LINSCOTT LAW & GREENSPAN
engineers

TRANSPORTATION IMPACT ANALYSIS

MONTIEL ROAD OFFICE

San Marcos, California
January 17, 2019

LLG Ref. 3-18-3017

Prepared by:
K.C. Yellapu, P.E.
Associate Principal
&
Charlene Sadiarin, P.E.
Transportation Engineer II

Under the Supervision of:
John Boarman, P.E.
Principal

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has prepared the following transportation impact study to determine and evaluate the potential impacts to the local roadway system due to the proposed Montiel Road Office project. The project site is located at 2375/2355 Montiel Road in the City of San Marcos.

The project proposes the development of a 32,971 square-foot (sf) office building. Access to the proposed project is proposed via two driveways along Montiel Road.

The project is calculated to generate 659 average daily traffic (ADT) with 92 trips during the AM peak hour (83 entering and 9 exiting) and 86 trips during the PM peak hour (17 entering and 69 exiting).

Based on the analysis and the established significance criteria, no significant traffic impacts were determined. However, the following access related improvements should be considered:

- Install stop signs at both access driveways.
- Provide a left-turn pocket to the western driveway.
- Participate in a regional carpool and vanpool matching program through *iCommute.*
- Provide sight distance and curb radius in conformance with City's standards at all project driveways.
- Provide sufficient ADA compliant pedestrian access to all the project facilities.
- Provide sufficient bicycle parking within the project.

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TRANSPORTATION IMPACT ANALYSIS

MONTIEL ROAD OFFICE

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1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared the following transportation impact study for the proposed Montiel Road Office project. The project site is located at 2375/2355 Montiel Road in the City of San Marcos. ***Figure 1–1*** shows the vicinity map. ***Figure 1–2*** shows a more detailed project area map.

The following items are included in this traffic study:

- Project Description
- Existing Conditions Discussion
- Bicycle, Pedestrian, and Transit Conditions Discussion
- Analysis Approach and Methodology
- Significance Criteria
- Existing Conditions Analysis
- Trip Generation/Distribution/Assignment
- Cumulative Projects Discussion
- Near-Term Analysis
- Horizon Year Analysis
- Access and Other Issues Discussion
- Significance of Impacts and Mitigation Measures

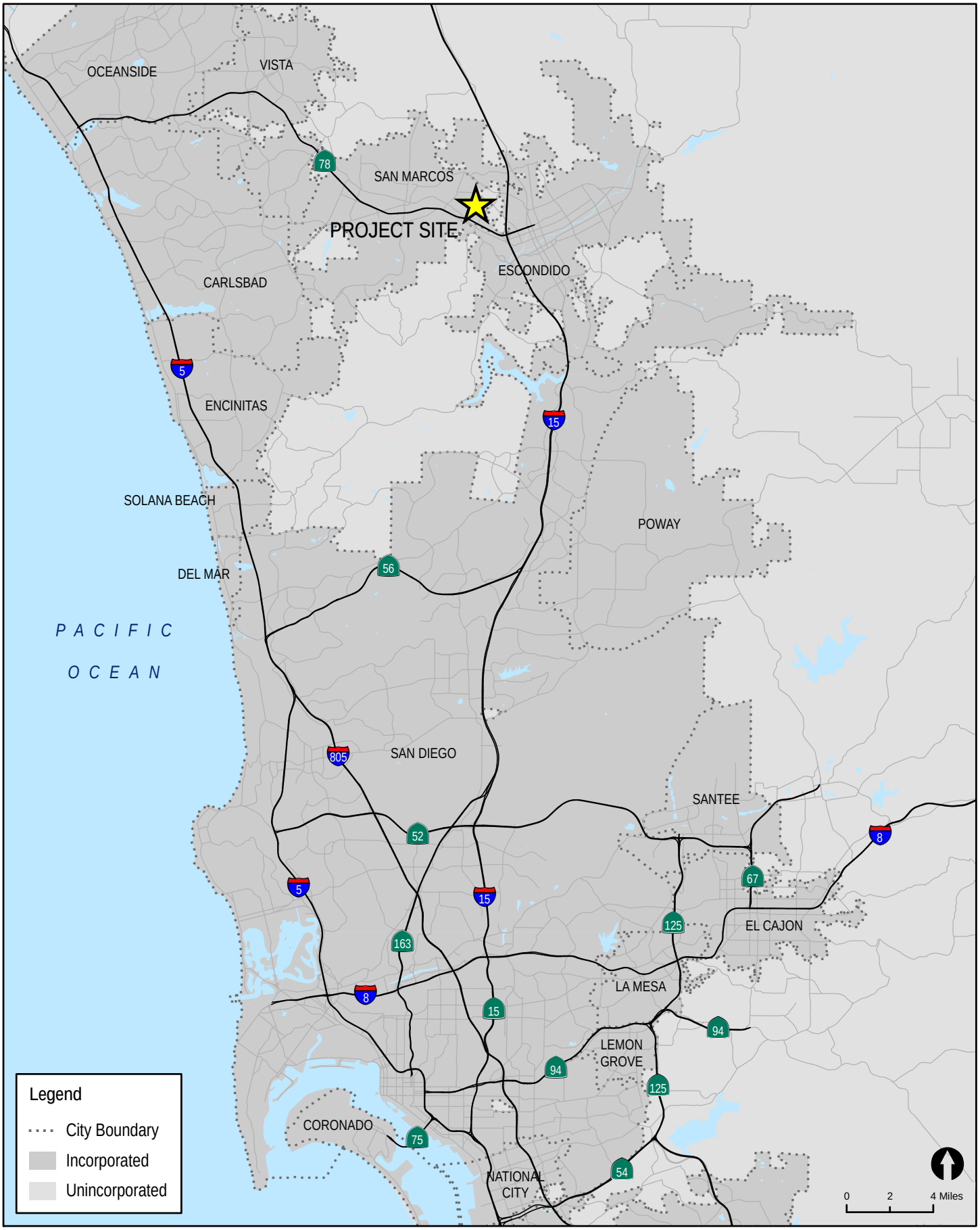

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Figure 1-1

Vicinity Map

MONTIEL ROAD OFFICE PROJECT

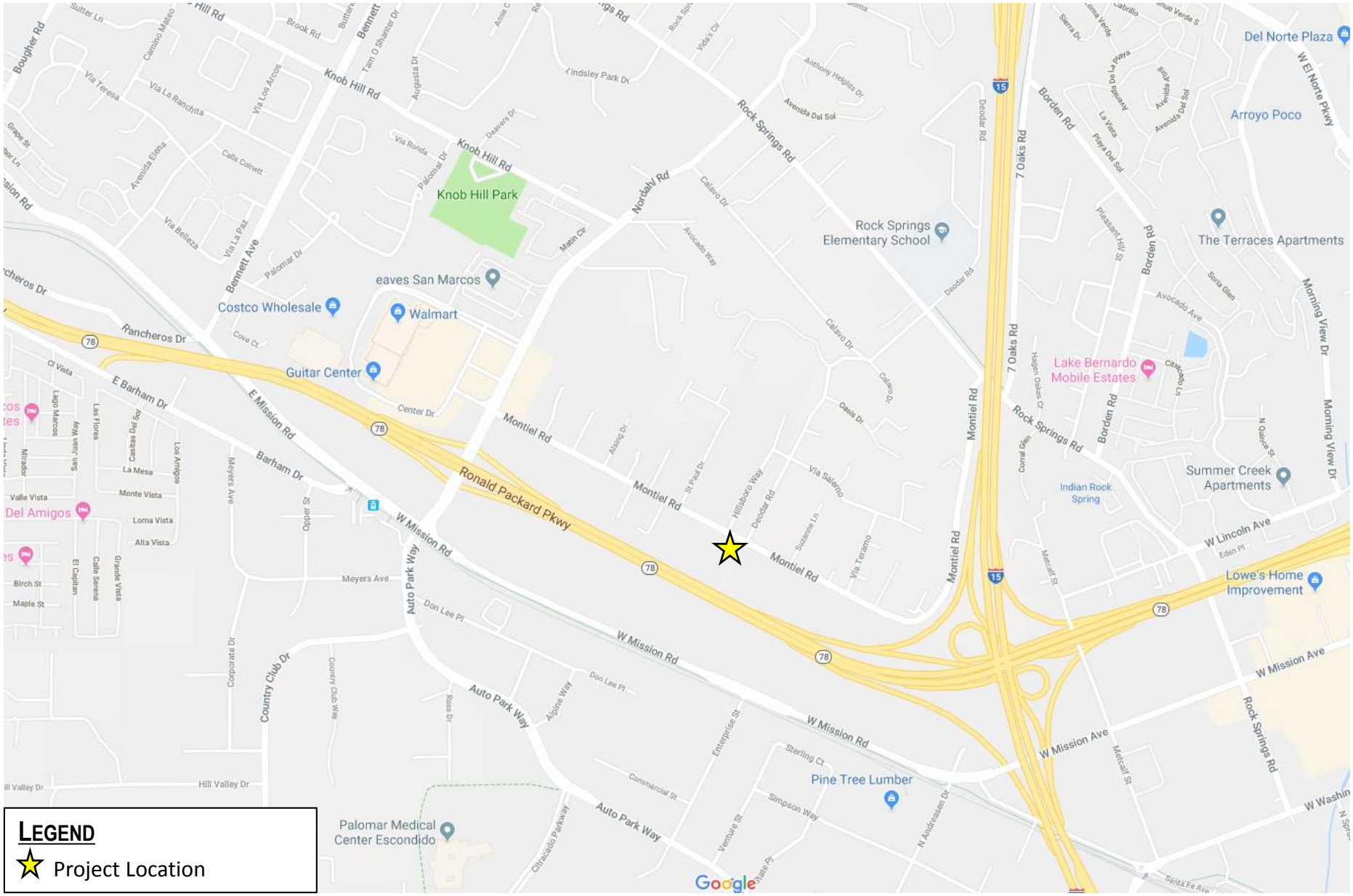

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Figure 1-2

Project Area Map

MONTIEL ROAD OFFICE PROJECT

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2.0 PROJECT DESCRIPTION

The project proposes the development of a 32,971 square-foot (sf) office building. Access to the proposed project is proposed via two driveways along Montiel Road.

