



REVISED TRAFFIC IMPACT ANALYSIS **STRATFORD RANCH RESIDENTIAL** **TTM 36647**

Prepared for



April 2018



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April 1, 2018

Mr. Jason Keller
Mission Pacific Land Company
4100 Newport Place, Suite 480
Newport Beach, CA 92660

RE: Revised Traffic Impact Analysis Report, Stratford Ranch Residential
(TTM36647), Perris, CA

Dear Mr. Keller,

We are pleased to submit herewith our Revised Traffic Impact Analysis Report for the proposed Stratford Ranch Residential (TTM36647) which we have prepared at your request.

If you have any questions regarding this report, please call the undersigned for clarification.

Sincerely yours,

ALBERT A. WEBB ASSOCIATES

A handwritten signature in black ink, appearing to read "Nancy Velgara".

Nancy Velgara, E.I.T.
Assistant Engineer

A handwritten signature in blue ink, appearing to read "Dilesh Sheth".

Dilesh Sheth, P.E., T.E.
Vice President



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EXECUTIVE SUMMARY

■ Purpose of Report and Study Objectives

The purpose of this study is to evaluate the effects on traffic circulation produced from the proposed development of Tentative Tract Map No. 33647 (Proposed Project) in the City of Perris.

Albert A. Webb Associates (WEBB) prepared two separate traffic impact analysis reports in 2014 for Tentative Tract Maps (TTM) 33647 and TTM 33648. The TTM 33648 traffic impact analysis received approval from the City of Perris in 2017. During the review of TTM 33648, Webb prepared and presented the City with extensive pedestrian and bicycle safety improvement recommendations. WEBB prepared the Evans Road Safety Analysis and preliminary traffic signal and signing & striping exhibits which are presented in this report. The traffic study for TTM 33648 was updated to reflect the Evans Road Safety Analysis recommendation, therefore now the traffic study for TTM 33647 has been updated to adhere to the Evans Road Safety Analysis. The Evans Road Safety Analysis is provided in Appendix A.

TTM 33647 updates reflect the Evans Road Safety Analysis improvements, and other recommendations provided in the TTM 33648 traffic impact study. The revised TTM 33647 incorporated the analysis and operation of the signalized intersection of Evans Road (NS) and Anira Court (EW), a key intersection that is anticipated to provide access among both tracts. Under ultimate conditions TTM 33647 would be restricted to provide two right-in right-out driveway access, therefore some project trips are anticipated to proceed through TTM 33648's signalized access at the intersection of Evans Road (NS) and Anira Court (EW) to arrive at TTM 33647.

The objectives of this study include the following:

- Document existing (2018) traffic conditions in the vicinity of the proposed development;
- Determine the traffic generated from the proposed development;
- Evaluate existing plus project (2018) traffic conditions;
- Evaluate existing plus ambient growth plus project (2020) traffic conditions;
- Evaluate existing plus ambient growth plus other cumulative projects plus project (2020) traffic conditions;
- Determine if the level of service (LOS) required by the City of Perris General Plan will be maintained at all study area intersections, and if not, determine the mitigation measures that will be necessary in order to maintain the required LOS;
- Determine if peak hour traffic signal warrants are met for any of the unsignalized study area intersections;
- Evaluate the adequacy of on-site circulation for the proposed development; and
- Determine if safety and/or operational improvements are necessary due to the proposed development.

■ Site Location and Study Area

The proposed project is located in the City of Perris. TTM36647 is located north of Ramona Expressway and west of Evans Road.

■ The Evans Road Safety Analysis

The Evans Road Safety Analysis layout is shown on Figure 2-B and Figure 2-C.

■ Development Description

Project Size

The project site encompasses approximately 29 acres. The project is currently proposed for development of 90 units single family dwelling.

Project Trip Generation

The proposed project is anticipated to generate approximately 850 daily trip-ends, including 67 trip-ends during the AM peak hour and 89 trip-ends during the PM peak hour.

Project Site Circulation

The project will have access to Evans Road to the east utilizing two driveways.

Project Zoning and Land Use

The existing and proposed zoning and land use designations are as follows:

- Existing Zoning: R-10,000
- Proposed Zoning: R-6,000
- Existing Land Use: Vacant
- Proposed Land Use: Residential

■ Principal Findings

Required Level of Service

According to the City of Perris General Plan, Policy II.A:

Maintain the following target Levels of Service:

LOS “D” along all City maintained roads (including intersections) and LOS “D” along I-215 and SR 74 (including intersections with local streets and roads). An exception to the local road standard is LOS “E,” at intersections of any Arterials and Expressways with SR 74, the Ramona-Cajalco Expressway or at I-215 freeway ramps.

LOS “E” may be allowed within the boundaries of the Downtown Specific Plan Area to the extent that it would support transit-oriented development and walkable communities. Increased congestion in this area will facilitate an increase in transit ridership and encourage development of a complementary mix of land uses within a comfortable walking distance from light rail stations.

For the City of Moreno Valley, target levels of service is presented in Figure 1-A, from the City of Moreno Valley General Plan Environmental Impact Report, Traffic Study.

Levels of Service – Existing (2018) Conditions

The existing (2018) levels of service for the study area intersections vary from LOS A to F. The following study area intersection operates at an unacceptable LOS:

5. Evans Road (NS) / Marbella Gate (EW)

With the project design feature recommendations from TTM 36648, the phase I of the Evans Road Safety Improvements Study and the project access recommendations presented in Table 6-1 and Figure 6-A, the levels of service at all study area intersections are expected to improve to meet the required level of service under the existing (2018) scenario.

Levels of Service – Existing Plus Project (2018) Conditions

For existing plus project (2018) traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to F. The following study area intersection operates at an unacceptable LOS:

3. Evans Road (NS) / Ramona Expressway (EW)

With the recommended mitigation measures presented in Table 6-1 and Figure 6-A, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus project (2018) scenario.

Levels of Service – Existing Plus Ambient Growth Plus Project (2020) Conditions

For existing plus ambient growth plus project (2020) traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to F. The following study area intersection operates at an unacceptable LOS:

3. Evans Road (NS) / Ramona Expressway (EW)

With the recommended mitigation measures presented in , the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus project (2020) scenario.

Table 6-2 and Figure 6-B, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus project (2020) scenario.

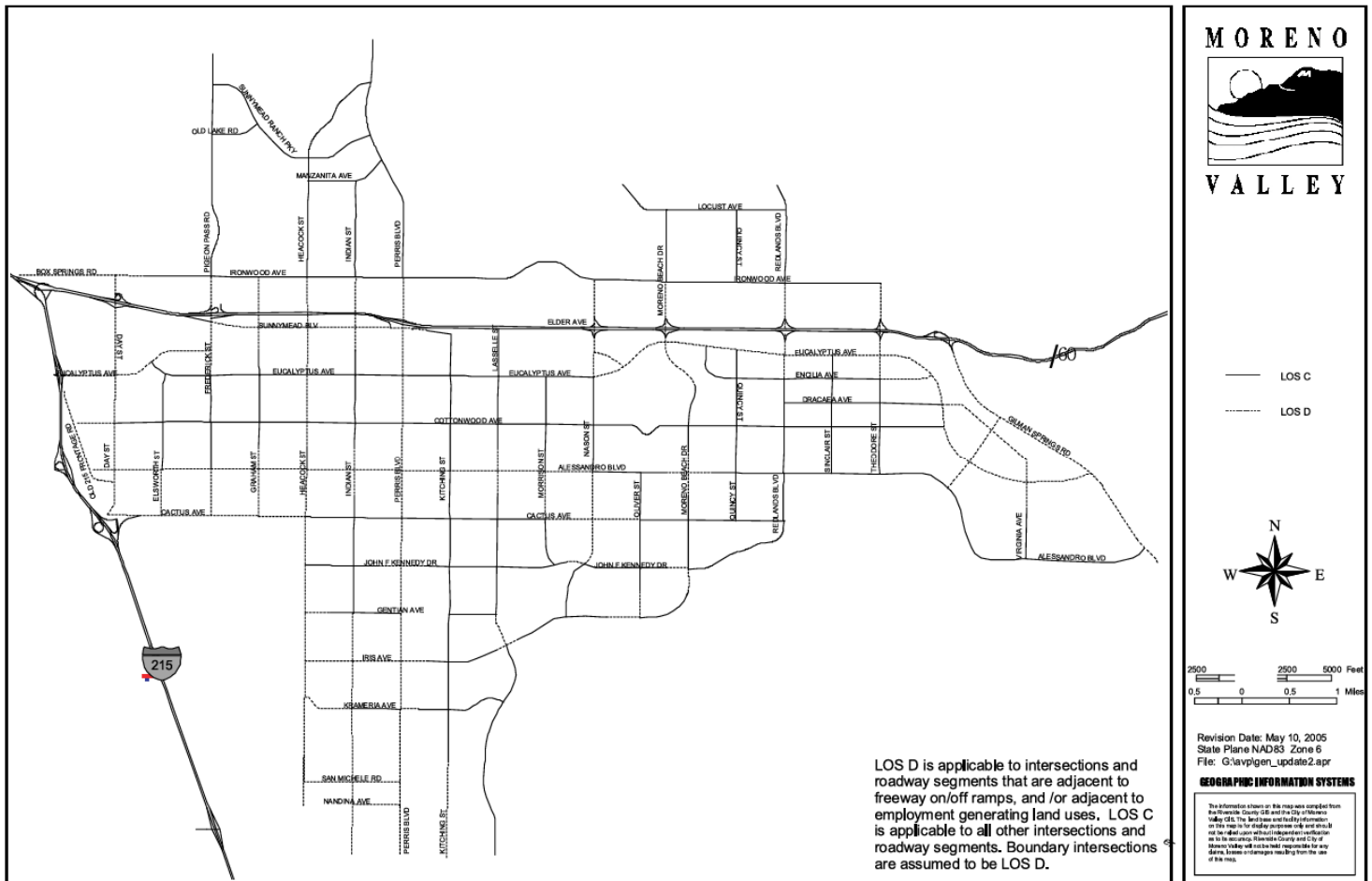
Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) Conditions

For existing plus ambient growth plus cumulative plus project (2020) traffic conditions without off-site improvements, the study area intersections are expected to operate at levels of service that vary from LOS A to F. The following study area intersections would operate at an unacceptable LOS:

3. Evans Road (NS) / Ramona Expressway (EW)

With the recommended improvement presented in Table 6-3 and Figure 6-C, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus cumulative projects plus project (2020) scenario.

Figure 1-A – Required Level of Service for the City of Moreno Valley



Source: Urban Crossroads, June 2004.

■ Traffic Signal Warrants

The California MUTCD states that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Peak hour traffic signal warrant analysis should only be considered as an “indicator” of the likelihood of an unsignalized intersection warranting a traffic signal. Intersections that exceed the peak hour warrant are more likely to meet one or more of the other volume based signal warrants. The Manual on Uniform Traffic Control Devices (MUTCD) also advises that a traffic control signal should not be installed unless:

- One or more of the traffic signal warrants is satisfied;
- An engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection; and
- It will not seriously disrupt progressive traffic flow.

For existing (2018) traffic conditions, the peak hour traffic control signal warrant is satisfied for the following study area unsignalized intersection(s) (see Appendix D for technical calculations):

8. Lasselle Street (NS) / School South Driveway (EW)

For existing plus project (2018) traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus project (2020) traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus other projects plus project (2020) traffic conditions, the peak hour traffic control signal warrant is expected to be satisfied for the following additional study area unsignalized intersection(s) (see Appendix D for technical calculations):

4. Evans Road (NS) / Project Driveway (EW)

The following study area unsignalized intersections do not satisfy the peak hour traffic signal warrant in any study scenario (see Appendix D for technical calculations):

5. Evans Road (NS) / Marbella Gate (EW)
7. Lasselle Street (NS) / Camino Del Rey (EW)

■ Circulation Recommendations

This traffic impact analysis demonstrates that the cumulative traffic impacts that TTM36647 contributes toward can be mitigated to meet the required level of service if the following recommended improvements are adopted.

On-Site Recommendations

Roadways

- Construct full width improvements on all internal roadways.
- Construct partial width improvements on the westerly side of Evans Road at its ultimate cross-section as a primary arterial adjacent to project boundary line.

Intersections

- Construct the intersection of Evans Road and Marbella Gate to restrict movement to right-in and right-out only from the driveway and for Marbella Gate with the following geometrics:
Northbound: Two through lanes. One right turn lane.
Southbound: Two through lane. One right turn lane.
Eastbound: One right turn lane. Stop controlled.
Westbound: One right turn lane. Stop controlled.
- Construct the intersection of Evans Road and Project Driveway to restrict movement to right-in and right-out only from the driveway with the following geometrics:
Northbound: Two through lanes.
Southbound: Two through lanes. One right turn lane.
Eastbound: One right turn lane. Stop controlled.
Westbound: Not Applicable.

■ Safety and Operational Improvements

- Sight distance at the project entrance roadway should be reviewed with respect to standard City of Perris sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Participate in the phased construction of off-site traffic signals through payment of project's fair share of traffic signal mitigation fees.
- Signing/stripping should be implemented in conjunction with detailed construction plans for the project site.

■ Regional Funding Mechanisms

The project will participate in the cost of off-site improvements through payment of the following "fair share" mitigation fees:

- Transportation Uniform Mitigation Fee (TUMF), current at time of construction.
- City of Perris Development Impact Fee (DIF), current at time of construction.

These fees should be collected and utilized as needed by City of Perris to construct the improvements necessary to maintain the required level of service.

■ Project Mitigation Summary

Table 1-1 summarizes the proposed mitigation measure and associated funding mechanism.

Table 1-1 – Project Mitigation Summary

No.	Intersection	Jurisdiction	Target LOS	LOS w/o Mitigation		Mitigation Measure	LOS with Mitigation		Funding Mechanism
				AM	PM		AM	PM	
Existing Conditions									
3	Evans Road (NS) Ramona Expressway (EW)	City of Perris	E	F	C	Construct the southbound signal to provide an overlapping right turn.	D	C	Project Developer
Cumulative Conditions									
3	Evans Road (NS) Ramona Expressway (EW)	City of Perris	E	F	D	Cosntruct a third westbound through lane.	E	C	TUMF Fees

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■ Site Location and Study Area

The proposed project is located in the City of Perris. TTM36647 is located north of Ramona Expressway and west of Evans Road. The project site location is presented on Figure 2-A.

The Evans Road Safety Analysis

The Evans Road Safety Analysis layout is shown on Figure 2-B.

