	F	0.940	45,600	F	1.140	Add a Southbound Lane	50,000	45,600	0.912	E
MODIFIED ROAD NETWORK												
Twin Oaks Valley Road												
Deer Springs Rd to Buena Creek Rd	40,000	28,300	C	0.708	36,300	E	0.908	Add a Southbound Lane	50,000	36,300	0.726	C

Footnote:

a. Delay and level of service without and with Project traffic, prior to the implementation of mitigation.
b. Delay and level of service with Project traffic and mitigation.
c. Level of Service with San Marcos Mobility Element classification.

16.5 Mitigation Phasing

An analysis was conducted at each of the impacted locations to determine the number of units that could be built before a direct significant impact would occur. The Project consists of various types of dwelling units and non-residential development. In order to determine the timing of when each mitigation measure is needed, the entire Project was converted to "Equivalent Dwelling Units" (EDU). A weighted average trip rate was determined. The Total Residential ADT / Total number of Residential Units equals weighted average trip rate:

i.e., 17,530 trips / 2,135 DU or, 8.2108 trips per DU.

The non-residential land uses generate a total of 11,332 ADT for a total Project ADT of 28,862. Using the above calculated rate of 8.2108 trips per EDU, the total number of EDUs is 3,515 as shown in ***Table 16–10***. A trial and error exercise was conducted to determine the number of EDUs which could be built before the impact would occur. ***Table 16–11*** and ***Table 16–12*** summarize the number of EDUs that may be built and occupied, before each mitigation measure is required at intersections and segments, respectively.

16.5.1 *Direct Intersection Impacts*

For each intersection, Project-only peak hour volumes were multiplied by a given percent and added to baseline volumes to identify the point at which the impact would occur. The starting percentage, low enough not to trigger an impact, was then incrementally increased until the point at which the impact occurs was identified. Generally this would be where intersection LOS deteriorates from LOS D to LOS E, though for intersections operating at LOS E or worse without the Project, it would be the point at which the increase in average delay due to the Project exceeds the 2.0 second threshold. The percent of Project trips at which the impact would occur was then related back to EDUs (rounded down to the nearest ten) as reported in *Table 16–11*.

16.5.2 *Direct Segment impacts*

For each street segment, the allowable ADT that can be added to each segment before triggering a significant impact was identified. This is then calculated as a percent of the total Project ADT on a given segment. The percent of total Project ADT that would be on the threshold of triggering a significant impact is then related back to EDUs, as reported in *Table 16–12*.

16.5.3 *Cumulative Intersection Impacts*

The EDUs at which each cumulative intersection impact would occur was calculated using the same methodology as for direct intersection impacts. ***Table 16–13*** summarizes the EDUs for the cumulative intersection impacts.

16.5.4 *Cumulative Segment impacts*

The EDUs at which each cumulative segment impact would occur was calculated using the same methodology as for direct segment impacts. ***Table 16–14*** summarizes the EDUs for the cumulative segment impacts.

TABLE 16–10
EQUIVALENT DWELLING UNITS CALCULATION

Land Use	Quantity	Rate [a]	ADT
Single Family	875 DU [b]	10 /DU	8,750
Multi-Family	935 DU	8 /DU	7,480
Senior	325 DU	4 /DU	1,300
Subtotal Residential	*2,135 Units*		*17,530*
Average Rate per DU = Total Trips/Total DU (17,530/2,135)			**8.2108**
Total Non-Residential			*11,332*
Gross Project (17,530 + 11,332)			**28,862**
Total EDU (28,862 / 8.2108)			**3,515**

Footnotes:

a. Rates obtained from *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, published by SANDAG. Also see *Table 8–1*.