Figure 2–1 depicts the project's site plan.

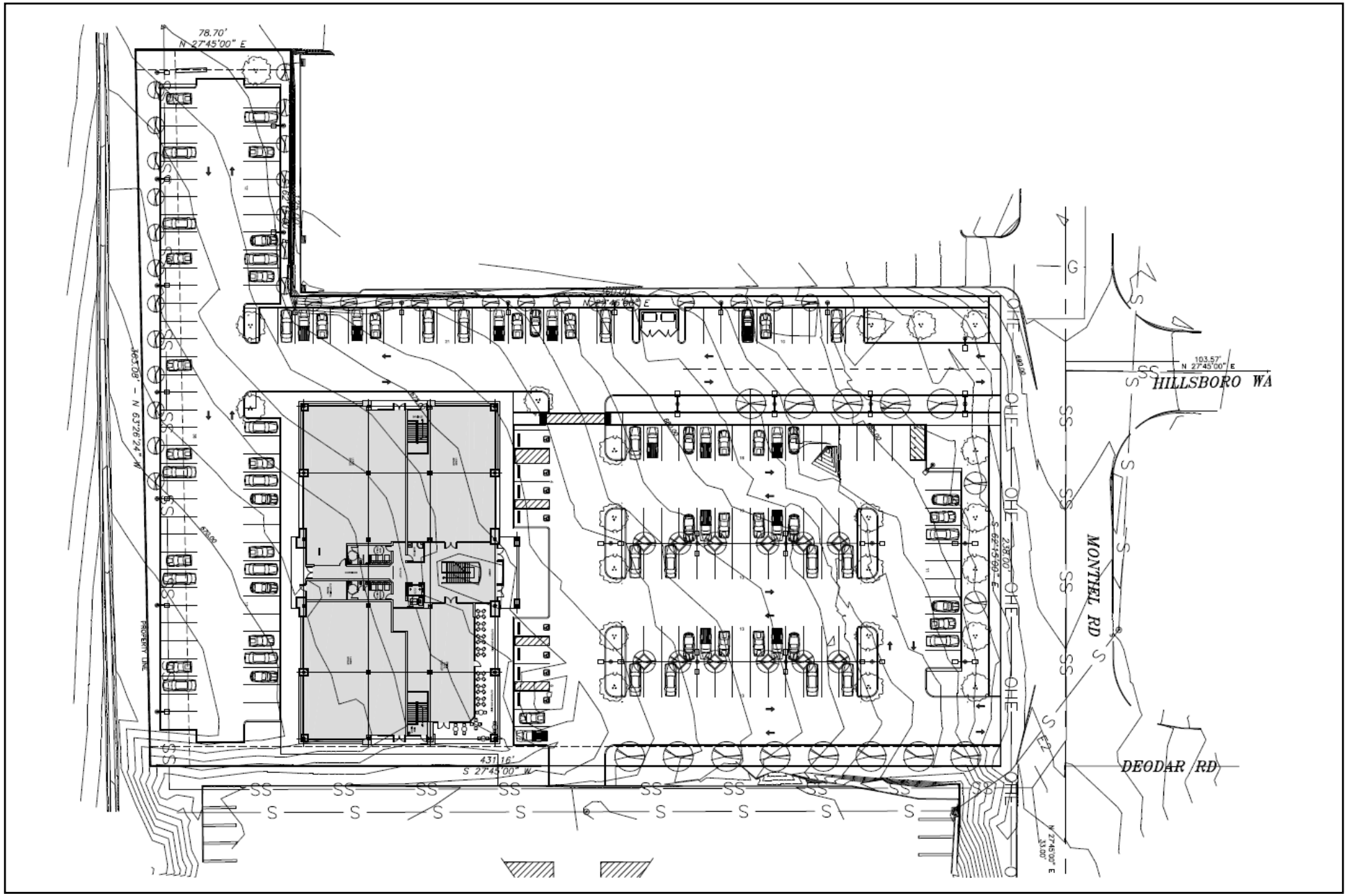

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Figure 2-1

Site Plan

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3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram including, intersection control and lane configurations. The study area includes the following intersections and street segments based on the anticipated distribution of the project traffic:

Intersections

1. Nordahl Road / Center Drive (South)
2. Nordahl Road / Montiel Road
3. Nordahl Road / SR-78 WB Ramps
4. Nordahl Road / SR-78 EB Ramps
5. Mission Road / Auto Park Way
6. Rock Springs Road / Montiel Road

Segments

- Montiel Road, from Nordahl Lane to Leora Lane
- Montiel Road, from Leora Lane to Rock Springs Road
- Nordahl Road, from Montiel Road to SR 78 Ramps

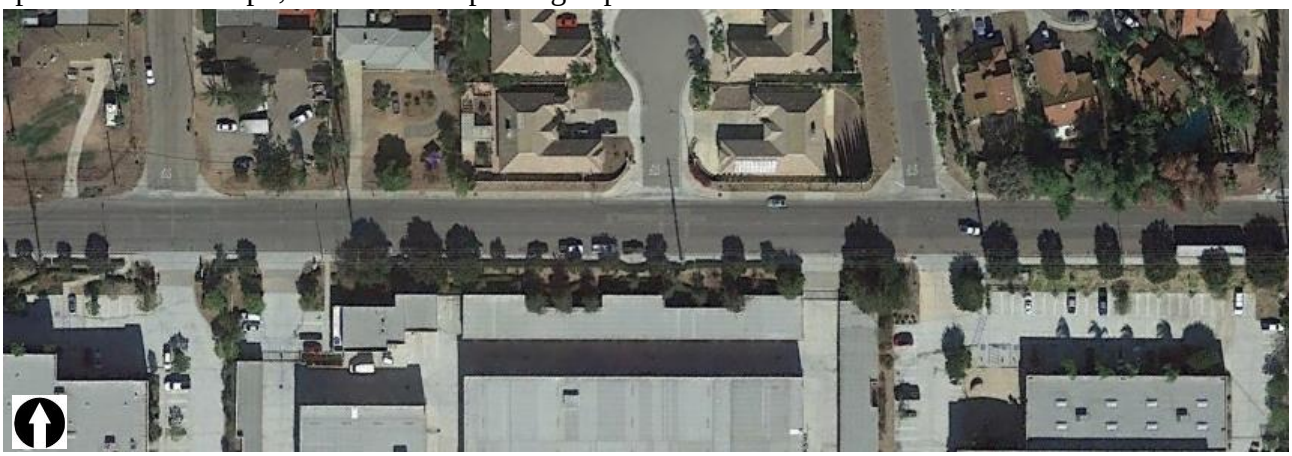
3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Nordahl Road, between Center Drive (South) and the SR-78, is classified as a 4-Lane Major Arterial in the *City of San Marcos General Plan Mobility Element*. It is currently constructed as a 5 to 8 lane divided roadway depending on the location due to turn pockets and/or the extension of turn pockets. The posted speed limit is 40 mph.

Montiel Road, between Nordahl Road and Leora Lane, is unclassified in the *City of San Marcos General Plan Mobility Element*. It is currently constructed as a 2 lane undivided roadway with a two-way left-turn lane. The posted speed limit is 40 mph.

Montiel Road, between Leora Lane and Rock Springs Road, is unclassified in the *City of San Marcos General Plan Mobility Element*. It is constructed as a 2 lane undivided roadway. The posted speed limit is 40 mph, and on-street parking is permitted.



3.2 Existing Traffic Volumes

Table 3–1 summarizes available Average Daily Traffic volumes (ADTs) from counts conducted in December 2018. Counts at the study area intersections, including bicycle and pedestrian counts, were also conducted in September and December 2018 between 7:00-9:00 AM and 4:00-6:00 PM. Traffic counts were conducted while schools were in session.

Figure 3–2 shows the existing traffic volumes. ***Appendix A*** contains the count sheets.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT[a]
Montiel Road	
Nordahl Lane to Leora Lane	7,350
Leora Lane to Rock Springs Road	4,620
Nordahl Road	
Montiel Road to SR 78 Ramps	39,870

Footnotes:

a. Average Daily Traffic Volumes (rounded up to the nearest ten).