Figure 2-A – Project Site Location Map



LEGEND

-  Project Site
-  Future Roadway
-  Study Intersections

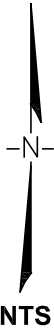
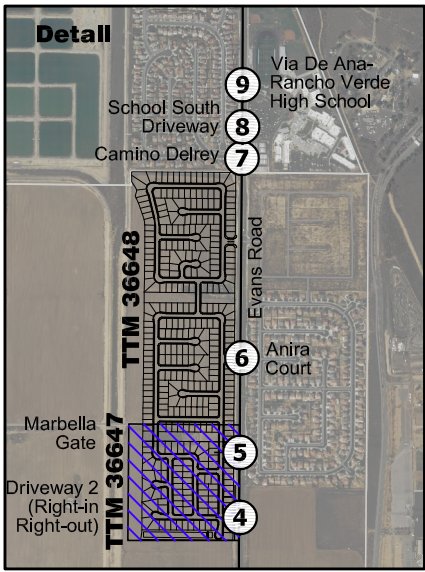


Figure 2-B – Evans Road Safety Analysis Phase I Safety Improvements

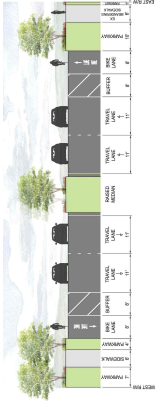
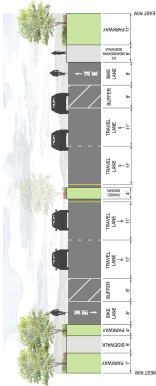
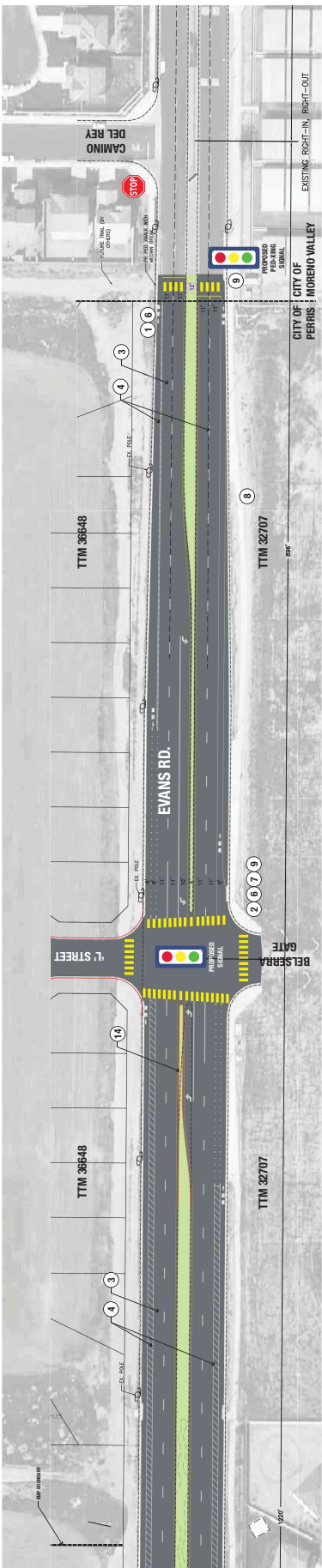
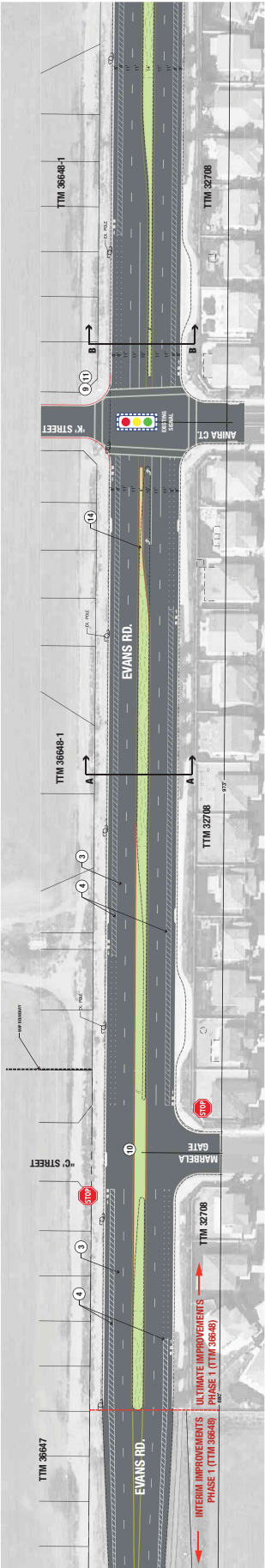
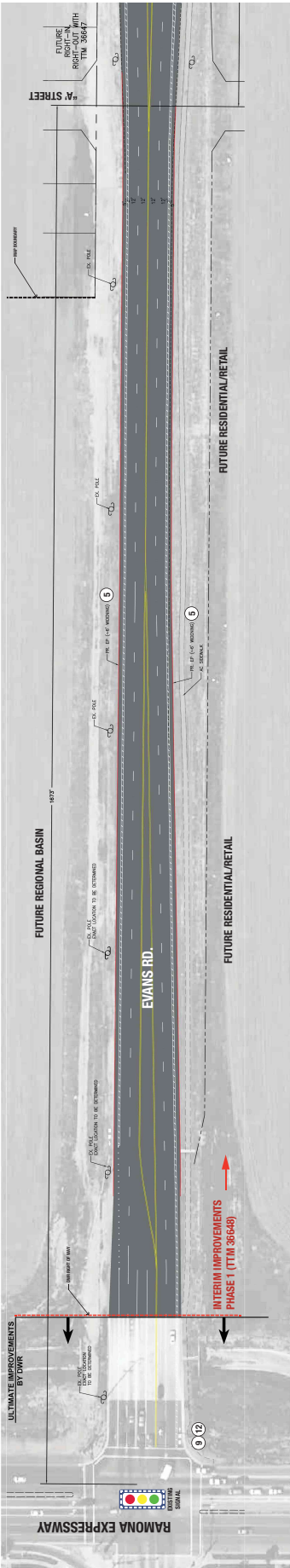
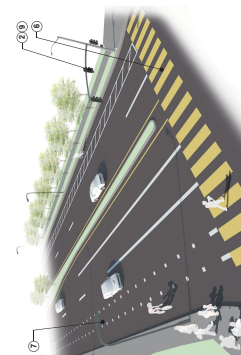
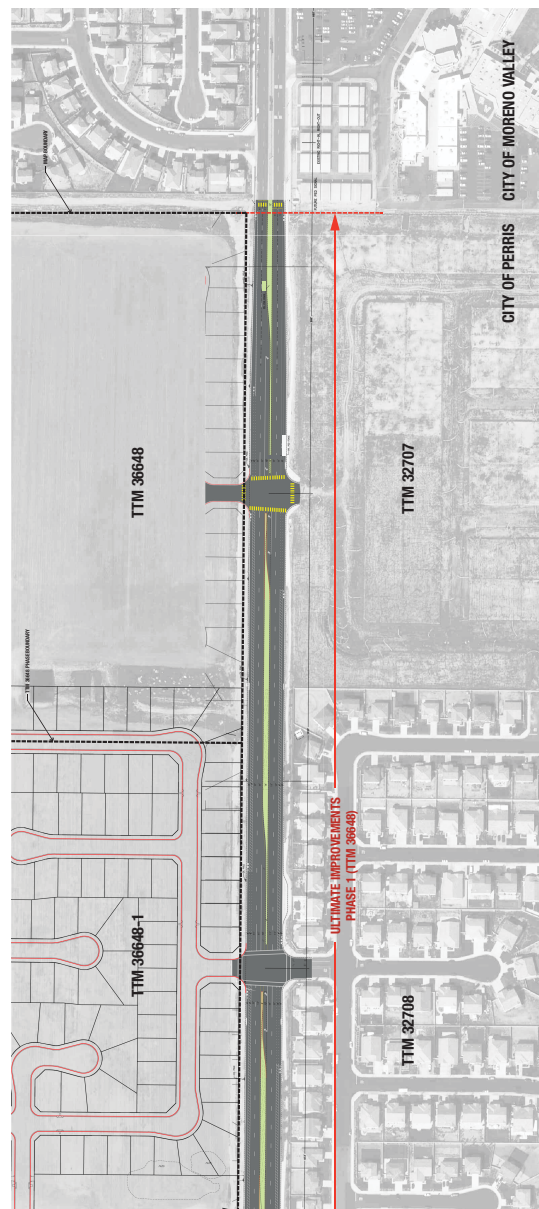
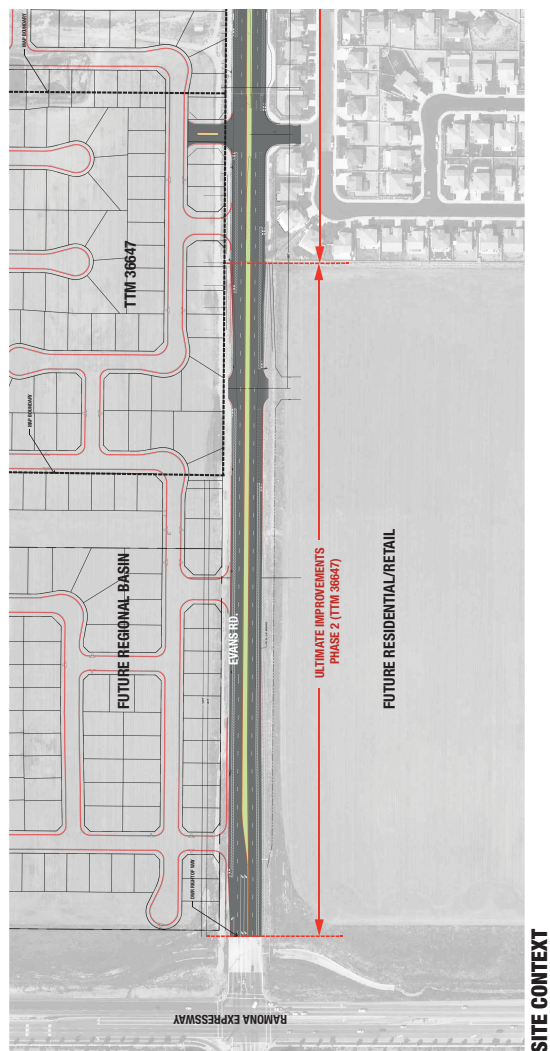


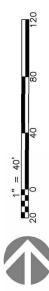
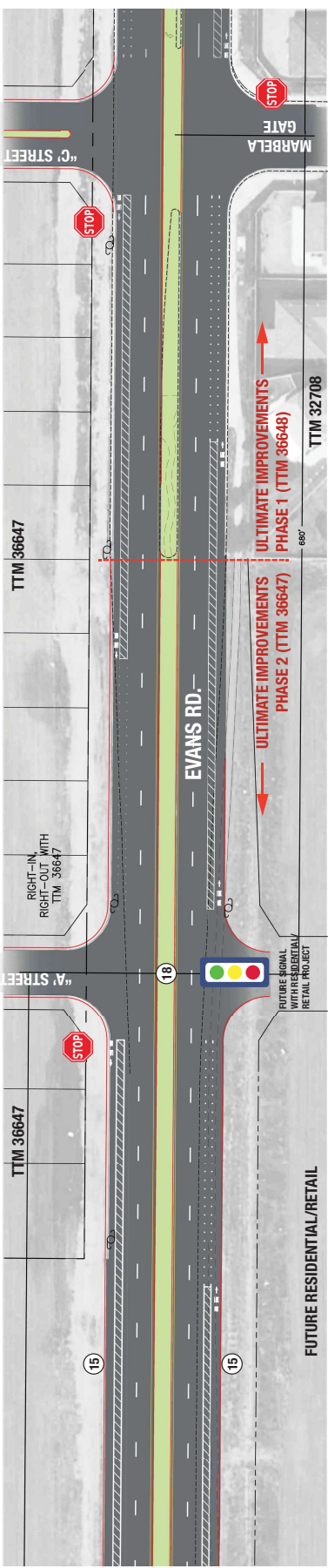
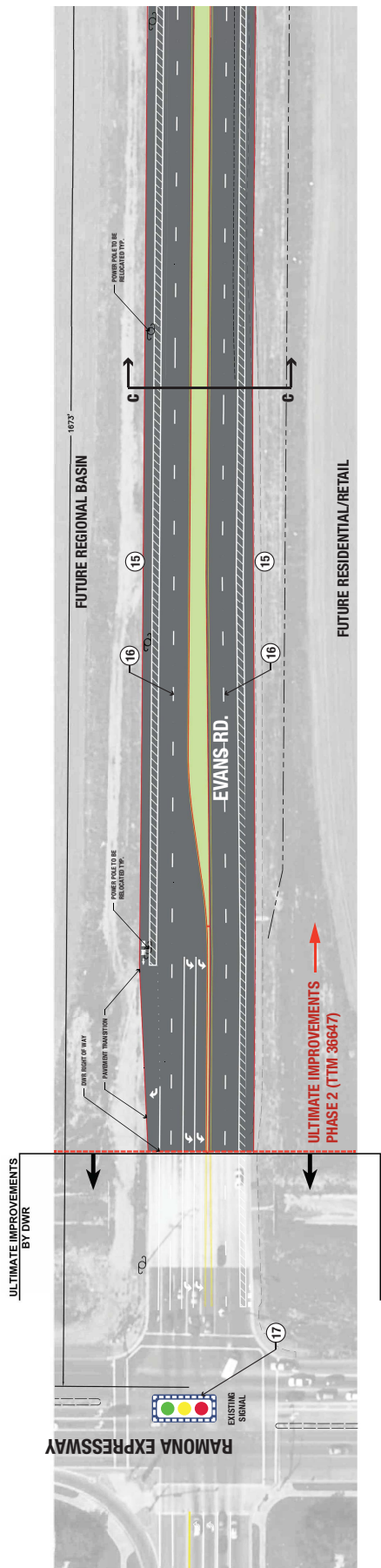
Figure 2-B Continued – Evans Road Safety Analysis Phase I Safety Improvements