TABLE 16–11
EXISTING + PROJECT MITIGATION PHASING SUMMARY — INTERSECTIONS

Intersections	Mitigation	Existing [a]		Allowable Delay in Seconds [b]	% of Project Traffic [c]	EDU [d]
		Delay	LOS			
5. Deer Springs Rd / I-15 NB Ramps	New Interchange (subject to Caltrans process)	38.4	D	16.6	18.2%	640
6. Deer Springs Rd / I-15 SB Ramps	New Interchange (subject to Caltrans process)	60.8	E	2.0	10.8%	370
7. Deer Springs Rd / Mesa Rock Rd	New Interchange (subject to Caltrans process)	23.3	C	31.7	27.7%	970
9. Deer Springs Rd / Sarver Lane	Install a signal and provide one left-turn lane and one right-turn lane with overlap phasing SB, one shared through/right lane and one through lane WB and two through lanes and one left-turn lane EB.	30.1	D	4.9	10.8%	370
12. Deer Springs Rd /Twin Oaks Valley Rd	Provide two through lanes and one right-turn lane SB, one left-turn lane and two through lanes NB and one left-turn lane and one right-turn lane EB with corresponding signal modifications.	44.1	D	10.9	8.6%	300
13. Buena Creek Rd / Twin Oaks Valley Rd	Provide one left-turn lane and two through lanes and one right-turn lane SB, one shared left/through/right lane WB, one left-turn lane, one through lane and one shared through/right lane NB and two left-turn lanes and one shared through/right lane EB	26.2	C	28.8	49.3%	1,730
26. Buena Creek Rd /South Santa Fe Ave	SB exclusive right-turn lane	37.7	D	17.3	46.0%	1,610
27. Buena Creek Rd /Monte Vista Dr	Install a signal and provide one through lane and one right-turn lane with right-turn-overlap phasing WB and one left-turn lane and one through lane EB.	70.2	F	2.0	7.7%	260

Footnotes:

a. Higher of the peak hours.
b. Average delay (seconds per vehicle) that can be added to intersection before triggering significant impact (LOS E), or 2.0 seconds if the intersection already operates at LOS E or F.
c. Percent of Project traffic at which Project-related delay is just below threshold identified in "Allowable Delay" column.
d. Equivalent Dwelling Units equal to the percent of Project traffic identified.
e. Refer to section 2.6.1 of this report for more information on the Caltrans-lead process to implement this mitigation.

TABLE 16–12
EXISTING + PROJECT MITIGATION PHASING SUMMARY — SEGMENTS

Street Segment	Existing Functional Classification	LOS E Capacity	Existing		Allowable ADT / V/C [a]	Project Traffic [b]	% of Project ADT [c]	EDU [d]
			Volume	LOS				
Deer Springs Road								
Twin Oaks Valley Rd to Sarver Ln	2.2E Lt Col	16,200	18,800	F	100	8,190	1.22%	43
Sarver Ln to Mesa Rock Rd	2.2E Lt Col	16,200	19,400	F	100	5,600	1.79%	63
Mesa Rock Rd to I-15	2.2E Lt Col	16,200	22,600	F	100	13,350	0.75%	26
Twin Oaks Valley Road								
Deer Springs Rd to Buena Creek Rd	2 Ln Col	15,000	20,700	F	300	8,000	3.75%	132
Buena Creek Rd to Cassou Rd	2 Ln Col	15,000	18,400	F	300	4,040	7.43%	261
Buena Creek Road								
S. Santa Fe Ave to Monte Vista Dr	2.2E Lt Col	16,200	9,200	D	200	2,390	8.37%	294
Monte Vista Dr to Twin Oaks Valley Rd	2.2E Lt Col	16,200	10,400	D	200	3,960	5.05%	178
Robelini Drive								
Sycamore Ave to South Santa Fe Ave	2.2E Lt Col	16,200	16,900	F	100	1,680	5.95%	209
South Santa Fe Avenue								
Woodland Dr to Buena Creek Rd	2.1B Com Col	19,000	15,900	E	200	310	64.52%	2,268

Footnotes:

a. Additional ADT that can be added before the Project has a significant direct impact and a mitigation measure is required.
b. The total traffic added to the segment by the Project.
c. The allowable ADT as a percent of the total Project traffic on that segment.
d. Allowable EDU on the segment prior to requiring mitigation measures.