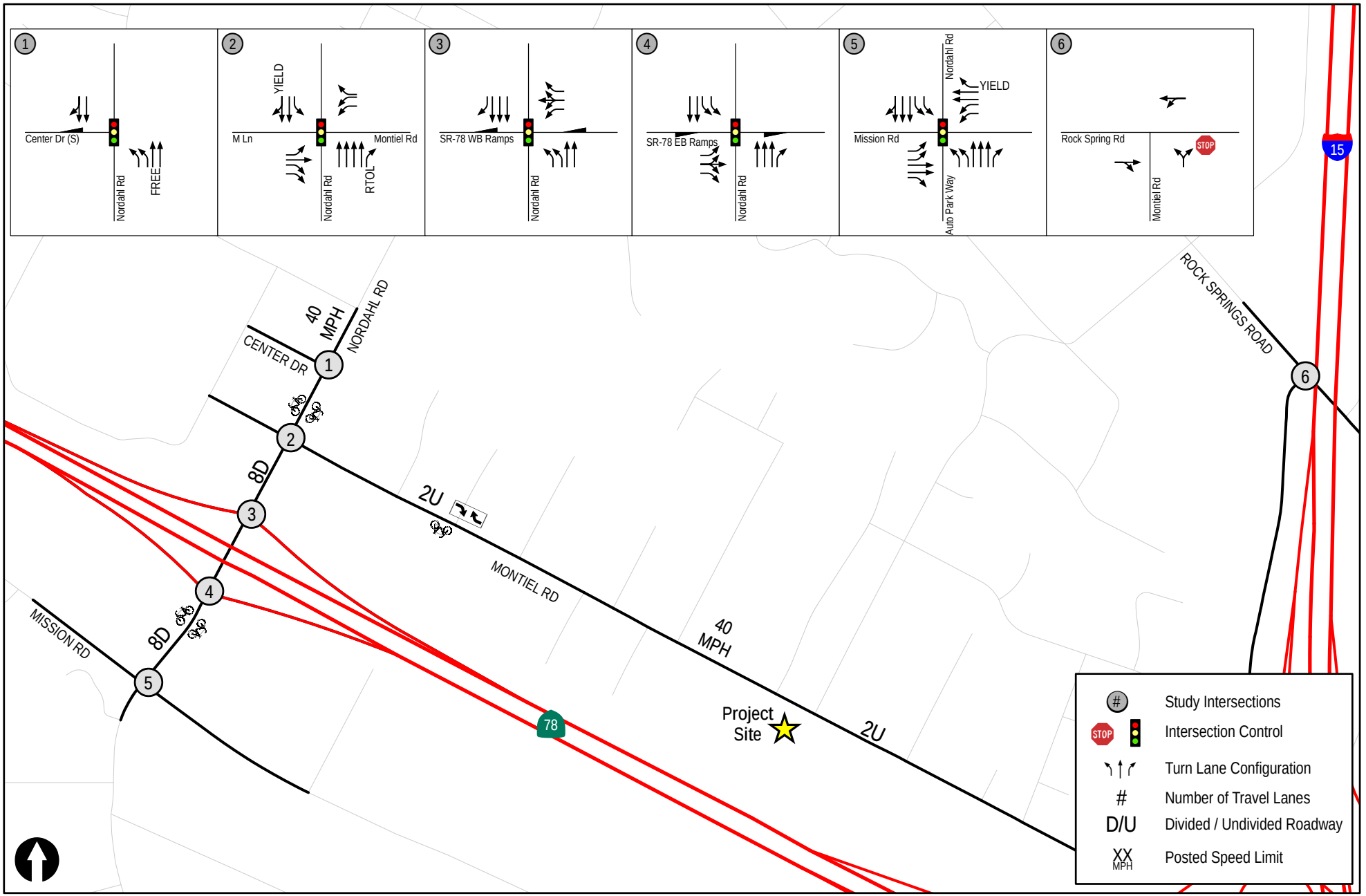


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Figure 3-1

Existing Traffic Conditions

Montiel Road Office Project

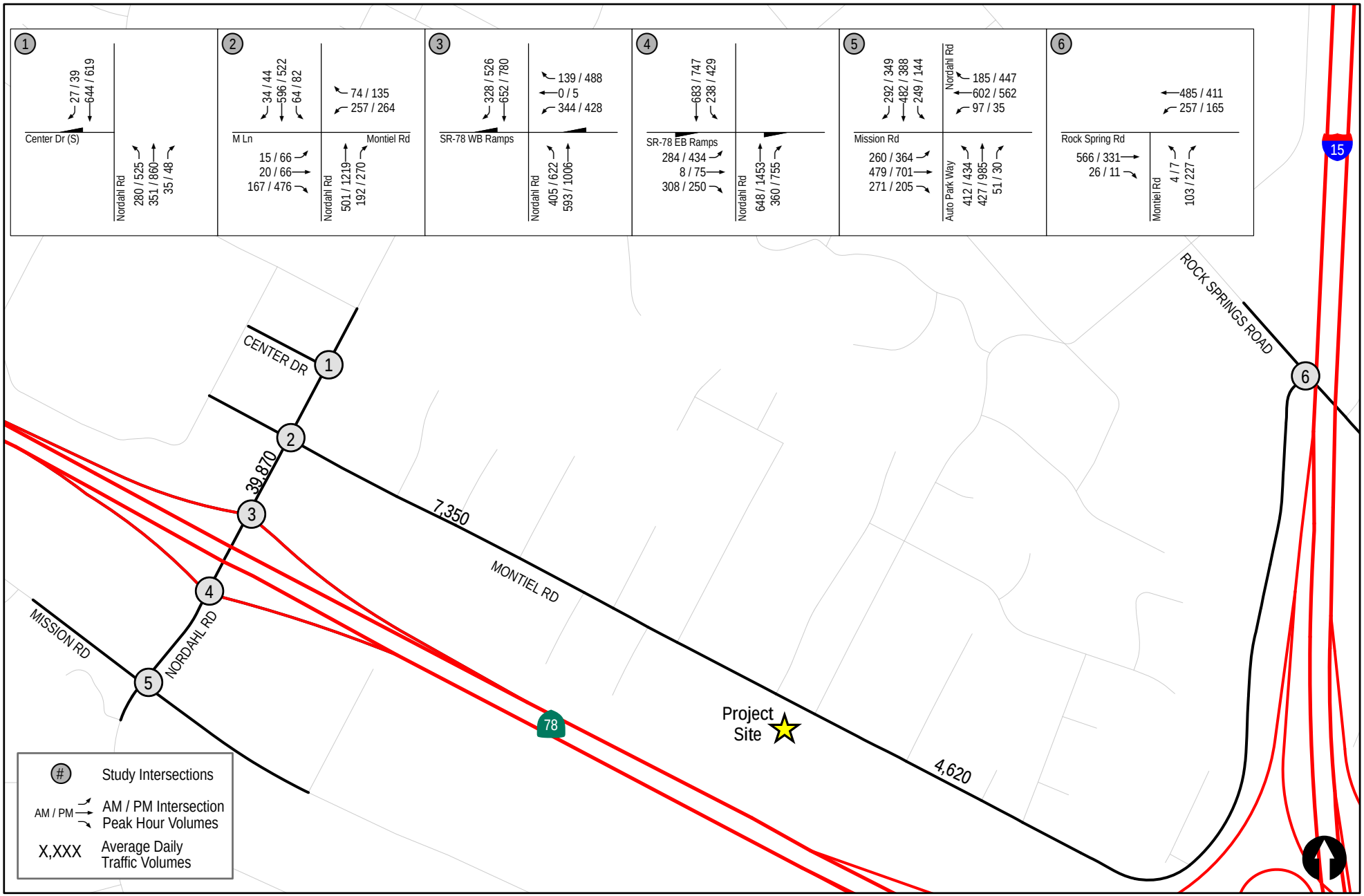

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Figure 3-2

Existing Traffic Volumes

Montiel Road Office Project

4.0 BICYCLE, PEDESTRIAN, AND TRANSIT CONDITIONS

4.1 Existing Bicycle Network

Currently, Class II bicycle facilities (i.e. bike lanes) are provided on the following study street segments:

- Nordahl Road, north of Center Drive (south) to Mission Road (both sides);
- Auto Park Way, south of Mission Road (both sides); and
- Montiel Road, from Nordahl Road to Alsing Drive (south side).

4.2 Existing Pedestrian Conditions

Pedestrian sidewalks are generally provided along Nordahl Road within the study area and on the south side of Montiel Road between Nordahl Road and Alsing Drive. Pedestrian crossings are prohibited at the following locations:

- Nordahl Road / Montiel Road (across the south leg);
- Nordahl Road / SR-78 WB Ramps (across the east and west legs);
- Nordahl Road / SR-78 EB Ramps (across the east and west legs);
- San Marcos Boulevard / SR-78 WB Ramps (across the west and south legs).