- LEGEND**
- PHASE 1 - PRIOR TO ISSUANCE OF FIRST BUILDING PERMIT FOR TTM 36648**
- 1. CONSTRUCT NEW CROSSWALK AND PEDESTRIAN TRAFFIC SIGNAL AT THE EMV DRAINAGE
 - 2. CONSTRUCT NEW CROSSWALK AND PEDESTRIAN TRAFFIC SIGNAL AT THE EMV DRAINAGE
 - 3. CONSTRUCT PEDESTRIAN SIGNAL
 - 4. CONSTRUCT NEW TRAFFIC SIGNAL AT THE EXISTING INTERSECTION OF BELSERRA GATE AND EVANS ROAD WITH ASSOCIATED INTERSECTION STRIPING TO PROVIDE CROSSWALKS. CROSSWALK STRIPING SHALL BE CONTINENTAL STRIPING TO IMPROVE PEDESTRIAN SAFETY.
 - 5. GRIND AND OVERLAY EXISTING PAVEMENT ALONG WEST SIDE OF EVANS ROAD FROM NORTHERLY CITY LIMITS TO SOUTHERLY LINE OF TRACT 32708.
 - 6. RE-STRIP EVANS ROAD FROM RAMONA EXPRESSWAY TO NORTHERLY CITY LIMITS TO REDUCE LANE WIDTHS TO 11'. THIS WILL REDUCE MOTORISTS SPEED AND ALLOW ADDITIONAL STREET SPACE FOR BIKE LANES AND AN EXPANDED BIKE LANE BUFFER.
 - 7. WIDEN EVANS ROAD TO AN INTERIM CONDITION FROM THE SOUTHERLY LINE OF TRACT 32708 TO RAMONA EXPRESSWAY TO ACCOMMODATE BUFFERS AND BIKE LANES.
 - 8. CONTINENTAL STRIPING AT ALL PROPOSED AND EXISTING SCHOOL CROSSWALKS. LOCATIONS INCLUDE BELSERRA GATE EVANS ROAD INTERSECTION, THE NEW PEDESTRIAN CROSSING IN CITY OF MORENO VALLEY AND VA DE ALCAZAR ROAD INTERSECTION.
 - 9. CONSTRUCT PEDESTRIAN LIGHTING IMPROVEMENTS AT CROSSWALKS AT THE INTERSECTION OF BELSERRA GATE AND EVANS ROAD.
 - 10. EXTEND SCHOOL REDUCED SPEED LIMIT ZONES SOUTH INTO THE CITY OF PERRIS PER THE CALIFORNIA MUTCD.
 - 11. INSTALL INTERCONNECT TRAFFIC SIGNALS ON EVANS ROAD FROM RAMONA EXPRESSWAY TO VA DE ANZA.
 - 12. MODIFY THE EXISTING MARBELLA GATE INTERSECTION TO RIGHT-IN/RIGHT-OUT TO REDUCE POTENTIAL CONFLICTING TURNING MOVEMENTS ALONG EVANS ROAD. THIS WILL BE ACHIEVED BY EXTENDING THE MEDIAN THROUGH THE INTERSECTION.
 - 13. UPDATE TRAFFIC SIGNAL AT ANNA COURT AND EVANS ROAD TO ACCOMMODATE SHIFTED LANES AND BIKE LANES.
 - 14. UPDATE TRAFFIC SIGNAL AT RAMONA EXPRESSWAY AND EVANS ROAD TO ACCOMMODATE SHIFTED LANES AND BIKE LANES. INSTALL SOUTHBOUND OVERLAPPING RIGHT TURN SIGNAL PER THE TRAFFIC IMPACT ANALYSIS FOR TTM 36648.
 - 15. PAY CASH-IN-LIEU FEE SHARE FOR CUMULATIVE IMPROVEMENTS WESTBOUND OVERLAPPING RIGHT TURN SIGNAL AS IDENTIFIED IN THE TRAFFIC IMPACT ANALYSIS FOR TTM 36648.
 - 16. EVANS ROAD MEDIAN RECONFIGURATION



FUTURE SIGNAL W/ CONTINENTAL CROSSWALK
AT BELSERRA GATE & EVANS RD.

Figure 2-C – Evans Road Safety Analysis Phase II Safety Improvements



LEGEND

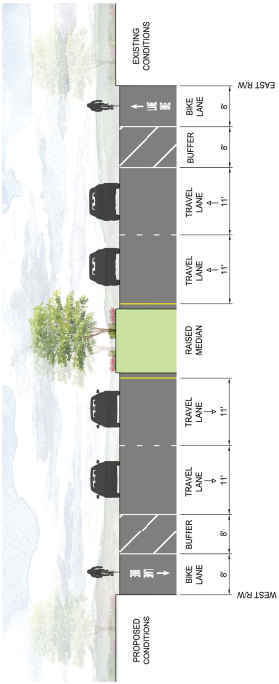
PHASE 2 – PRIOR TO ISSUANCE OF FIRST CERTIFICATE OF OCCUPANCY FOR TTC 36647

15 WHEN EVANS ROAD TO THE ULTIMATE CROSS SECTION FROM THE SOUTHERLY LINE OF TRACT 32708 TO THE NORTHERLY DNR EASEMENT LINE, THIS IMPROVEMENT WILL REQUIRE THE RELOCATION OF 6 EXISTING SIZE POWER POLES.

16 RESTRIPE EVANS ROAD FROM THE SOUTHERLY LINE OF TRACT 32708 TO RAMONA EXPRESSWAY.

17 UPDATE TRAFFIC SIGNAL AT RAMONA EXPRESSWAY AND EVANS ROAD AS NECESSARY TO ACCOMMODATE SHIFTED LANES AND BIKE LANES. ADD OVERLAP PHASE FOR SOUTHBOUND RIGHT WITH EASTBOUND LEFT.

18 CONSTRUCT FULL WIDTH MEDIAN



■ Development Project Description

Project Size and Description

The project site encompasses approximately 29 acres. The project is currently proposed for development of 90 single family detached residential dwelling units.

Existing Land Use and Zoning

Existing land use and zoning designations are as follows:

- Existing Zoning: R-10,000
- Existing Land Use: Vacant

Proposed Land Use and Zoning

Proposed land use and zoning designations are as follows:

- Proposed Zoning: R-6,000
- Proposed Land Use: Residential

Site Plan of Proposed Project

The current proposed project layout is shown on Figure 2-D.

Site Access

As indicated on Figure 2-D, TTM36647 will have access to Evans Road east of the project.

Proposed Project Opening Year and Proposed Project Phasing

For analysis purposes, it is assumed that TTM36647 will be developed in a single phase and full development is anticipated by 2020.

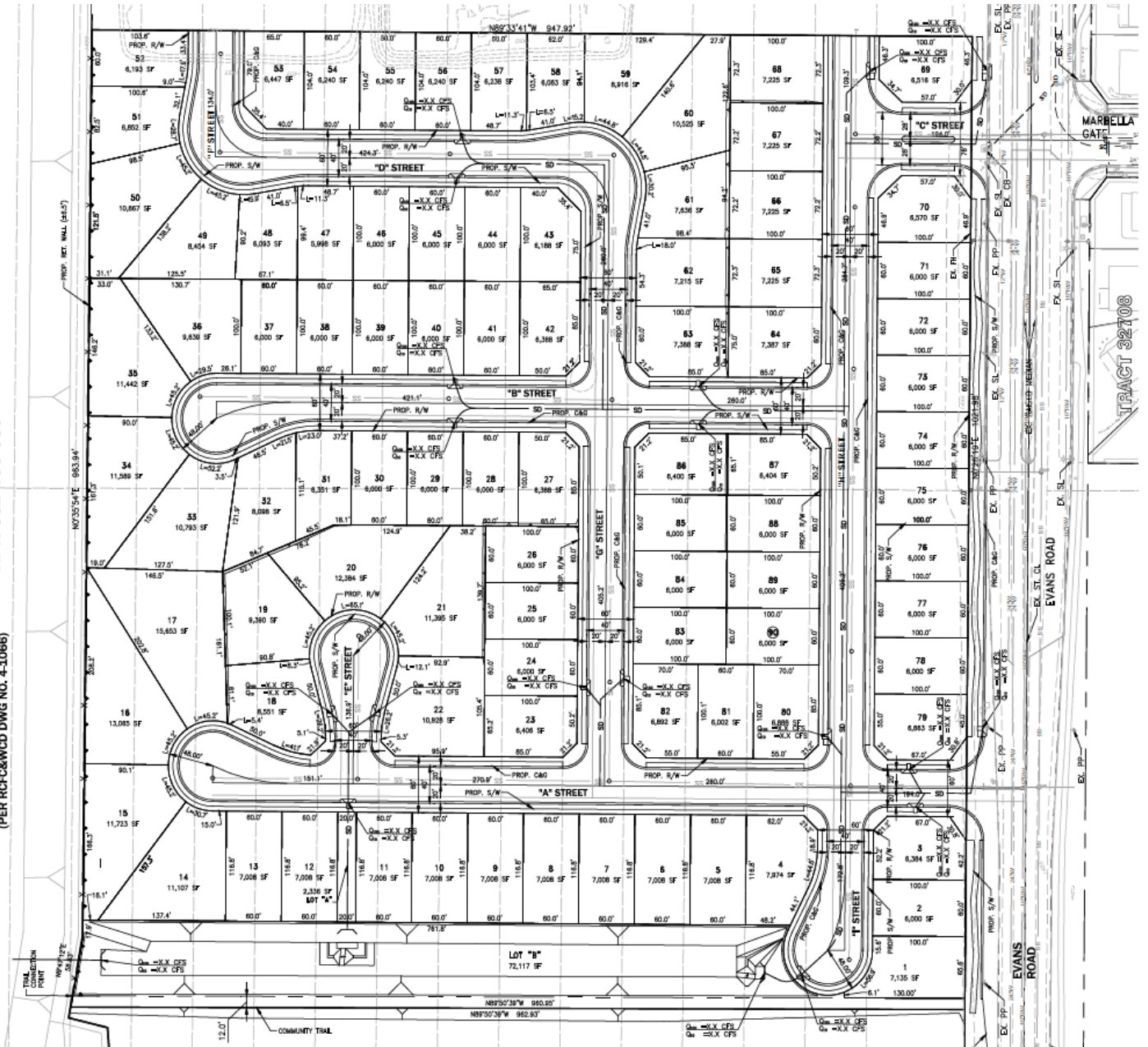
Sphere of Influence

TTM36647 is within the sphere of influence or within one mile of the border of the City of Moreno Valley.

Figure 2-D - Project (TTM36647) Site Plan

APN 302-150-009

PERRIS VALLEY STORM DRAIN CHANNEL
(PER RCF&WCD DWG NO. 4-1066)



■ Study Intersections

The study area includes the following intersections:

1. Perris Boulevard (NS) / Ramona Expressway (EW)
2. Redlands Avenue (NS) / Ramona Expressway (EW)
3. Evans Road (NS) / Ramona Expressway (EW)
4. Evans Road (NS) / Project Driveway (EW)
5. Evans Road (NS) / Marbella Gate (EW)
6. Evans Road (NS) / Anira Court (EW)
7. Lasselle Street (NS) / Camino Delrey (EW)
8. Lasselle Street (NS) / School South Driveway (EW)
9. Lasselle Street (NS) / Via De Anza-Rancho Verde High School (EW)

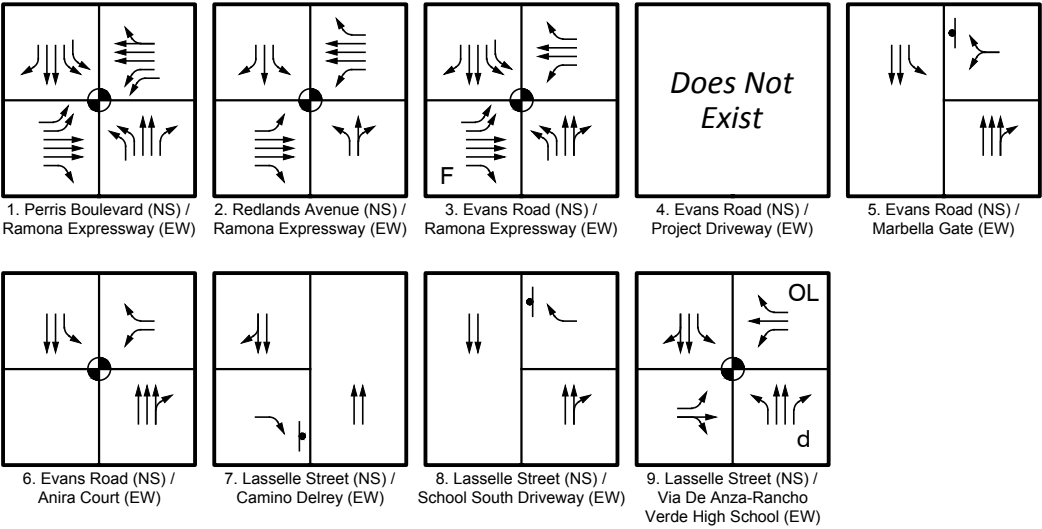
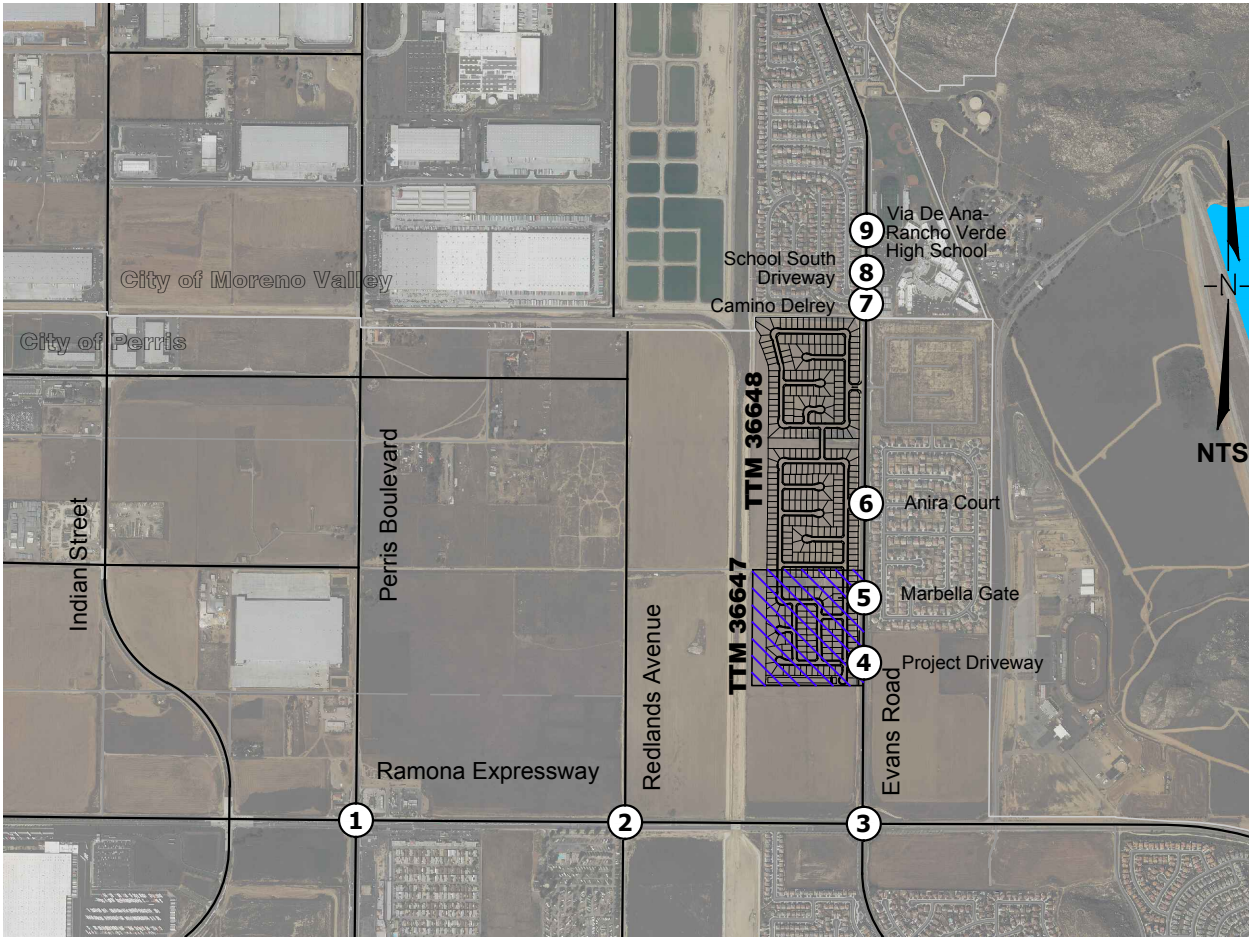
■ Existing Traffic Controls and Intersection Geometrics

The existing roadway system is shown on Figure 3-A. It identifies the existing intersection traffic controls (i.e. signals and signage), and intersection geometrics within the study area.