TABLE 16–13

EXISTING + PROJECT + CUMULATIVE PROJECTS MITIGATION PHASING SUMMARY — INTERSECTIONS

Intersections		Mitigation	Existing [a]		Allowable # of Vehicles / Delay in Seconds [b]	% of Project Traffic [c]	EDU [d]
			Delay	LOS			
C-1.	Deer Springs Rd / I-15 NB Ramps	New Interchange (subject to Caltrans process)	38.4	D		18.2%	640
C-2.	Deer Springs Rd / I-15 SB Ramps	New Interchange (subject to Caltrans process)	60.8	E		10.8%	370
C-3.	Deer Springs Rd / Mesa Rock Rd	New Interchange (subject to Caltrans process)	23.3	C		27.7%	970
C-4.	Deer Springs Rd / Sarver Ln	Install a signal and provide one left-turn lane and one right-turn lane with overlap phasing SB, one shared through/right lane and one through lane WB and two through lanes and one left-turn lane EB.	30.1	D		10.8%	370
C-5.	Deer Springs Rd / Sycamore Rd	If not done by others, install a traffic signal.	>100.0	F	5 Trips	-	40
C-6.	Deer Springs Rd /Twin Oaks Valley Rd	Provide two through lanes and one right-turn lane SB, one left-turn lane and two through lanes NB and one left-turn lane and one right-turn lane EB with corresponding signal modifications.	44.1	D		8.6%	300
C-7.	Buena Creek Rd / Twin Oaks Valley Rd	Provide one left-turn lane and two through lanes and one right-turn lane SB, one shared left/through/right lane WB, one left-turn lane, one through lane and one shared through/right lane NB and two left-turn lanes and one shared through/right lane EB	26.2	C		49.3%	1,730
C-8.	Twin Oaks Valley Rd / San Marcos Boulevard	Contribute Fair share towards installing a dedicated southbound right-turn lane and the third westbound left-turn lane at this intersection.	118.6	F			910
C-9.	Buena Creek Rd /South Santa Fe Ave	SB exclusive right-turn lane	37.7	D		46.0%	1,610

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TABLE 16–13 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS MITIGATION PHASING SUMMARY — INTERSECTIONS

Intersections	Mitigation	Existing [a]		Allowable # of Vehicles / Delay in Seconds [b]	% of Project Traffic [c]	EDU [d]
		Delay	LOS			
C-11. Buena Creek Rd /Monte Vista Dr	Install a signal and provide one shared left/right lane SB, one through lane and one right-turn lane with right-turn-overlap phasing WB and one left-turn lane and one through lane EB.	70.2	F	2.0 Seconds	7.7%	260

Footnotes:

a. Higher of the peak hours.
b. Average delay (seconds per vehicle) that can be added to intersection before triggering significant impact (LOS E), or 2.0 seconds if the intersection already operates at LOS E or F.
c. Percent of Project traffic at which Project-related delay is just below threshold identified in "Allowable Delay" column.
d. Equivalent Dwelling Units equal to the percent of Project traffic identified.
e. Refer to section 2.6.1 of this report for more information on the Caltrans-lead process to implement this mitigation.