4.3 Existing Transit Conditions

Transit service is provided to the project area via the Breeze Bus Route 353 and Bus Route 305. Route 353 provides bus service between the Nordahl Marketplace and Escondido Transit Center, with a stop within the study along Auto Park Way. The route operates hourly between the hours of 6:00 AM and 8:00 PM every day. Route 305 provides bus service between the Vista Transit Center and the Escondido Transit Center, with a stop within the study along Mission Road. The route operates hourly between the hours of 4:00 AM and 12 midnight, Monday through Friday, and between the hours of 5:00 AM and 11:30 PM on Saturday and Sunday.

5.0 ANALYSIS APPROACH AND METHODOLOGY

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment or intersection under various traffic volume loads. It 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. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

5.1 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 19 of the *Highway Capacity Manual 6th Edition (HCM 6),* with the assistance of the *Synchro 10* computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix B***.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 20 and Chapter 21 of the *HCM 6* with the assistance of the *Synchro 10* computer software. A more detailed explanation of the methodology is attached in *Appendix B.*

5.2 Street Segments

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

6.0 SIGNIFICANCE CRITERIA

6.1 City of San Marcos & City of Escondido

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 6–1*** 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 6–1*, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated.

TABLE 6–1
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.)
D, 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. The acceptable level of service for freeways, roadways and intersections is generally LOS A through LOS D.

6.2 County of San Diego

Since the Montiel Road / Rock Springs Road intersection is within County of San Diego limits, this section describes the criteria utilized to evaluate potential significant impacts based on the *County of San Diego Guidelines for Determining Significance—Transportation and Traffic*, dated June 30, 2009 with a second modification effective August 24, 2011.

6.2.1 *Unsignalized Intersections*

Table 6–2 was obtained from County guidelines and summarizes the allowable increases in delay or traffic volumes at intersections. Exceeding the thresholds in *Table 6–2* would result in a significant impact.

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

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, 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.

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 6–2* 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.

7.0 ANALYSIS OF EXISTING CONDITIONS

7.1 Peak Hour Intersection Levels of Service

Table 7–1 summarizes the peak hour intersection operations for the existing conditions. As seen in *Table 7–1*, all intersections are calculated to currently operate at LOS D or better.

Appendix D contains the existing intersection analysis worksheets.

7.2 Daily Street Segment Levels of Service

Table 7–2 summarizes the existing roadway segment operations. As seen in *Table 7–2*, all the study area segments are calculated to currently operate at LOS C or better.

TABLE 7–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. Nordahl Road / Center Drive (South)	Signal	AM PM	23.7 38.6	C D
2. Nordahl Road / Montiel Road	Signal	AM PM	16.5 26.6	B C
3. Nordahl Road / SR-78 WB Ramps	Signal	AM PM	27.0 47.2	C D
4. Nordahl Road / SR-78 EB Ramps	Signal	AM PM	16.7 32.4	B C
5. Mission Road / Auto Park Way	Signal	AM PM	48.8 54.1	D D
6. Rock Springs Road / Montiel Road	OWSC[c]	AM PM	24.1 15.0	C C

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. OWSC – One-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
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	Existing Roadway Configurations	Capacity (LOS E) [a]	ADT [b]	V/C [d]	LOS [c]
Montiel Road					
Nordahl Lane to Leora Lane	2-Lane Collector w/ TWLTL[e]	15,000	7,350	0.490	C
Leora Lane to Rock Springs Road	2-Lane Collector	8,000	4,620	0.578	C
Nordahl Road					
Montiel Road to SR 78 Ramps	8-Lane Prime Arterial	70,000	39,870	0.570	B

Footnotes:

a. Capacities based on the City of San Marcos's Roadway Classification Table.
b. Average Daily Traffic Volumes.
c. Level of Service.
d. Volume to Capacity.
e. TWLTL: Two-Way Left-Turn Lane

8.0 CUMULATIVE PROJECTS

There are other planned project within the vicinity which could potentially add traffic to the roadways and intersections in the study area. Based on research at the City of San Marcos, City of Escondido and County of San Diego, the cumulative projects listed in ***Appendix E*** were included in the traffic analysis.

Land use assumptions contained in the SANDAG Series 12 Model within the project area were reviewed, and cumulative projects which were not already included in the model were added. In order to account for other unforeseen cumulative projects and regional traffic growth, traffic forecasts from the SANDAG Series 12 Model were also utilized to forecast cumulative projects traffic volumes.

Figure 8–1 illustrates the peak hour and ADT segment volumes for the Existing + Cumulative Projects scenario.

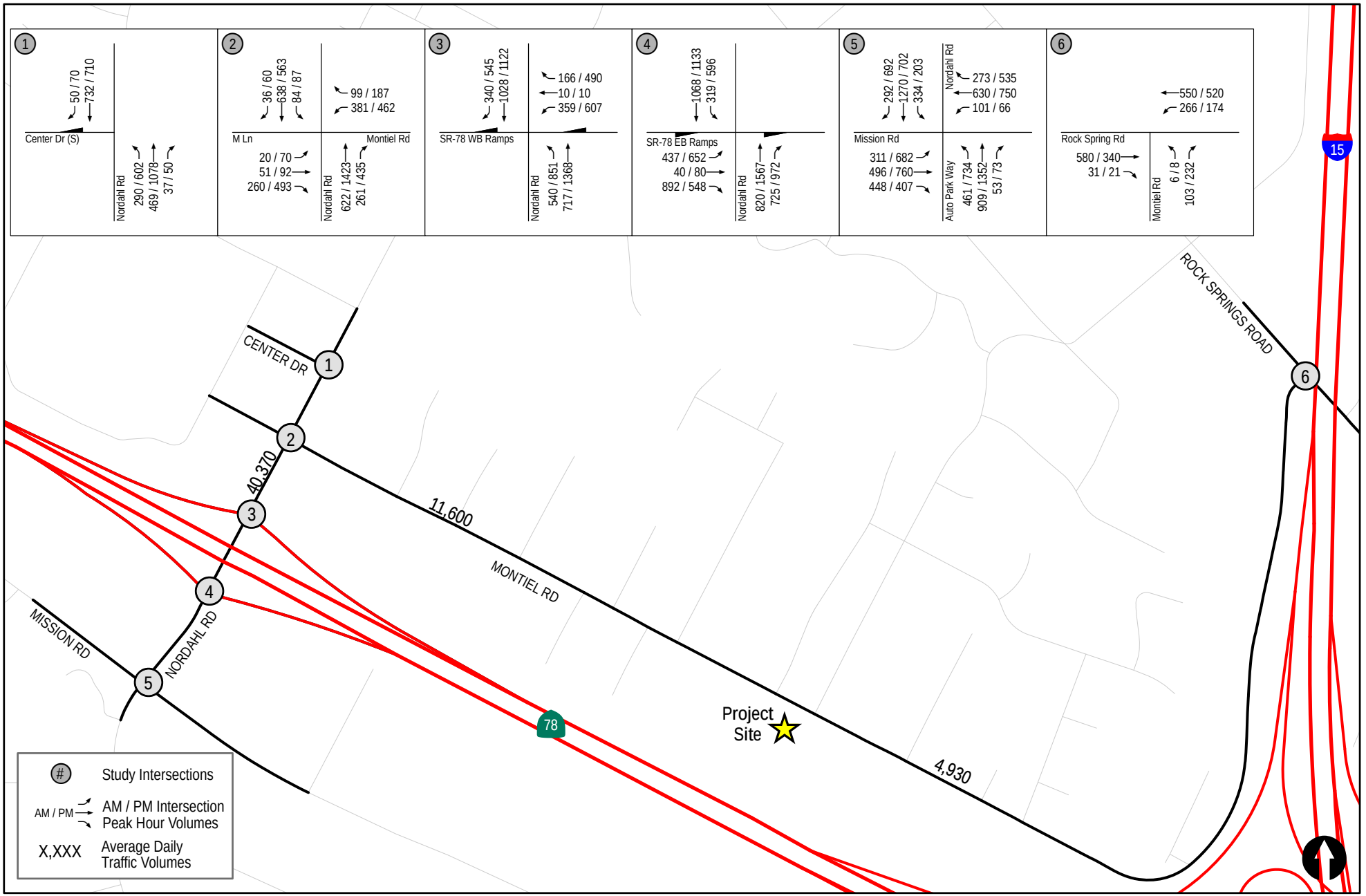

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Figure 8-1

Existing + Cumulative Projects Traffic Volumes

Montiel Road Office Project

9.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

9.1 Trip Generation

Table 9–1 tabulates the total project traffic generation based on the data contained in the SANDAG's trip generation guide for a standard commercial office building. The total project is calculated to generate approximately 659 ADT with 83 inbound / 9 outbound trips during the AM peak hour and 17 inbound / 69 outbound trips during the PM peak hour.