■ Existing Traffic Volumes

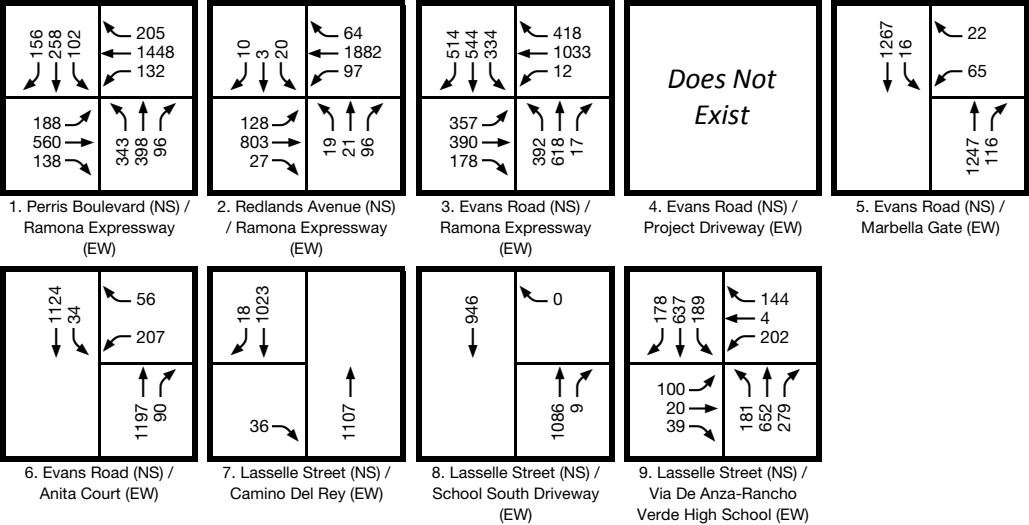
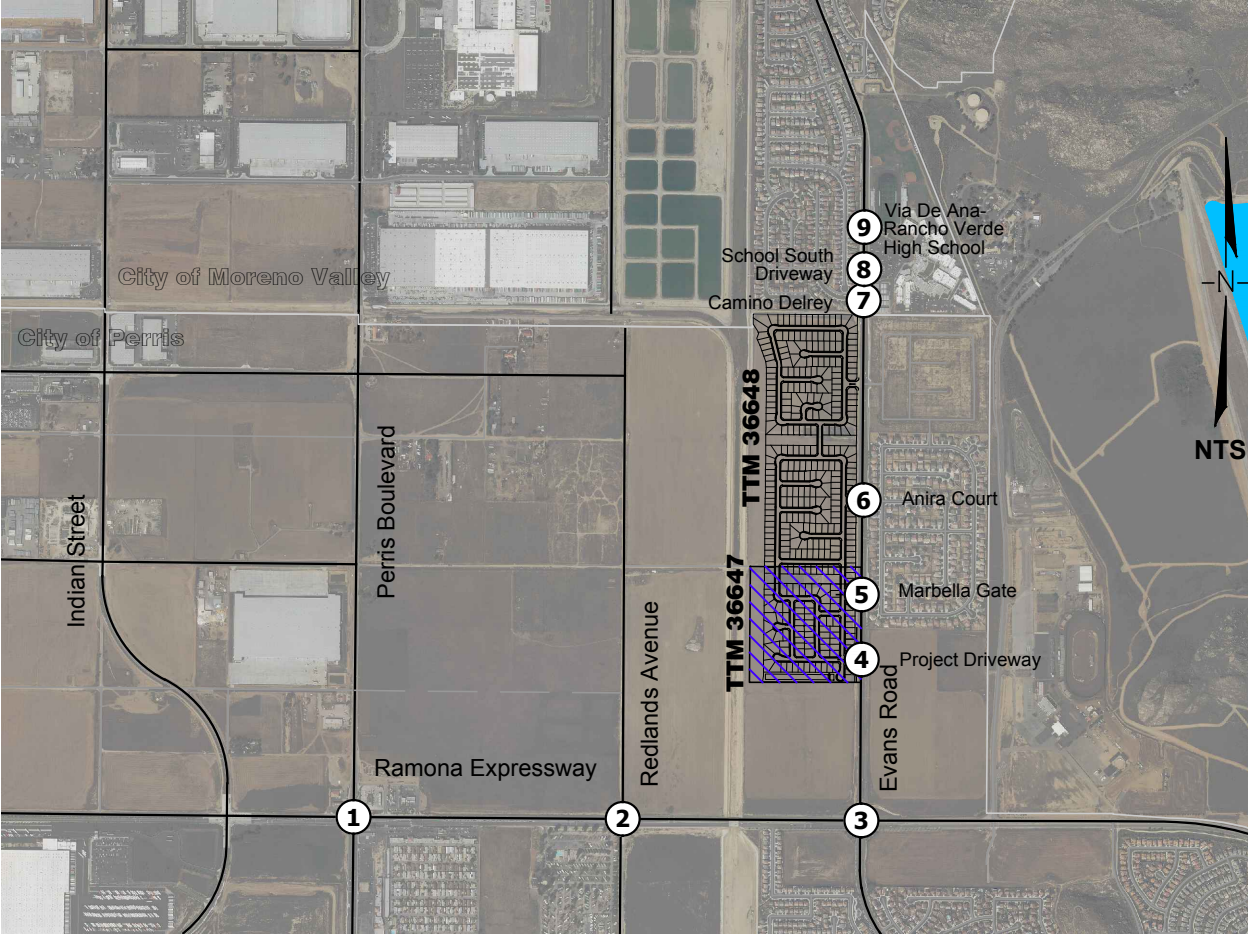
The existing AM peak period and PM peak period intersection turning movement counts were conducted by Counts Unlimited, Inc. The traffic study for TTM 33647 was prepared using counts collected in 2014. These Counts were adjusted with an additional three percent per year ambient growth percentage up to year 2018 (a total of 12 percent ambient growth was added to all intersection counts) in order to provide representative volumes of existing traffic conditions. The traffic count worksheets and volume development are provided in Appendix C. The AM and PM peak hour intersection turning movement volumes are presented on Figure 3-B and Figure 3-C, respectively.

Figure 3-A – Existing Roadway System



- LEGEND**
- Existing Traffic Signal
 - Existing Stop Sign
 - Existing Lane Geometrics
 - F Existing Free Right Turn
 - OL Existing Overlap Right Turn
 - d Existing Defacto Right Turn
 - Project Site
 - Future Roadway

Figure 3-B – Existing (2018) AM Peak Hour Intersection Volumes

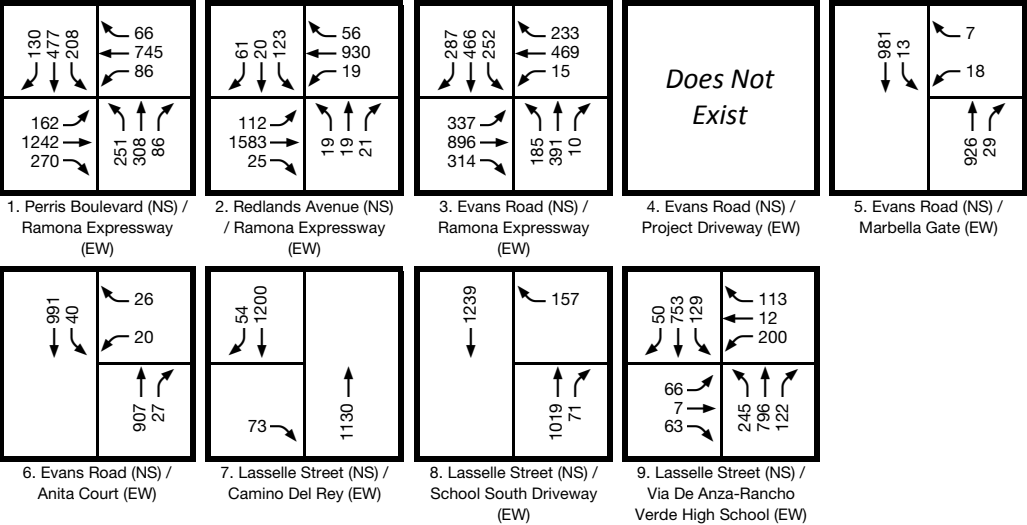
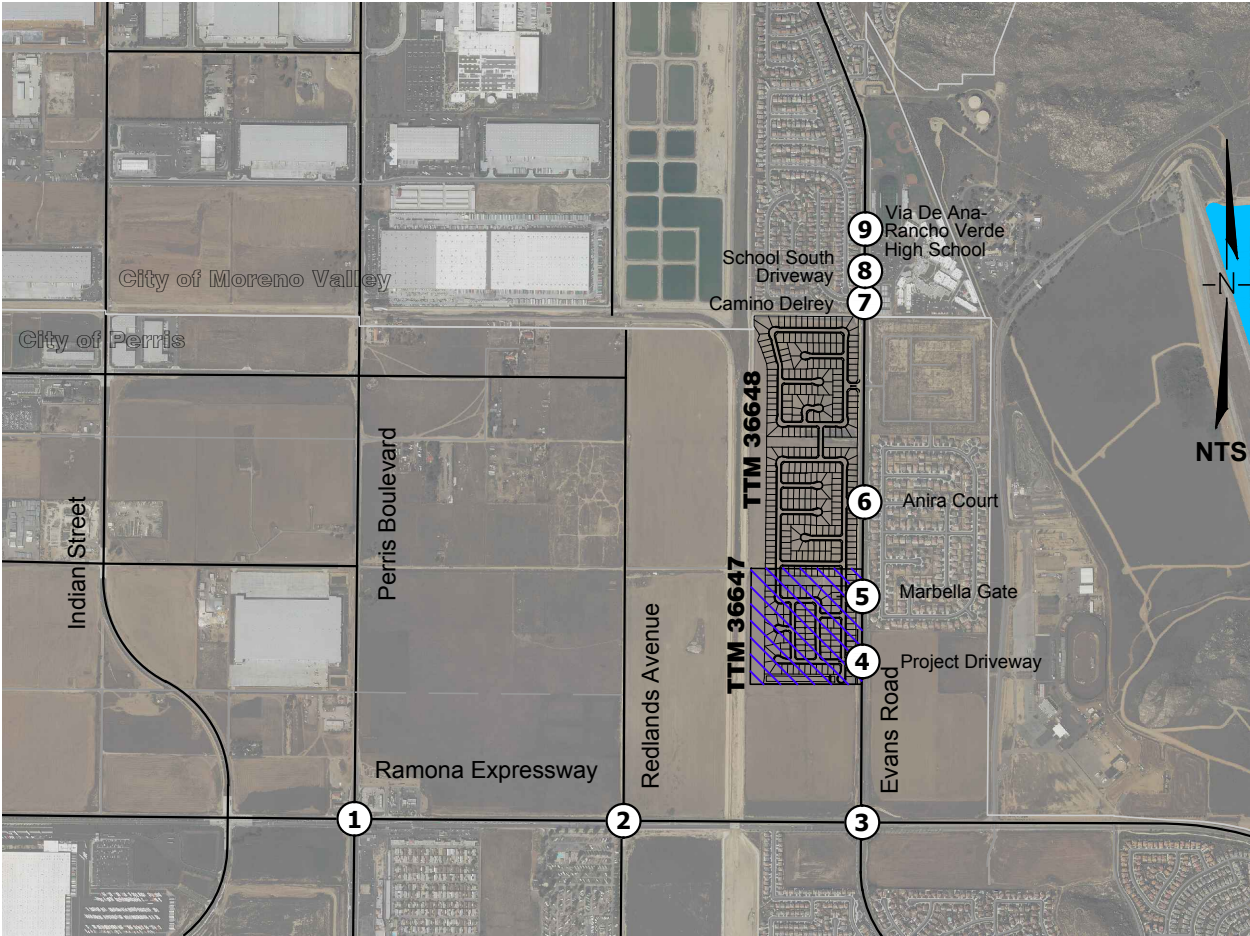


LEGEND

Project Site

Future Roadway

Figure 3-C – Existing (2018) PM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

■ Level of Service Methodology

The City of Perris requires that the Transportation Research Board Highway Capacity Manual 2010 (HCM 2010) be used to analyze Level of Service (LOS).

Quality of service describes how well a transportation facility or service operates from the traveler's perspective. Level of service (LOS) is a quantitative stratification of a performance measure or measures that represent the quality of service. LOS is measured on a familiar A to F scale where LOS A represents the best conditions from a traveler's perspective and LOS F the worst. A simple LOS letter system is used to hide much of the complexity of transportation facility performance in order to simplify decision making on whether facility performance is generally acceptable and whether a future change in performance is likely to be perceived as significant by the general public. One reason for the widespread adoption of the LOS concept by agencies is the concept's ability to communicate roadway performance to nontechnical decision makers.