TABLE 16–14
EXISTING + PROJECT + CUMULATIVE PROJECTS MITIGATION PHASING SUMMARY — SEGMENTS

Street Segment	Existing Functional Classification	LOS E Capacity	Existing + Cumulative Projects		Allowable ADT [a]	Project Traffic [b]	% of Project ADT [c]	EDU [d]
			Volume	LOS				
Deer Springs Road								
Twin Oaks Valley Rd to Sarver Ln	2.2E Lt Col	16,200	24,500	F	100	8,190	1.22%	43
Sarver Ln to Mesa Rock Rd	2.2E Lt Col	16,200	24,500	F	100	5,600	1.79%	63
Mesa Rock Rd to I-15	2.2E Lt Col	16,200	25,000	F	100	13,350	0.75%	26
Twin Oaks Valley Road								
Deer Springs Rd to Buena Creek Rd	2 Ln Col	15,000	24,700	F	300	8,000	3.75%	132
Buena Creek Rd to Cassou Rd	2 Ln Col	15,000	20,000	F	300	4,040	7.43%	261
Richmar Rd to San Marcos Blvd	4 Ln Major Art	40,000	33,120	D	1,880	2,440	77.05%	2,708
Buena Creek Road								
S. Santa Fe Ave to Monte Vista Dr	2.2E Lt Col	16,200	17,100	F	100	2,390	4.18%	147
Monte Vista Dr to Twin Oaks Valley Rd	2.2E Lt Col	16,200	14,400	E	200	3,960	5.05%	178
Monte Vista Drive								
Foothill Dr to Buena Creek Rd	2.2E Lt Col	16,200	10,600	D	300	1,020	29.41%	1,034
Gopher Canyon Road								
Little Gopher Canyon Rd to I-15 Ramps	2.2E Lt Col	16,200	16,900	F	100	110	90.91%	3,195
Robelini Drive								
Sycamore Ave to South Santa Fe Ave	2.2E Lt Col	16,200	18,000	F	100	1,680	5.95%	209

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TABLE 16–14 (CONTINUED)
EXISTING + PROJECT + CUMULATIVE PROJECTS MITIGATION PHASING SUMMARY — SEGMENTS

Street Segment	Existing Functional Classification	LOS E Capacity	Existing + Cumulative Projects		Allowable ADT [a]	Project Traffic [b]	% of Project ADT [c]	EDU [d]
			Volume	LOS				
South Santa Fe Avenue								
Woodland Dr to Buena Creek Rd	2.1B Com Col	19,000	16,500	E	200	330	60.61%	2,130

Footnotes:

a. Additional ADT that can be added before the Project has a significant direct impact and a mitigation measure is required.
b. The total traffic added to the segment by the Project.
c. The allowable ADT as a percent of the total Project traffic on that segment.
d. Allowable EDU on the segment prior to requiring mitigation measures.

17.0 PROJECT MITIGATION OPTIONS FOR DEER SPRINGS ROAD

Two mitigation measure options were evaluated for Deer Springs Road between Sarver Lane and Mesa Rock Road. ***Table 17-1*** below summarizes the post mitigation operations with Deer Springs Road improved to (1) a 4.1B Major Road and (2) a 2.1B Community Collector segment with a continuous turn lane. As seen in *Table 17–1*, Deer Springs Road is calculated to operate at an acceptable LOS C if improved to a 4.1B Major Road and at LOS F with the improvement to a 2.1B Community Collector classification.

TABLE 17–1
ALTERNATIVE DEER SPRINGS ROAD MITIGATION OPTIONS – SARVER LANE TO MESA ROCK ROAD
EXISTING + PROJECT SCENARIO

Street Segment	**Prior to Mitigation [a]**				**Post Alternative Mitigation [b]**			
	Functional Classification [c]	**LOS E Capacity [d]**	**Volume**	**LOS [e]**	**Mitigated Roadway Classification [f]**	**LOS E Capacity**	**Volume**	**LOS**
Sarver Ln to Mesa Rock Rd	2.2E Lt Col	16,200	25,000	F	4.1 B Maj Road 2.1B Comm Collector	34,200 19,000	25,000 25,000	C F[g]

Footnote:

a. Delay and level of service without Project traffic, prior to the implementation of mitigation.
b. Delay and level of service with Project traffic and mitigation.
c. The existing roadway classification at which the facility operates, prior to mitigation.
d. Capacity of the roadway per the County *Table 1, Average Daily Vehicle Trips.*
e. Level of Service.
f. The mitigated roadway classification.
g. Segment impact not mitigated.