TABLE 9–1
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
		Rate[a]	Volume	% of ADT	In:Out Split	Volume In	Volume Out	% of ADT	In:Out Split	Volume In	Volume Out
Office	32.97 KSF	20 / KSF	659	14%	9:1	83	9	13%	2:8	17	69

Footnotes:
a. Rate is based on SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002
b. KSF = 1,000 square feet

9.2 Trip Distribution/Assignment

The traffic generated by the proposed project was distributed and assigned based on anticipated traffic patterns to and from the site. ***Figure 9–1*** shows the project traffic distribution. ***Figure 9–2*** shows the project traffic volumes. ***Figure 9–3*** shows the Existing + Project traffic volumes. ***Figure 9–4*** shows the Existing + Cumulative Projects + Project traffic volumes.

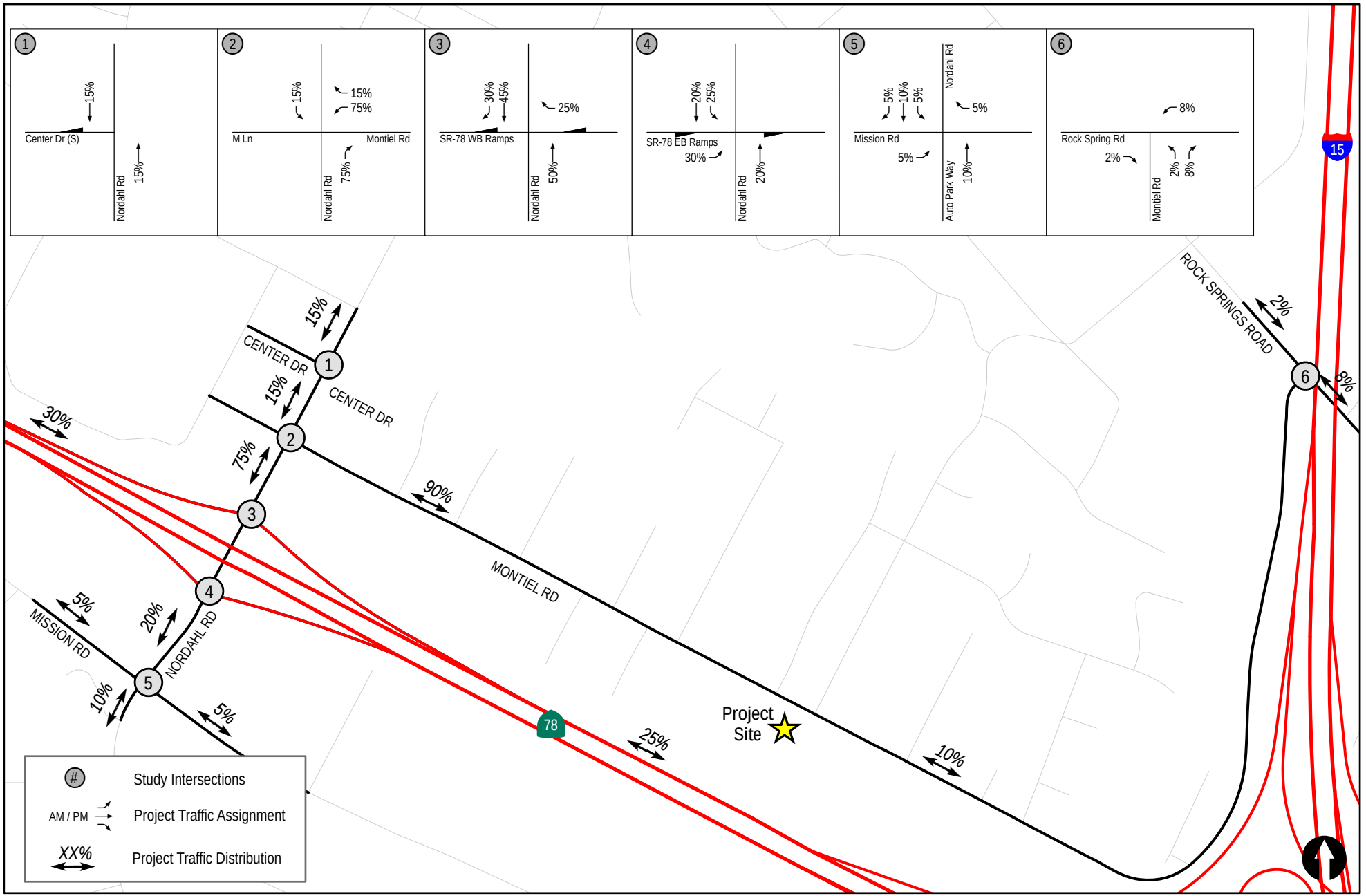

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Figure 9-2

Project Traffic Distribution

Montiel Road Office Project

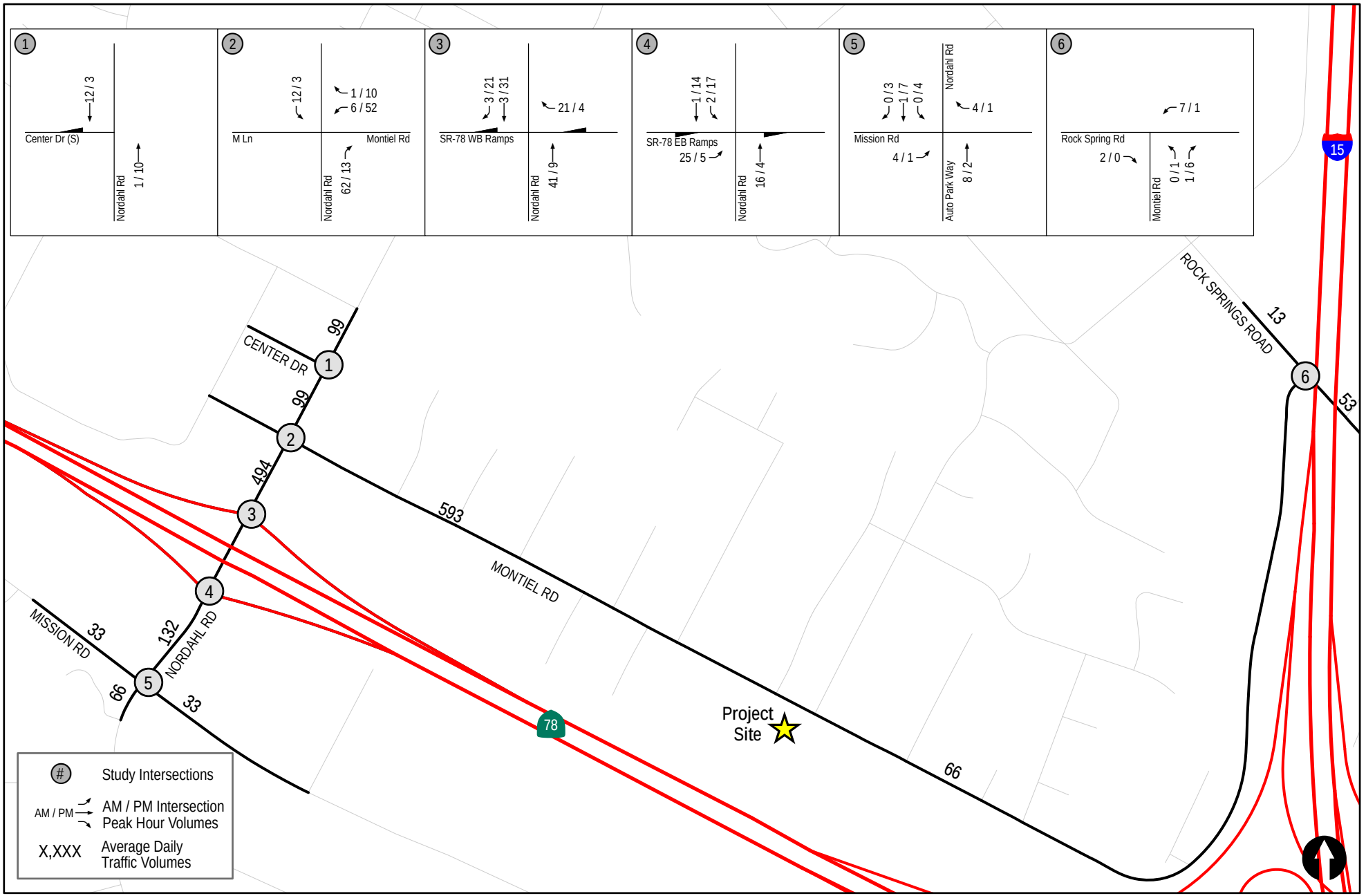

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Figure 9-2

Project Traffic Volumes

Montiel Road Office Project

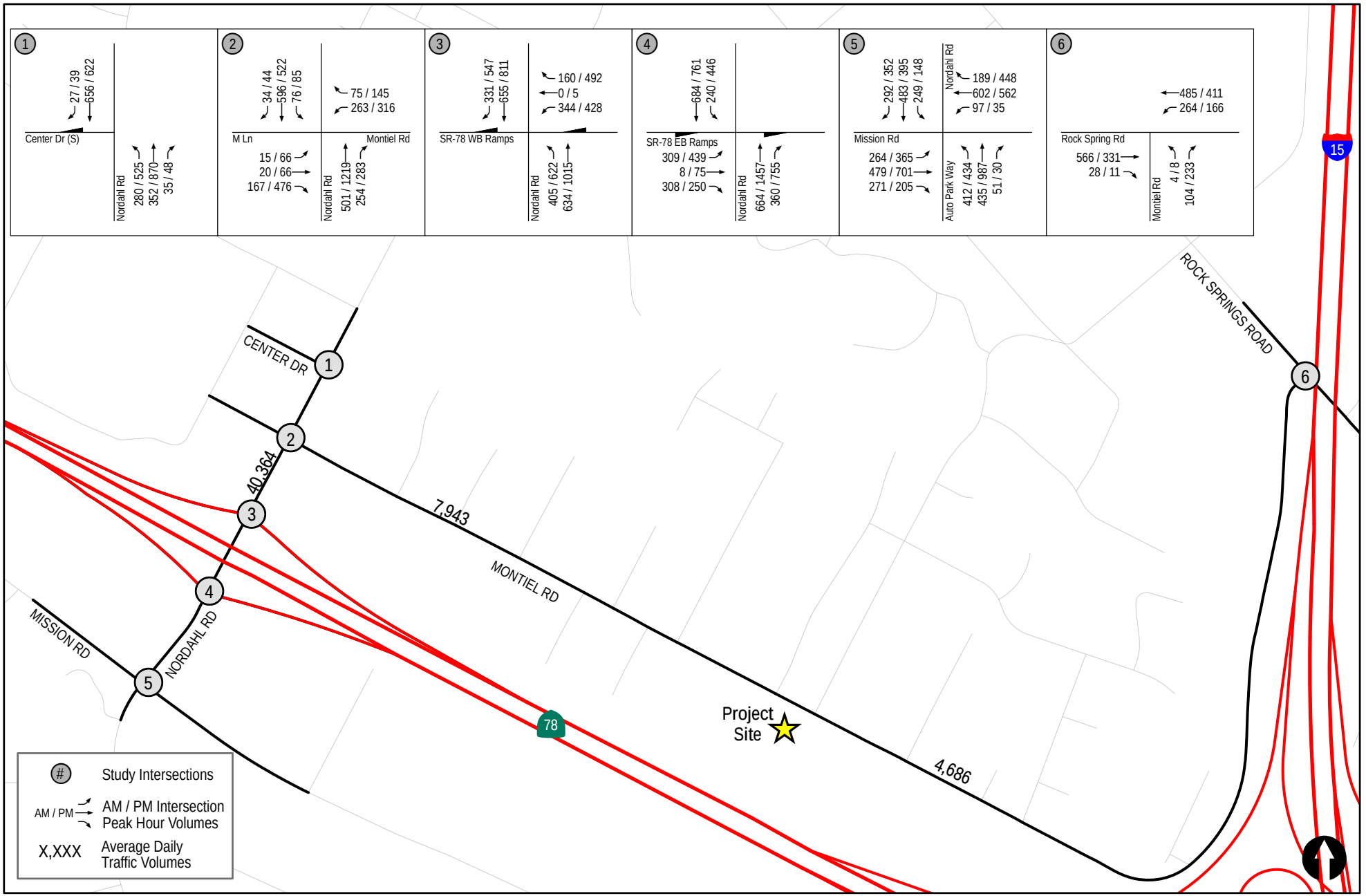

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Figure 9-3

Existing + Project Traffic Volumes

Montiel Road Office Project

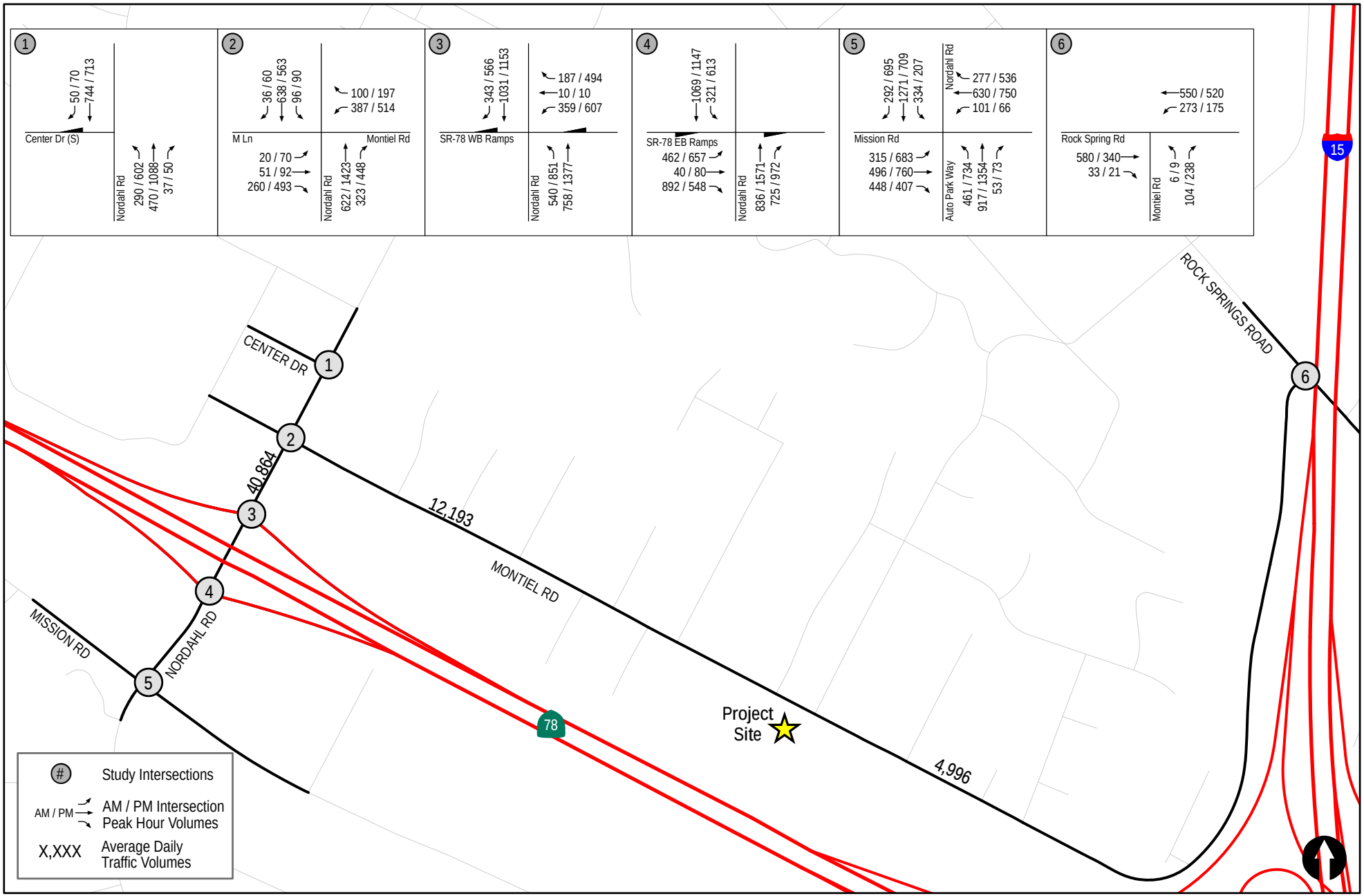

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Figure 9-4

Existing + Cumulative Projects + Project Traffic Volumes

Montiel Road Office Project

10.0 ANALYSIS OF NEAR-TERM SCENARIOS

10.1 Existing + Project

10.1.1 *Intersection Analysis*