The HCM 2010 evaluates the LOS of intersections based upon the control delay per vehicle. Control delay is defined as the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. The methodology used to evaluate the intersection level of service differs on whether the intersection is signalized or unsignalized. Levels of service at signalized and unsignalized intersections have been evaluated using PTV Vistro 5.00, which is based on HCM 2010 methodologies.

Signalized Intersections

Signalized intersections have been evaluated using the Operational Method as described in Chapter 18 of the HCM 2010. According to this methodology, the level of service for signalized intersections is based upon the weighted average control delay, in seconds per vehicle, of all vehicles passing through the intersection. Table 3-1 shows the criteria used to determine the level of service for signalized intersections.

Table 3-1 – Level of Service for Signalized Intersections

Level of Service	Control Delay (sec/vehicle)	Description
A	≤ 10	Minimal delay and primarily free-flow operation. Most vehicles do not stop because they arrive during the green indication or only stop for a brief amount of time as the signal changes.
B	> 10 – 20	Short delay and reasonably unimpeded operation. Many vehicles do not stop because they arrive during the green indication or only stop for a short amount of time as the signal changes. More vehicles stop than with LOS A.
C	> 20 – 35	Moderate delay and stable operation. Individual cycle failures (i.e. when queued vehicles do not clear the signal during the next green indication) may begin to appear. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
D	> 35 – 55	Less stable operation in which small increases in vehicles may cause substantial increases in delay. Many vehicles stop and individual cycle failures are noticeable.
E	> 55 – 80	Significant delay and unstable operation. Most vehicles stop and individual cycle failures are frequent.
F	> 80	Considerable delay and extensive queuing. Almost all vehicles stop and most cycles fail to clear the queue.

Unsignalized Intersections

Unsignalized intersections have been evaluated using Chapters 19-20 of the HCM 2010. According to this methodology, the level of service for all-way stop intersections is based upon the weighted average control

delay, in seconds per vehicle, of all vehicles passing through the intersection. For two-way stop-controlled intersections, the level of service is based on the highest control delay of all controlled movements for the intersection. Table 3-2 shows the criteria used to determine the level of service for unsignalized intersections.

Table 3-2 – Level of Service for Unsignalized Intersections

Level of Service	Control Delay (sec/vehicle)	Description
A	≤ 10	Minimal delay. Usually no conflicting traffic.
B	> 10 – 15	Short delay. Occasionally some conflicting traffic.
C	> 15 – 25	Noticeable delay, but not inconveniencing. Usually some conflicting traffic.
D	> 25 – 35	Noticeable delay and irritating. A significant amount of conflicting traffic. Increased likelihood of risk taking.
E	> 35 – 50	Significant delay approaching tolerance level. Lots of conflicting traffic, but with some gaps of suitable size. Risk taking behavior likely.
F	> 50	Considerable delay exceeding tolerance level. Lots of conflicting traffic, with not enough gaps of suitable size. High likelihood of risk taking.

■ Required Level of Service

According to the City of Perris General Plan, Policy II.A:

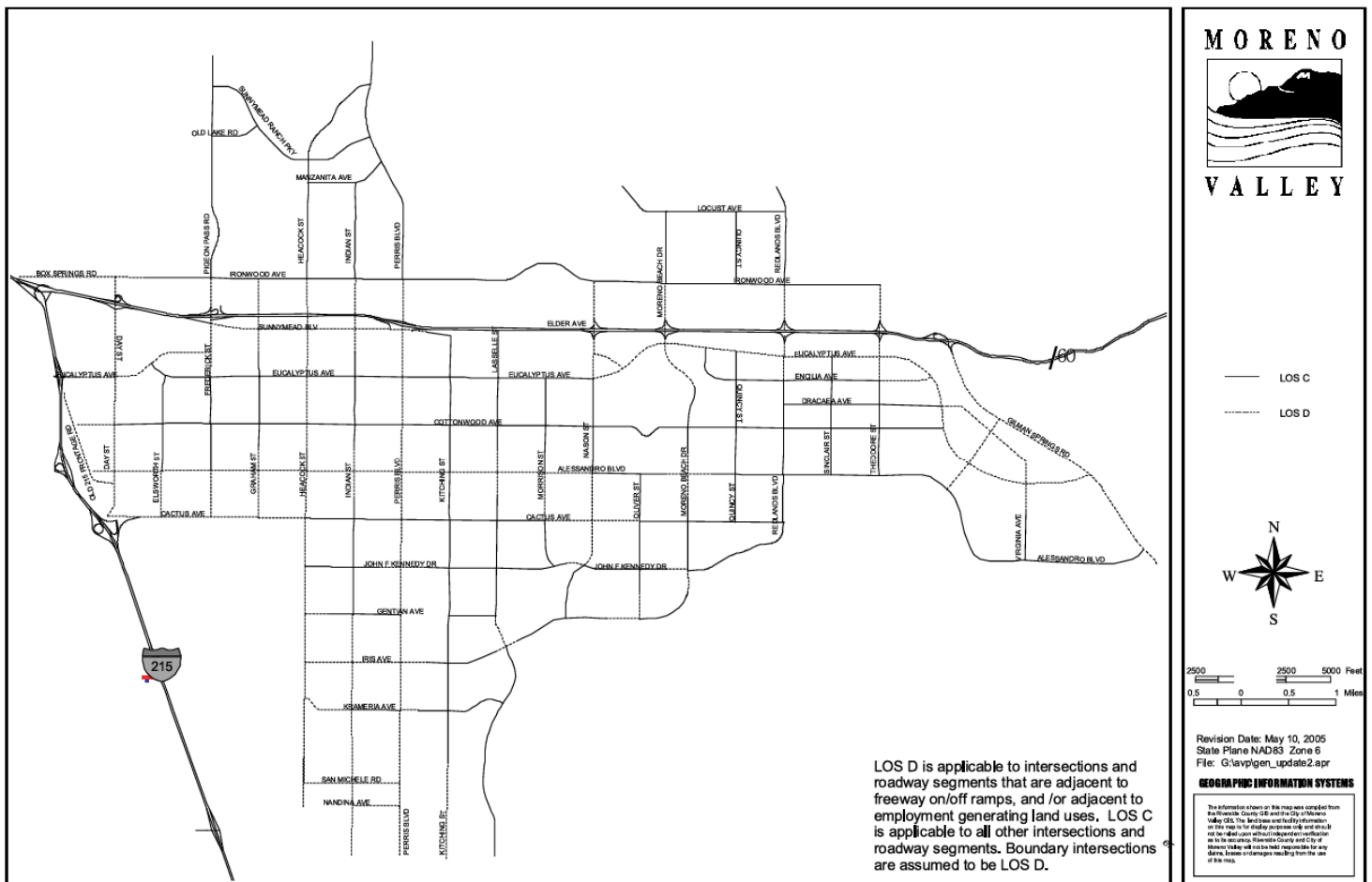
Maintain the following target Levels of Service:

LOS “D” along all City maintained roads (including intersections) and LOS “D” along I-215 and SR 74 (including intersections with local streets and roads). An exception to the local road standard is LOS “E,” at intersections of any Arterials and Expressways with SR 74, the Ramona-Cajalco Expressway or at I-215 freeway ramps.

LOS “E” may be allowed within the boundaries of the Downtown Specific Plan Area to the extent that it would support transit-oriented development and walkable communities. Increased congestion in this area will facilitate an increase in transit ridership and encourage development of a complementary mix of land uses within a comfortable walking distance from light rail stations.

For the City of Moreno Valley, target levels of service is presented Figure 3-D, from the City of Moreno Valley General Plan Environmental Impact Report, Traffic Study.

Figure 3-D – Required Level of Service for the City of Moreno Valley



Source: Urban Crossroads, June 2004.

■ Levels of Service – Existing Conditions

The intersection levels of service for existing conditions shown on Table 3-3 are based upon the existing roadway system shown on Figure 3-A and the existing AM and PM peak hour intersection volumes shown on Figure 3-B and Figure 3-C, respectively. The level of service calculation worksheets are provided in Appendix E.

Table 3-3 – Levels of Service – Existing Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec)	LOS
1. Perris Boulevard (NS) Ramona Expressway (EW)	AM PM	Signal	32.5 26.3	C C
2. Redlands Avenue (NS) Ramona Expressway (EW)	AM PM	Signal	22.2 24.5	C C
3. Evans Road (NS) Ramona Expressway (EW)	AM PM	Signal	78.3 23.7	E C
4. Evans Road (NS) Project Driveway (EW)	AM PM	<i>Does Not Exist</i>		
5. Evans Road (NS) Marbella Gate (EW)	AM PM	OWSC	OFL 49.4	F E
6. Evans Road (NS) Anira Court (EW)	AM PM	Signal	10.9 4.4	B A
7. Lasselle Street (NS) Camino Delrey (EW)	AM PM	OWSC	14.4 17.9	B C
8. Lasselle Street (NS) School South Driveway (EW)	AM PM	OWSC	13.9 18.0	B C
9. Lasselle Street (NS) Via De Anza-Rancho Verde High School (EW)	AM PM	Signal	28.7 26.8	C C

OWSC = One Way Stop Controlled and TWSC = Two Way Stop Controlled.

XXX = Exceeds LOS Standard

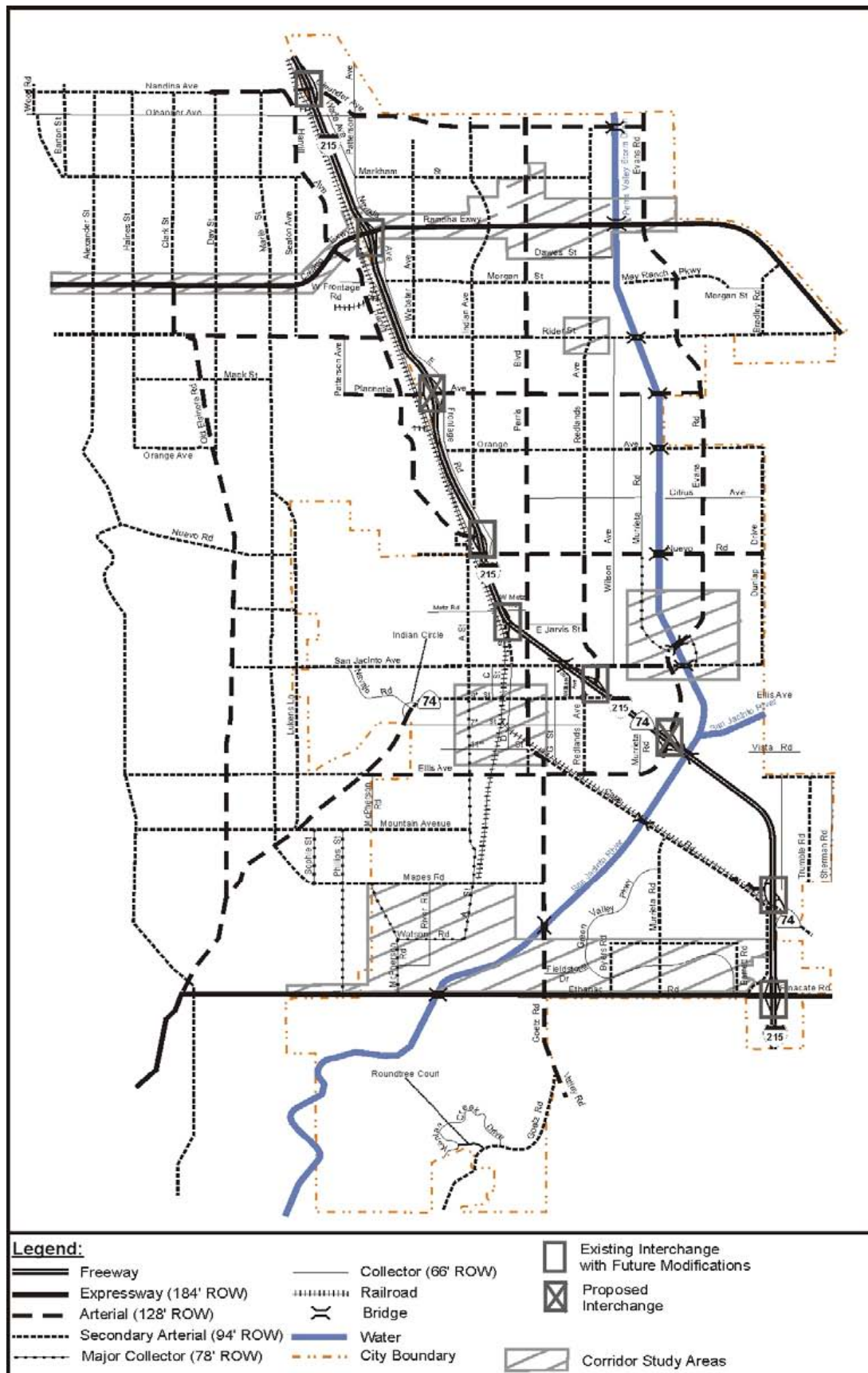
■ **General Plan Circulation**

The current City of Perris General Plan circulation element is shown on Figure 3-E.

■ **Transit Service**

The project area is served by Riverside Transit Agency (RTA) route 41 (Mead Valley Community Center to Moreno Valley College and RCRMC).

Figure 3-E – Riverside County General Plan Circulation Element



■ Method of Projection

The method of traffic projection is based on the build-up method as follows :

- Existing traffic conditions;
- Ambient growth projections;
- Project generated traffic; and
- Cumulative project generated traffic.

This report uses a study year of 2020 for analysis purposes.

■ Ambient Growth

In order to evaluate traffic conditions for the study year, area wide growth on existing roadways must be projected. The majority of the anticipated growth within the study area is accounted for with cumulative project traffic. Per discussion with the City of Perris Planning staff, this study will utilize a 3 percent per year growth rate.

■ Project Generated Traffic

Project Trip Generation

Trip Generation Rates

Trip generation represents the amount of traffic traveling to and from the proposed project. The traffic generation figures used in this study are based upon the development of 90 single family detached residential dwelling units. Table 4-1 shows the peak hour and daily trip generation rates for the proposed project.

The trip generation rates for single family detached housing are based on the weighted average trip generation rates provided in the *Trip Generation Manual (10th Edition)* by the Institute of Transportation Engineers (ITE), 2017. The inbound and outbound peak hour trip generation rates are calculated by multiplying the total peak hour generation rate by the directional distribution provided in the *Trip Generation Manual*.

Table 4-1 – Trip Generation Rates

Land Use	Unit	AM Peak Hour			PM Peak Hour			Daily
		Total	In	Out	Total	In	Out	
Single-Family Detached Housing Land Use Category: 210	DU	0.74	0.19	0.55	0.99	0.62	0.37	9.44

Average trip generation rates from *Trip Generation Manual, ITE, 10th Edition* (2017).