Table 10–1 summarizes the intersection operations for the Existing + Project scenario. As seen in *Table 10–1*, with the addition of project traffic, all of the study intersections are calculated to operate at LOS D or better.

Appendix F contains the Existing + Project intersection analysis worksheets.

10.1.2 *Segment Operations*

Table 10–2 summarizes the roadway segment operations for the Existing + Project scenario. As seen in *Table 10–2*, with the addition of project traffic, all of the study segments are calculated to operate at LOS C or better.

10.2 Existing + Cumulative Projects

10.2.1 *Near-Term Baseline Conditions*

No network changes were identified or assumed for the Near-Term analysis.

10.2.2 *Intersection Analysis*

Table 10–1 summarizes the intersection operations for the Existing + Cumulative Projects scenario. As seen in *Table 10–1*, all of the study intersections are calculated to operate at LOS D or better except at the following intersections:

- Nordahl Road / SR-78 WB Ramps (LOS E during the PM peak hour)
- Nordahl Road / SR-78 EB Ramps (LOS F during both the AM & PM peak hours)
- Nordahl Road / Mission Road / Auto Park Way (LOS F during both the AM & PM peak hours)

Appendix G contains the Existing + Cumulative Projects intersection analysis worksheets.

10.2.3 *Segment Operations*

Table 10–2 summarizes the roadway segment operations for the Existing + Cumulative Projects scenario. As seen in *Table 10–2*, all of the study segments are calculated to operate at LOS D or better.

10.3 Existing + Cumulative Projects + Project

10.3.1 *Intersection Analysis*

Table 10–1 summarizes the intersection operations for the Existing + Cumulative Projects + Project scenario. As seen in *Table 10–1*, with the addition of project traffic, all of the study intersections are calculated to operate at LOS D or better except at the following intersections:

- Nordahl Road / SR-78 WB Ramps (LOS E during the PM peak hour);
- Nordahl Road / SR-78 EB Ramps (LOS F during both the AM and PM peak hours)
- Mission Road / Auto Parkway (LOS F during both the AM and PM peak hours)

Although the intersections listed above are operating at LOS E or LOS F, the increase in delay due to the project is less than 2 seconds. **Therefore, no significant impacts are identified for the Existing + Cumulative Projects + Project scenario.**

Appendix H contains the Existing + Cumulative Projects + Project analysis worksheets.

10.3.2 *Segment Operations*

Table 10–2 summarizes the roadway segment operations for the Existing + Cumulative Projects + Project scenario. As seen in *Table 10–2*, with the addition of project traffic, all of the study segments are calculated to operate at LOS D.

Base on the significance criteria, <u>no</u> significant impacts are calculated along the study street segments as the Project contribution does not exceed the allowable thresholds.

TABLE 10–1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Δ[c]	Existing + Cumulative		Existing + Cumulative + Project		Δ
			Delay[a]	LOS[b]	Delay	LOS		Delay	LOS	Delay	LOS	
1. Nordahl Road / Center Drive (South)	Signal	AM	23.7	C	23.9	C	0.2	38.5	D	39.3	D	0.8
		PM	38.6	D	39.4	D	0.8	52.0	D	52.5	D	0.5
2. Nordahl Road / Montiel Road	Signal	AM	16.5	B	16.7	B	0.2	22.4	C	22.5	C	0.1
		PM	26.6	C	27.5	C	0.9	30.3	C	32.9	C	2.6
3. Nordahl Road / SR-78 WB Ramps	Signal	AM	27.0	C	27.1	C	0.1	24.7	C	24.8	C	0.1
		PM	47.2	D	47.6	D	0.4	57.0	E	57.5	E	0.5
4. Nordahl Road / SR-78 EB Ramps	Signal	AM	16.7	B	17.0	B	0.3	79.6	F	81.2	F	1.6
		PM	32.4	C	33.6	C	1.2	118.7	F	120.0	F	1.3
5. Mission Road / Auto Park Way	Signal	AM	48.8	D	48.8	D	0.0	96.8	F	97.0	F	0.2
		PM	54.1	D	54.1	D	0.0	176.6	F	177.2	F	0.6
6. Rock Springs Road / Montiel Road	OWSC[d]	AM	24.1	C	24.4	C	1[c]	37.2	D	34.0	D	1[c]
		PM	15.0	C	15.3	C	7[c]	16.1	C	16.6	C	7[c]

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. For San Marcos intersections, Δ denotes a project-induced increase in delay. For County intersections, Δ denotes a project-induced increase in traffic on the critical movement.
d. OWSC – One-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
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 10–2
NEAR-TERM STREET SEGMENT OPERATIONS

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project			Δ[e]	Existing + Cumulative Projects			Existing + Cumulative Projects + Project			Δ
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS		ADT	V/C	LOS	ADT	V/C	LOS	
Montiel Road															
Nordahl Lane to Leora Lane	15,000	7,350	0.490	C	7,943	0.530	C	0.040	11,600	0.773	D	12,193	0.813	D	0.040
Leora Lane to Rock Springs Road	8,000	4,620	0.578	C	4,686	0.586	C	0.008	4,930	0.616	C	4,996	0.625	C	0.008
Nordahl Road															
Montiel Road to SR 78 Ramps	70,000	39,870	0.570	B	40,364	0.577	B	0.007	40,370	0.577	B	40,864	0.584	C	0.007

Footnotes:

a. Capacities based on City of San Marcos's Roadway Classification & LOS table
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

11.0 YEAR 2035 ANALYSIS

11.1 Year 2035 without Project Forecasted Volumes and Baseline Conditions

To forecast future traffic volumes for Year 2035, the SANDAG Series 12 Model was utilized. The forecasted ADT volumes were obtained from the model and used to calculate peak hour volumes based partially on the existing relationship between the ADT and peak hour volumes.

Several other Traffic Engineering principals and factors such as the K-factor and D-factor were also considered in the forecast analysis (see ***Appendix I*** for definitions). The forecast volumes were also checked for consistency between intersections, where no driveways or roadways exist between intersections and were compared to existing volumes for accuracy.

No network improvements were assumed for the Year 2035 analysis.

Figure 11–1 shows the Year 2035 forecasted traffic volumes. ***Figure 11–2*** shows the Year 2035 + Project traffic volumes.

11.2 Year 2035

11.2.1 *Intersection Analysis*

Table 11–1 summarizes the intersection operations for the Year 2035 scenario. As seen in *Table 11–1*, the following intersections are calculated to operate at LOS E or LOS F:

- Nordahl Road / Center Drive (South) (LOS E during the PM peak hour);
- Nordahl Road / SR-78 WB Ramps (LOS F during the PM peak hour);
- Nordahl Road / SR-78 EB Ramps (LOS F during both the AM and PM peak hours);
- Mission Road / Auto Parkway (LOS F during both the AM and PM peak hours); and
- Rock Springs Road / Montiel Road (LOS F during the AM peak hour).

Appendix J contains the Year 2035 intersection analysis worksheets.

11.2.2 *Segment Operations*

Table 11–2 summarizes the roadway segment operations for the Year 2035 scenario. As seen in *Table 11–2*, all of the study segments are calculated to operate at LOS D.

11.3 Year 2035 + Project

11.3.1 *Intersection Analysis*

Table 11–1 summarizes the intersection operations for the Year 2035 + Project scenario. As seen in *Table 11–1*, with the addition of project traffic, the following intersections are calculated to operate at LOS E or LOS F:

- Nordahl Road / Center Drive (South) (LOS E during the PM peak hour)
- Nordahl Road / SR-78 WB Ramps (LOS F during the PM peak hour)
- Nordahl Road / SR-78 EB Ramps (LOS F during both the AM and PM peak hours)

- Mission Road / Auto Parkway (LOS F during both the AM and PM peak hours)
- Rock Springs Road / Montiel Road (LOS F during the AM peak hour)

Although the intersections listed are operating at LOS E or LOS F, the increase in delay due to the project is less than 2 seconds with the exception of the Rock Springs Road / Montiel Road intersection. This unsignalized intersection falls within the County of San Diego's jurisdiction, and a different significance criterion is applied. See *Section 6.2.1* for more information. As such, the increase in traffic due to the project during the AM peak hour is less than 5 on the critical movement (i.e. northbound left-turn). Therefore, no significant impacts are identified for the Year 2035 + Project scenario.

Appendix K contains the Year 2035 + Project intersection analysis worksheets.

11.3.2 *Segment Operations*

Table 11–2 summarizes the roadway segment operations for the Year 2035 + Project scenario. As seen in *Table 11–2*, with the addition of project traffic, all of the study segments are calculated to operate at LOS D or better.

Base on the significance criteria, no significant impacts are calculated along the study street segments as the Project contribution does not exceed the allowable thresholds.

TABLE 11–1
LONG TERM INTERSECTION OPERATIONS

Intersection	Peak Hour	Year 2035		Year 2035 With Project		Δ[c]	Sig?[d]
		Delay[a]	LOS[b]	Delay	LOS		
1. Nordahl Road / Center Drive (South)	AM	51.8	D	54.1	D	2.3	No
	PM	76.7	E	77.3	E	0.6	No
2. Nordahl Road / Montiel Road	AM	23.1	C	24.5	C	1.4	No
	PM	36.9	D	40.0	D	3.1	No
3. Nordahl Road / SR-78 WB Ramps	AM	28.0	C	28.0	C	0.0	No
	PM	80.4	F	80.8	F	0.4	No
4. Nordahl Road / SR-78 EB Ramps	AM	116.7	F	118.3	F	1.6	No
	PM	156.2	F	157.3	F	1.1	No
5. Mission Road / Auto Park Way	AM	140.0	F	140.2	F	0.2	No
	PM	232.1	F	233.5	F	1.4	No
6. Rock Springs Road / Montiel Road	AM	311.1	F	348.5	F	1[c]	No
	PM	26.5	D	28.1	D	7[c]	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. For San Marcos intersections, Δ denotes a project-induced increase in delay. For County intersections, Δ denotes a project-induced increase in traffic on the critical movement.
d. Sig = Significant project impacts based on Significance Criteria.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
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 11–2
YEAR 2035 STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E) [a]	Year 2035			Year 2035 With Project			Δ[e]	Sig? [f]
		ADT[b]	V/C [d]	LOS [c]	ADT	V/C [d]	LOS [c]		
Montiel Road									
Nordahl Lane to Leora Lane	15,000	11,610	0.774	D	12,203	0.814	D	0.040	No
Leora Lane to Rock Springs Road	8,000	5,530	0.691	D	5,596	0.700	D	0.008	No
Nordahl Road									
Montiel Road to SR 78 Ramps	70,000	43,370	0.620	C	43,864	0.627	C	0.007	No

Footnotes:

a. Capacity based on roadway classification operating at LOS E.
b. Average Daily Traffic.
c. Level of Service.
d. Volume to Capacity.
e. Δ denotes a project-induced increase in the Volume to Capacity (V/C) ratio.
f. Sig = Significant project impact based on Significance Criteria.