Project Trip Generation

Table 4-2 presents the daily and peak hour trip generation for the proposed project. As shown, the proposed project is anticipated to generate approximately 850 daily trip-ends, including 67 trip-ends during the AM peak hour and 89 trip-ends during the PM peak hour.

Table 4-2 – Project Trip Generation

Land Use	Qty	Unit	AM Peak Hour			PM Peak Hour			Daily
			Total	In	Out	Total	In	Out	
Single-Family Detached Housing	90	DU	67	17	50	89	56	33	850
PROJECT TOTAL			67	17	50	89	56	33	850

DU = Dwelling Units

Project Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is influenced by the geographical location of the site, type of land use in the study area, such as shopping centers and recreational sites, and proximity to the regional freeway system.

The trip directional orientation of traffic for the proposed project was determined based upon the existing roadway system, existing traffic patterns, and existing and future land uses. The directional distribution for the proposed project traffic assumed in this study is shown on Figure 4-A.

Project Modal Split

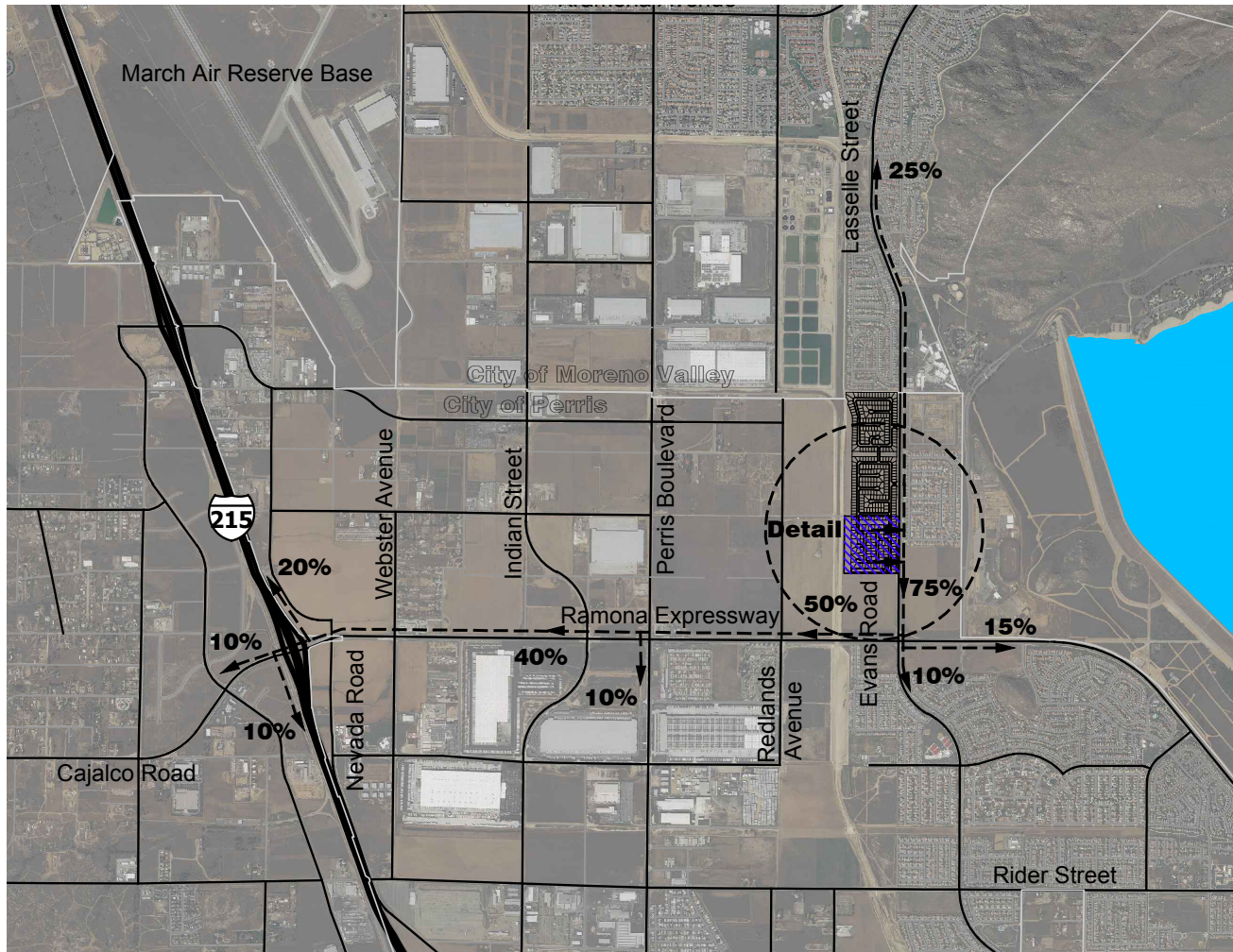
The traffic reducing potential of public transit has not been considered in this study. Therefore, the traffic projections provided in this report are considered conservative since public transit could reduce traffic volumes in the project area.

Project Trip Assignment

Trip assignment is the result of assigning the previously discussed trip generation numbers to the circulation system using the previously discussed trip distribution.

The project related AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 4-B and Figure 4-C, respectively.

Figure 4-A – Directional Distribution of Project Traffic



LEGEND

-  Project Site
-  Future Roadway
- X%** Directional Distribution To/From Proposed Project Site

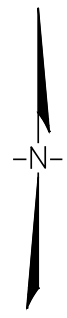
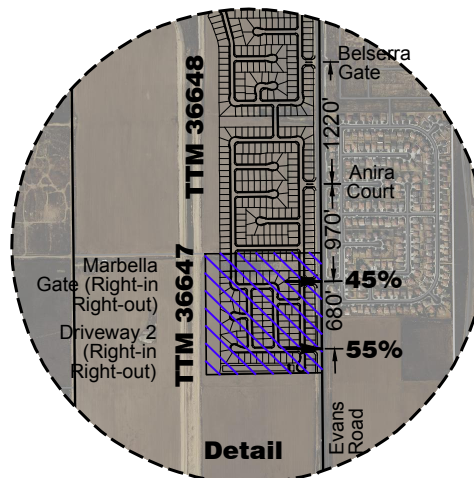


Figure 4-B – Project Only AM Peak Hour Intersection Volumes

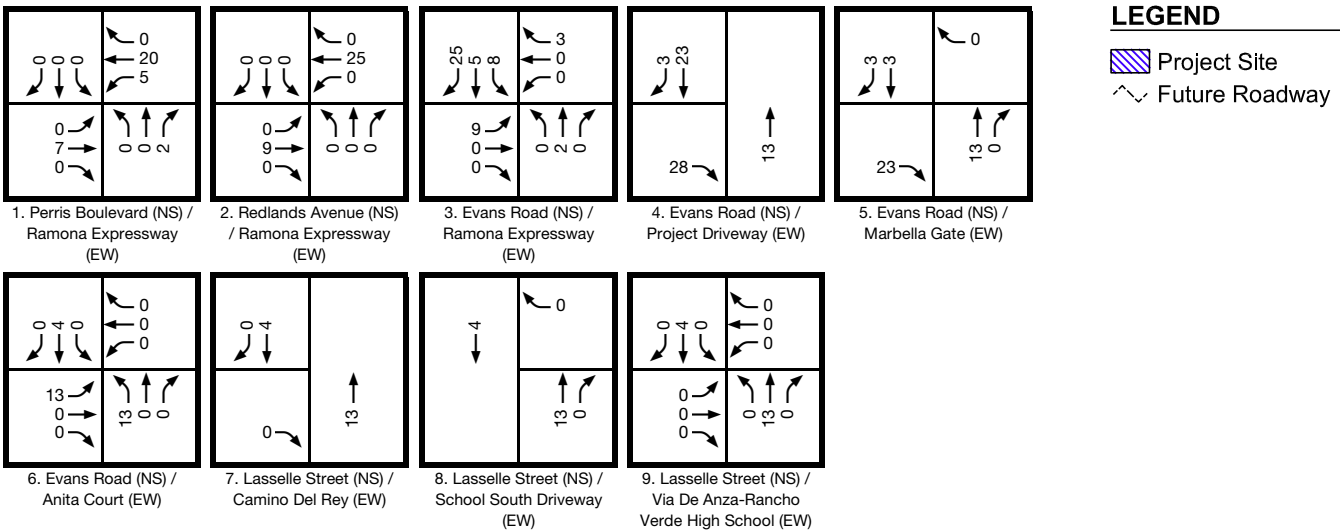
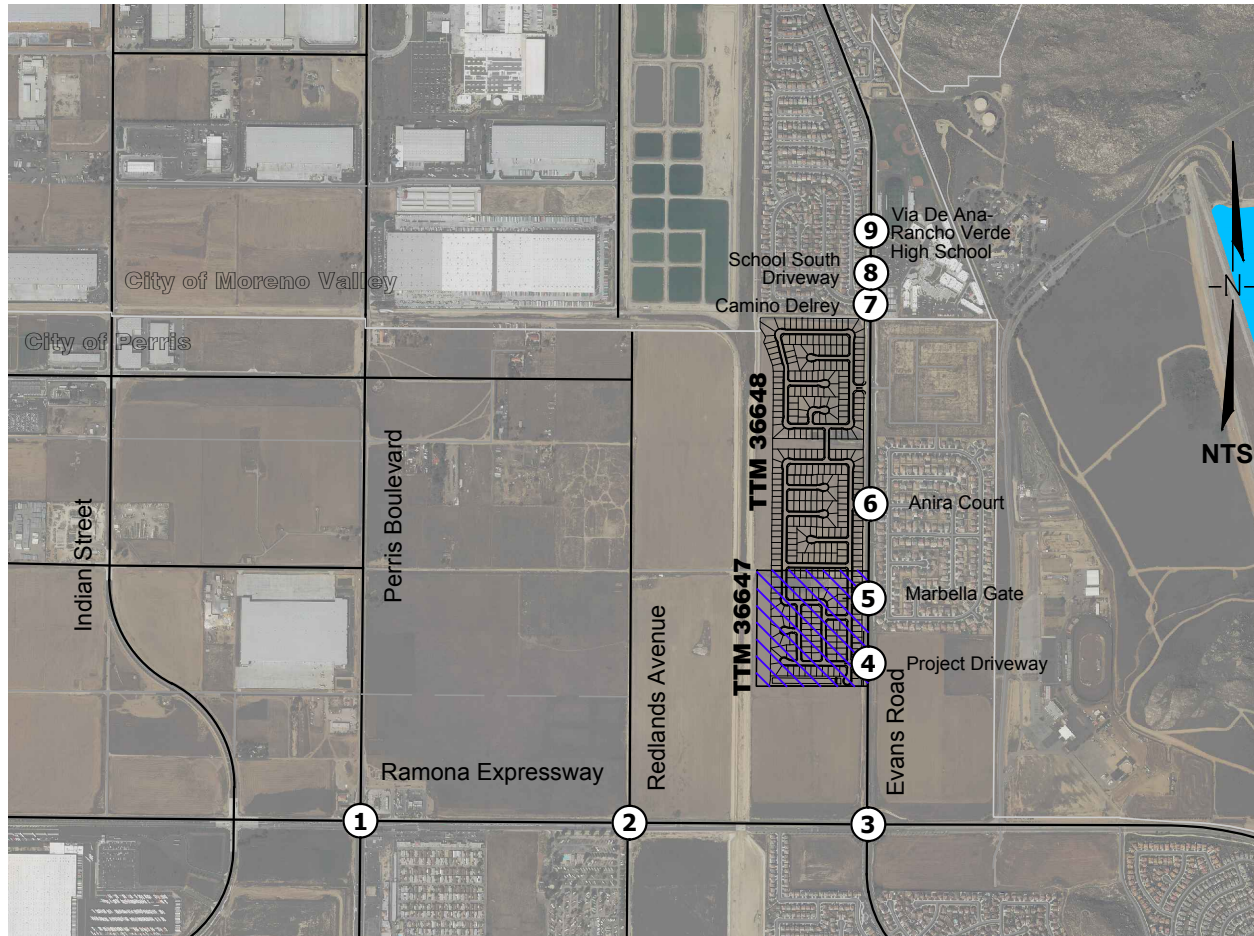
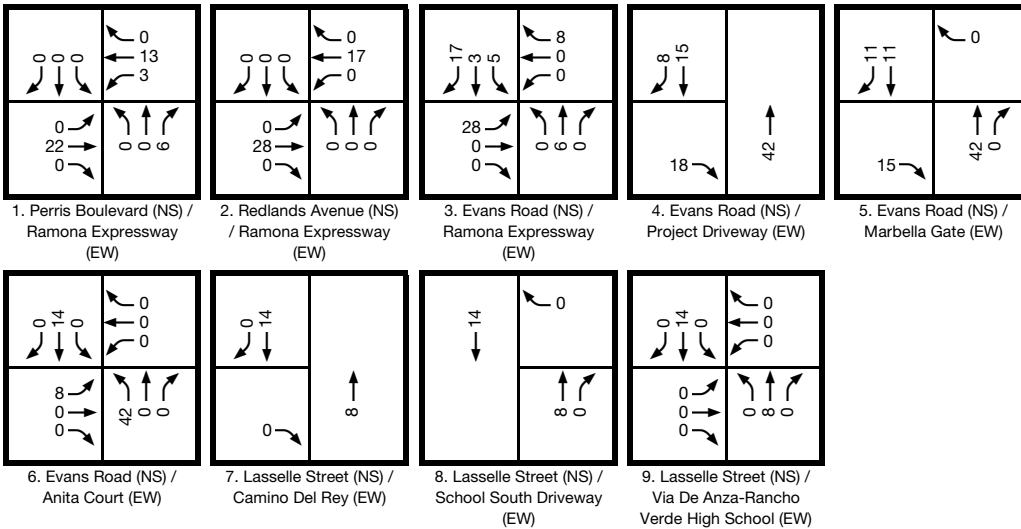
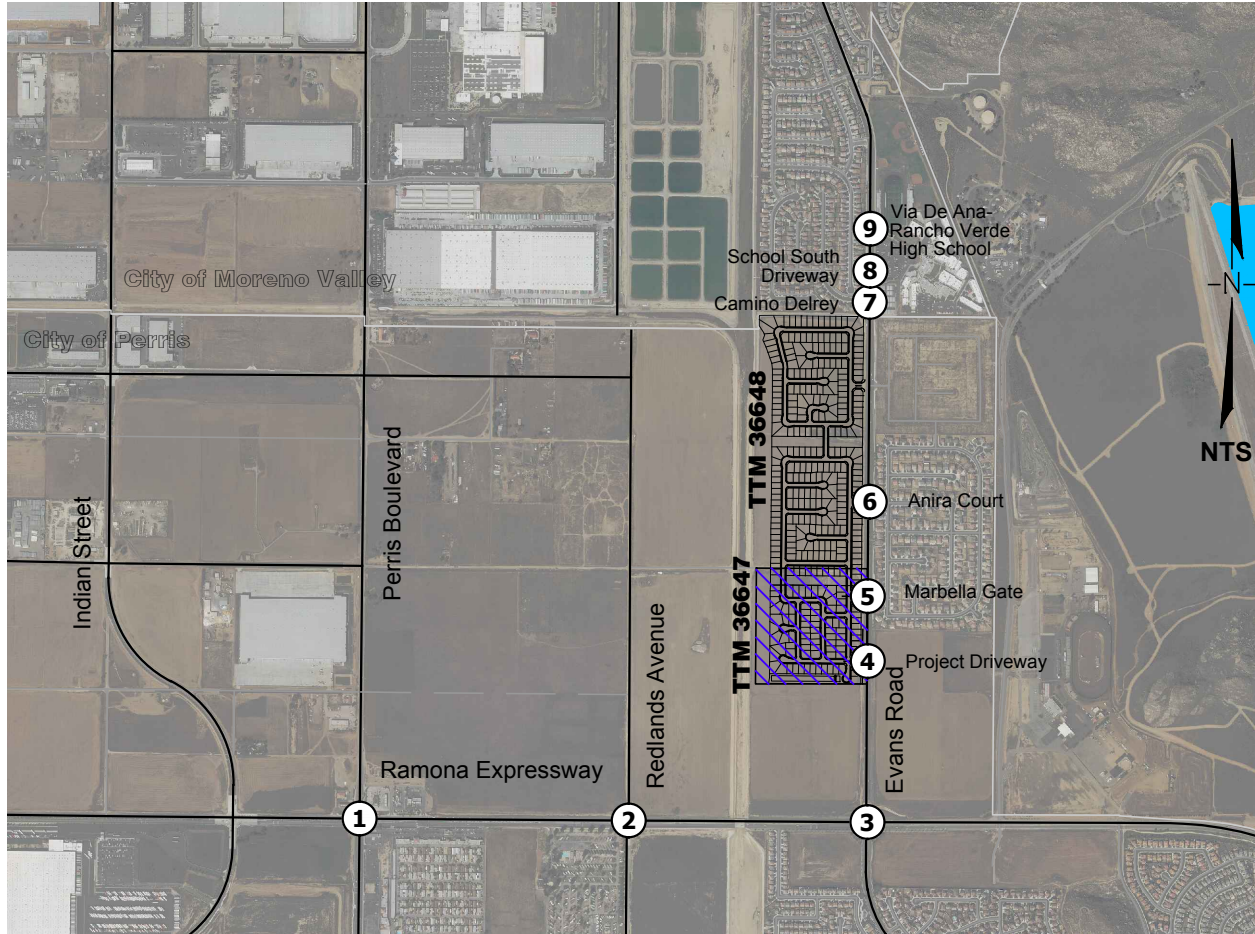


Figure 4-C – Project Only PM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

■ Cumulative Project Generated Traffic

Cumulative project traffic from within the study area is expected to have an impact on levels of service. The cumulative projects within the study area are listed in Table 4-3. These projects were included as per discussion with the City of Perris staff. The location of these projects are shown on Figure 4-D. The AM and PM peak hour intersection turning movement volumes for cumulative projects are shown on Figure 4-E and Figure 4-F, respectively.

Table 4-3 – Cumulative Projects within the Study Area

Project	Land Use	Qty	Unit	AM Peak Hour	PM Peak Hour	Daily
City of Perris						
1. Stratford Ranch (TTM 36648)	Single-Family Detached Housing	275	DU	206	275	2,618
2. Stratford Ranch Industrial	High-Cube Warehouse	1725.4	TSF	190	207	2,899
3. IDI P05-0113	High-Cube Warehouse	1750	TSF	193	210	2,940
4. P05-0477	High-Cube Warehouse	462.69	TSF	51	56	777
5. Rados Distribution Center	High-Cube Warehouse	1200	TSF	132	144	2,016
6. Investment Development Services (IDS) II	High-Cube Warehouse	350	TSF	39	42	588
7. P07-09-0018	Warehousing	170	TSF	110	84	778
8. Oakmont II P07-07-0029	High-Cube Warehouse	1600	TSF	176	192	2,688
9. TR32707	Single-Family Detached Housing	137	DU	103	137	1,304
10. TR34716	Single-Family Detached Housing	318	DU	239	318	3,027
11. Ridge I P05-0493	High-Cube Warehouse	597.37	TSF	66	72	1,004
12. Ridge II	High-Cube Warehouse	2005.2	TSF	221	241	3,369
13. Harvest Landing Specific Plan	Single-Family Detached Housing	717	DU	538	717	6,826
	Residential Condominium/Townhouse	1139	DU	362	442	5,340
	Sports Park ¹	16.7	Acres	27	78	697
	Business Park	1233.4	TSF	1,626	1,416	13,814
	Shopping Center	73.181	TSF	129	486	5,544
				2,682	3,139	32,221
				<i>Internal Trips (10%)</i>	<i>(268)</i>	<i>(314)</i>
				<i>Pass-by Trips (34%)(Retail Only)</i>	<i>0</i>	<i>(142)</i>
				PROJECT TOTAL	2,414	2,683
14. Concrete Batch Plant P06-0411	Manufacturing	2	TSF	1	1	8
15. Jordan Distribution	High-Cube Warehouse	378	TSF	42	45	635
16. Aiere	High-Cube Warehouse	642	TSF	71	77	1,079
17. Starcrest P08-11-0005; P08-11-0006	High-Cube Warehouse	454.09	TSF	50	54	763
18. Perris Marketplace	Shopping Center	516.65	TSF	424	1,800	19,748
				<i>Pass-by Trips (34%)</i>	<i>0</i>	<i>(588)</i>
				PROJECT TOTAL	424	1,212
19. Perris Logistic Center	High-Cube Warehouse	697.6	TSF	77	84	1,172
20. Mission Pacific Residential	Single-Family Detached Housing	192	DU	144	192	1,828

Table 4-5 (Continued) – Cumulative Projects within the Study Area

City of Perris						
20. Mission Pacific Commercial	Shopping Center	15	TSF	49	168	1,979
	Supermarket	50	TSF	170	474	5,112
	Pharmacy/Drugstore without Drive-Through Window	20	TSF	59	168	1,801
	High-Turnover (Sit-Down) Restaurant	15	TSF	162	148	1,907
				584	1,150	12,627
	Internal Trips (20%PM)(30%Daily)			0	(230)	(3,788)
	Pass-by Trips (34%)(Retail Only)			0	(46)	(46)
	Pass-by Trips (36%)(Supermarket Only)			0	(137)	(137)
	Pass-by Trips (53%)(Drugstore Only)			0	(71)	(71)
	Pass-by Trips (43%)(Restaurant Only)			0	(51)	(51)
	PROJECT TOTAL			584	615	8,534
21. Optimus I	High-Cube Warehouse	1460.1	TSF	161	175	2,453
22. Optimus II	High-Cube Warehouse	1037.8	TSF	114	125	1,744
23. Integra Industrial Facility	High-Cube Warehouse	864	TSF	95	104	1,452
24. CUP 14-07-0002 Outdoor Storage Yard	General Office Building	3.12	TSF	12	82	94
	Warehousing	2.816	TSF	12	6	23
City of Moreno Valley						
25. First Industrial Realty Trust PA06-0152 & PA06-0153	High-Cube Warehouse	1182.9	TSF	130	142	1,987
26. Pierce Hardy Limited Partnership PA06-0014	Building Materials and Lumber Store	67	TSF	174	301	3,026
27. March Business Center	High-Cube Warehouse	1380.2	TSF	152	166	2,319
	Warehousing	87.429	TSF	77	55	439
	General Light Industrial	16.732	TSF	15	16	117
28. Moreno Valley Industrial Park PA07-0035; PA07-0039	General Light Industrial	204.66	TSF	152	135	1,427
	High-Cube Warehouse	409.92	TSF	45	49	689
29. Indian Business Park PA07-0079	High-Cube Warehouse	1560	TSF	172	187	2,621
30. Komar Investments PA06-0021; PA06-0022; PA06-0048; PA06-0049	Warehousing	2057.4	TSF	435	413	6,642
31. Ivan Devries PA06-0017	Industrial Park	569.2	TSF	373	474	3,519
32. Vogel PA09-0004	High-Cube Warehouse	1616.1	TSF	178	194	2,715
33. TM34748	Single-Family Detached Housing	135	DU	101	135	1,285
34. TM32917	Residential Condominium/Townhouse	227	DU	99	118	1,313
35. TM33810	Single-Family Detached Housing	16	DU	12	16	152
36. TM34151	Single-Family Detached Housing	37	DU	28	37	352
37. TM32716	Single-Family Detached Housing	57	DU	43	57	543
38. Moreno Valley Walmart	Free-Standing Discount Superstore	189.52	TSF	351	824	9,618
	Gasoline/Service Station with Convenience Market and Car Wash	16	VFP	189	222	2,445
				540	1,046	12,063
	Internal Trips (10%)			(54)	(104)	(1,206)
	Pass-by Trips (AM: 62%, PM/Daily: 56%)(Gas Only)			(104)	(110)	(1,232)
	PROJECT TOTAL			382	832	9,625

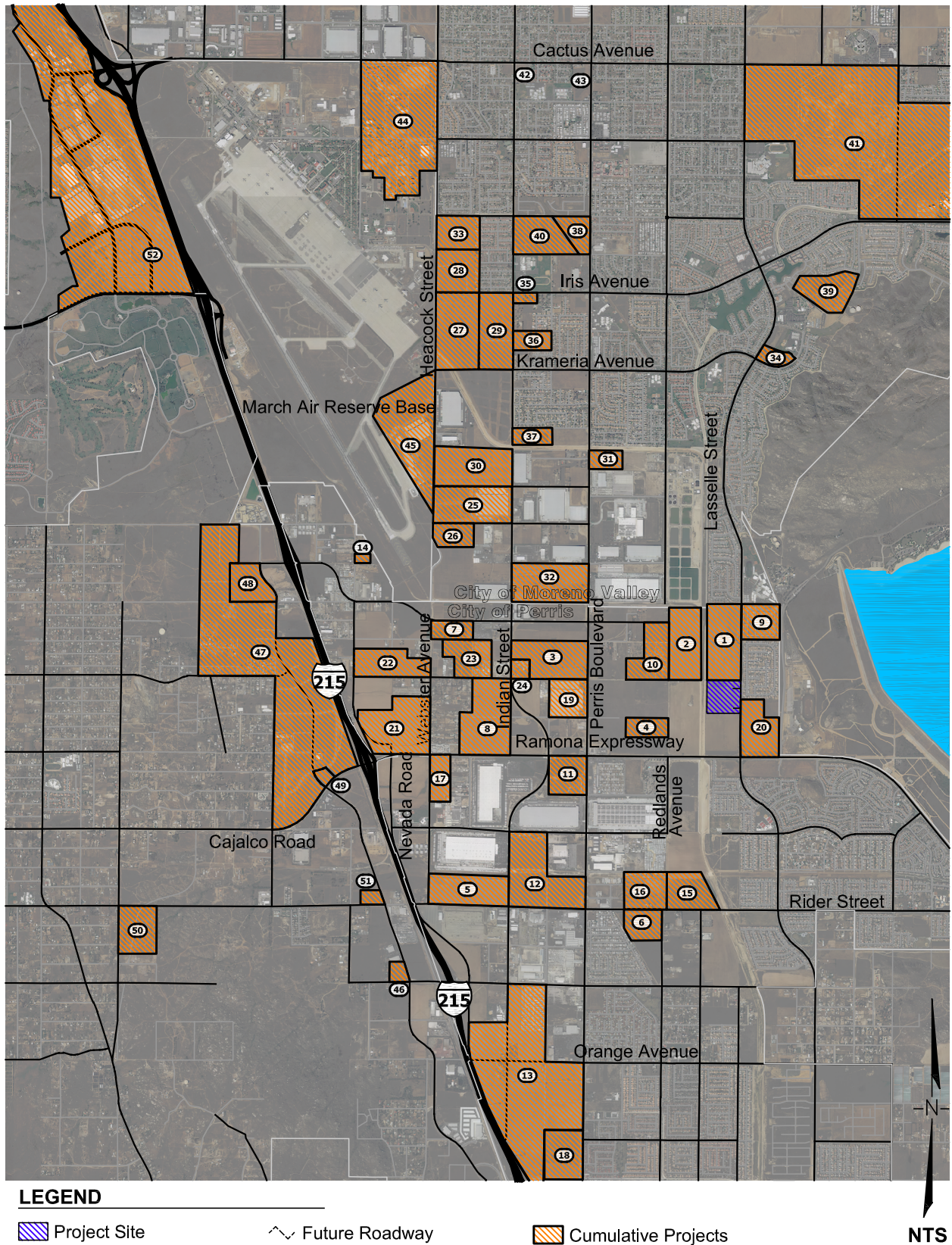
Table 4-5 (Continued) – Cumulative Projects within the Study Area

City of Moreno Valley						
39. TR32142	Single-Family Detached Housing	81	DU	61	81	771
40. TR22180	Single-Family Detached Housing	87	DU	65	87	828
41. Moreno Medical Campus	Medical-Dental Office Building	80	TSF	191	286	2,890
41. Aqua Bella Specific Plan	Single-Family Detached Housing	2922	DU	2,055	2,191	23,426
41. Granite Capitol (TR34329)	Single-Family Detached Housing	90	DU	68	90	857
41. Cresta Bella	General Office Building	30	TSF	73	112	526
42. TR33417	Residential Condominium/Townhouse	10	DU	4	5	58
43. TR33607	Residential Condominium/Townhouse	54	DU	24	28	314
March Joint Powers Authority						
44. March Lifecare Campus Specific Plan	Medical-Dental Office Building	190	TSF	454	678	6,865
	Shopping Center	210	TSF	245	985	11,000
	Research and Development Center	200	TSF	237	235	1,786
	Hospital	50	TSF	56	57	825
	Assisted Living	660	Beds	92	145	1,756
				1,084	2,100	22,232
	<i>Pass-by Trips (34%)(Retail Only)</i>			0	(335)	(335)
	PROJECT TOTAL			1,084	1,765	21,897
45. Airport Master Plan ¹	General Light Industrial	559	TSF	1,511	2,148	19,953
County of Riverside						
46. PP18908	General Light Industrial	133	TSF	68	33	892
47. Majestic Freeway Business Center SP341; PP21552	High-Cube Warehouse	6200	TSF	682	744	10,416
48. Oleander Business Park PP20699	Warehousing	1206.7	TSF	325	293	4,198
49. Ramona Metrolink Station	Light Rail Transit Station with Parking	300	PS	321	372	753
50. TR33869	Single-Family Detached Housing	39	DU	29	39	371
51. PP21144	Industrial Park	190.8	TSF	157	179	1,630
52. Meridian Business Park	Business Park	1998.8	TSF	2,597	2,187	21,942
TOTAL				16,495	19,876	230,875

DU = Dwelling Units, TSF = 1,000 Square Feet Gross Floor Area, PS = Parking Spaces.