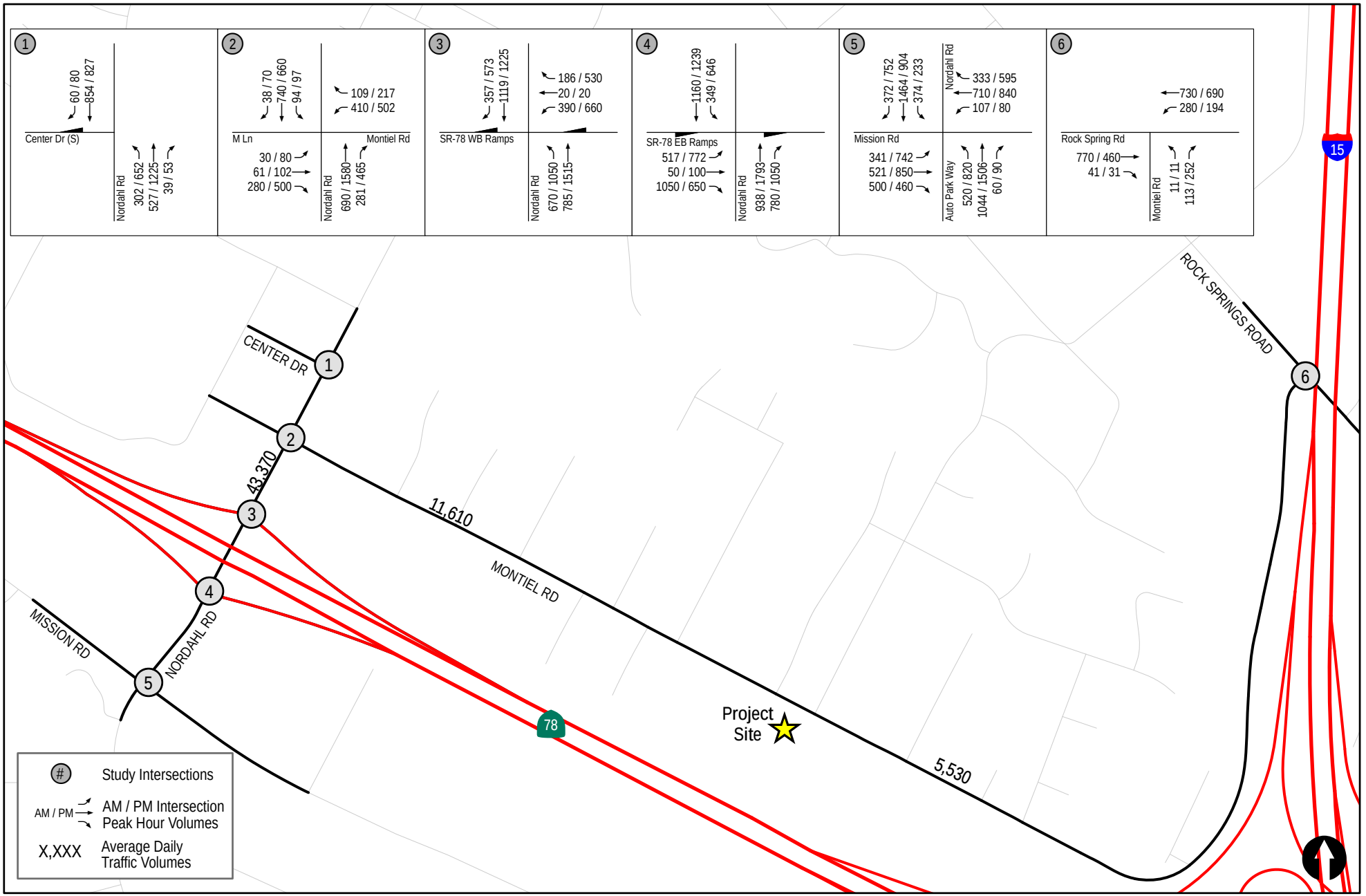

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Figure 10-1

Year 2035 Traffic Volumes

Montiel Road Office Project

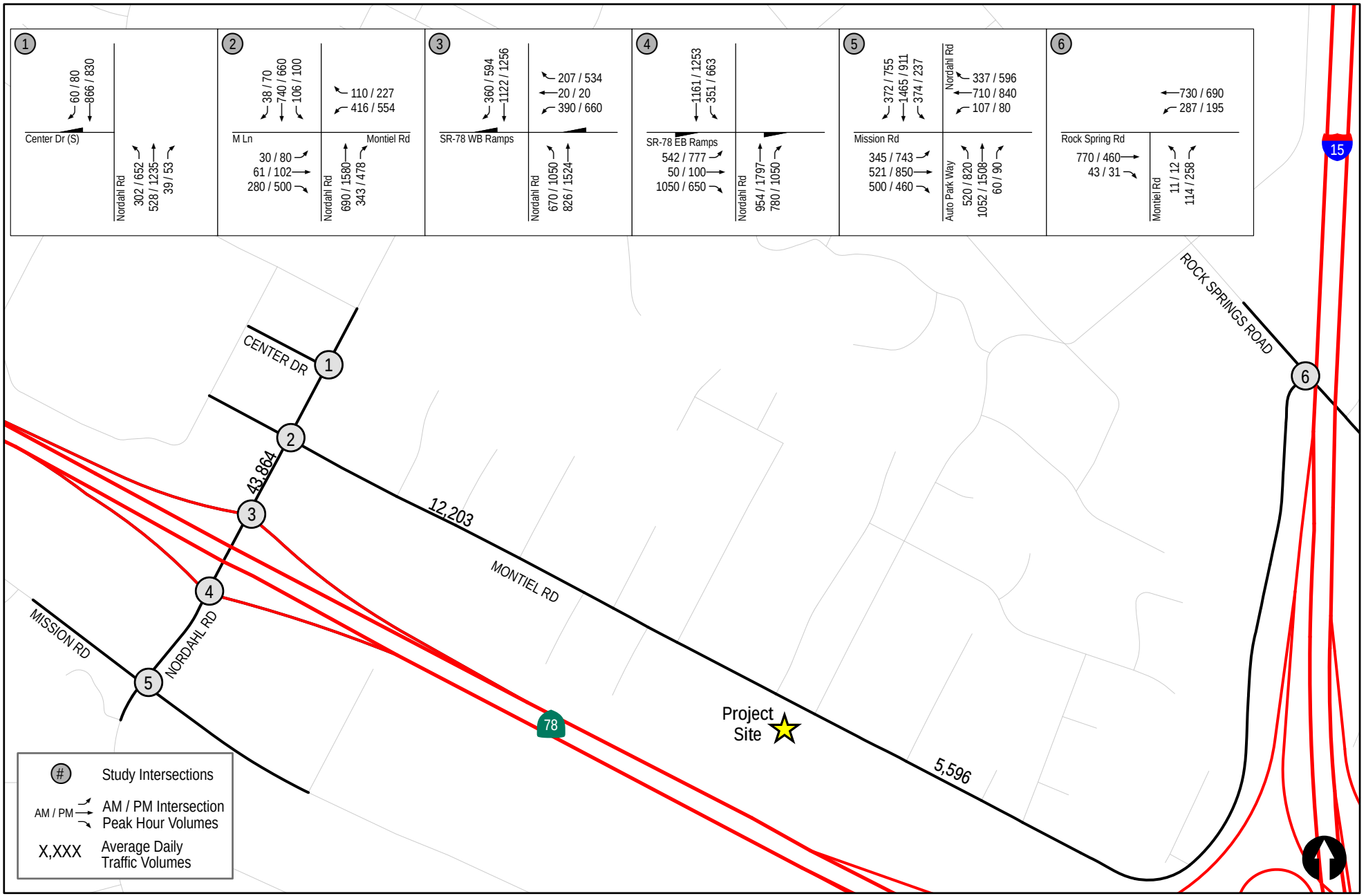

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Figure 11-2

Year 2035 + Project Traffic Volumes

Montiel Road Office Project

12.0 ACCESS AND OTHER ISSUES

As shown in *Figure 2–1*, the project plans to provide two full access driveways along Montiel Road. The western driveway aligns with Hillsboro Way. Due to the property boundary, the eastern driveway does not quite align with Deodar Road. Given the low volumes at the Montiel Road and Deodar Road intersection, this is not expected to be problematic.

Based on a review of the site plan, the following access-related improvements should be considered:

- Install stop signs at both access driveways.
- Provide a westbound left-turn pocket on Montiel Road at the western driveway.
- Participate in a regional carpool and vanpool matching program through *iCommute.*
- Provide sight distance and curb radius in conformance with City's standards at all project driveways.
- Provide sufficient ADA compliant pedestrian access to all the project facilities.
- Provide sufficient bicycle parking within the project.

13.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Based on the analysis and the established significance criteria, no significant traffic impacts were determined. Therefore, mitigation measures are not necessary.

It is recommended that a westbound left turn pocket be provided on Montiel Road at the western driveway.