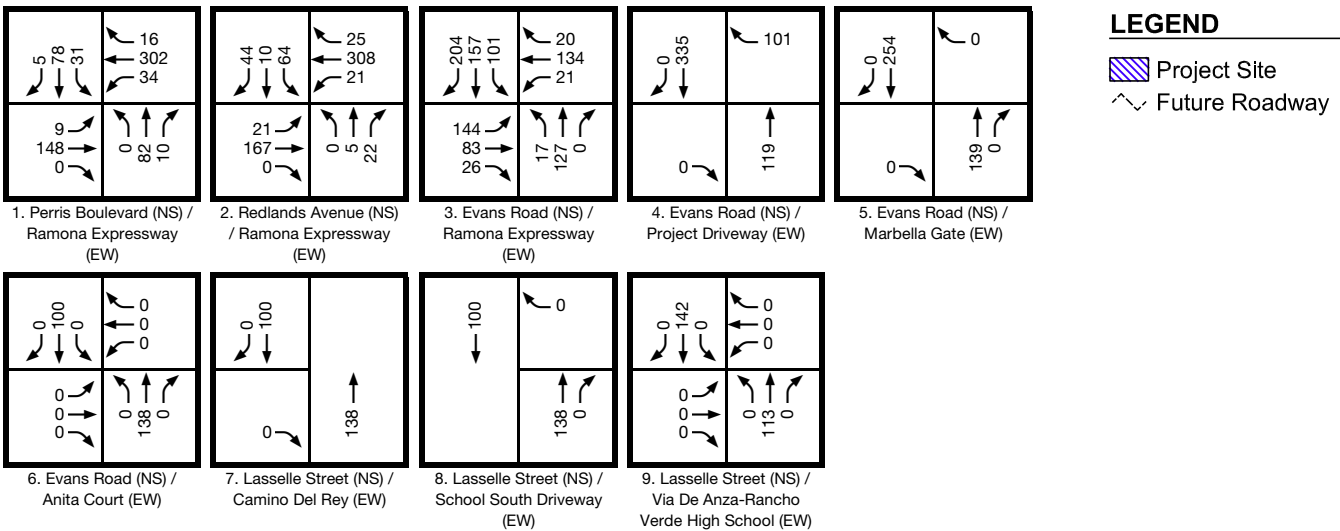
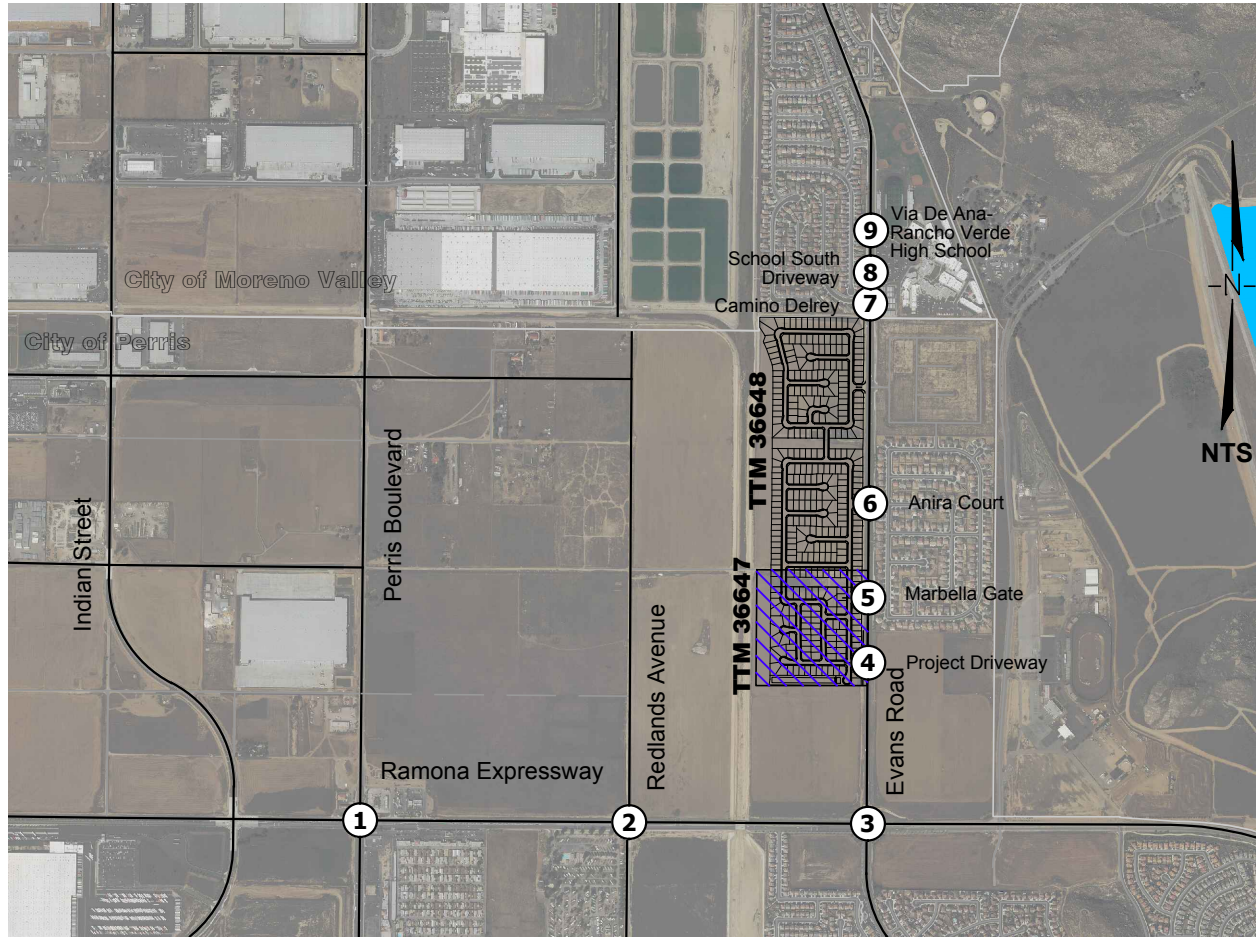
¹ Trip generation derived from *Stratford Ranch Industrial Traffic Study, Urban Crossroads*.

Figure 4-D Cumulative Projects Within the Study Area



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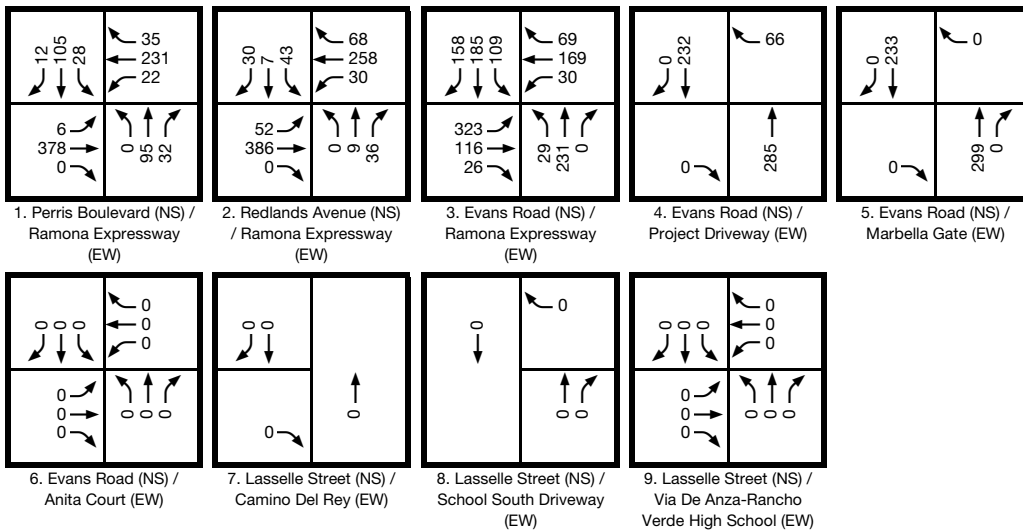
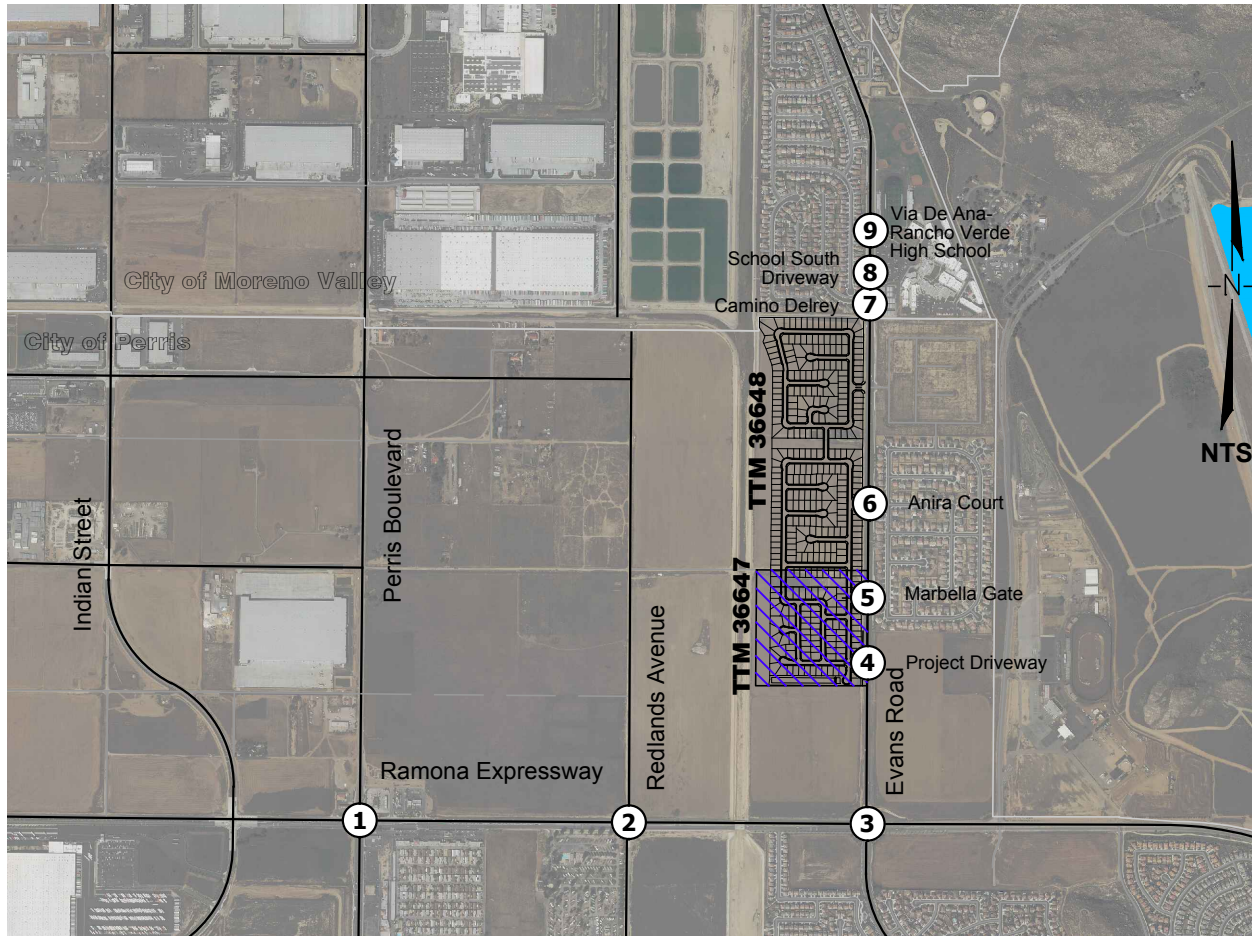
Figure 4-E – Cumulative Projects Only AM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Figure 4-F – Cumulative Projects Only PM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Capacity and Level of Service and Improvement Analysis

Levels of Service – Existing Plus Project (2018) Conditions

The existing plus project (2018) scenario includes existing traffic and project traffic. Table 5-1 provides the projected delay and levels of service at the study intersections under existing plus project (2018) conditions without off-site improvements. These levels of service vary from LOS A to F. The existing plus project AM and PM peak hour intersection turning movement volumes are shown on Figure 5-A and Figure 5-B, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study area intersection operates at an unacceptable LOS:

3. Evans Road (NS) / Ramona Expressway (EW)

Table 5-1 – Levels of Service – Existing Plus Project (2018) Conditions

Intersection	Peak Hour	Without Project			With Project		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
1. Perris Boulevard (NS) Ramona Expressway (EW)	AM PM	Signal	32.5 26.3	C C	Signal	32.5 26.3	C C
2. Redlands Avenue (NS) Ramona Expressway (EW)	AM PM	Signal	22.2 24.5	C C	Signal	22.1 24.2	C C
3. Evans Road (NS) Ramona Expressway (EW)	AM PM	Signal	78.3 23.7	E C	Signal	83.2 24.1	F C
4. Evans Road (NS) Project Driveway (EW)	AM PM	<i>Does Not Exist</i>			OWSC	15.4 13.3	C B
5. Evans Road (NS) Marbella Gate (EW)	AM PM	OWSC	OFL 49.4	F E	TWSC	19.4 12.8	C B
6. Evans Road (NS) Anira Court (EW)	AM PM	Signal	10.9 4.4	B A	Signal	26.9 18.2	C C
7. Lasselle Street (NS) Camino Delrey (EW)	AM PM	OWSC	14.4 17.9	B C	OWSC	14.4 18.1	B C
8. Lasselle Street (NS) School South Driveway (EW)	AM PM	OWSC	13.9 18.0	B C	OWSC	14.0 27.5	B C
9. Lasselle Street (NS) Via De Anza-Rancho Verde High School (EW)	AM PM	Signal	28.7 26.8	C C	Signal	29.3	C

OWSC = One Way Stop Controlled and TWSC = Two Way Stop Controlled

XXX = Exceeds LOS Standard

Levels of Service Existing Plus Project (2018) with Improvements

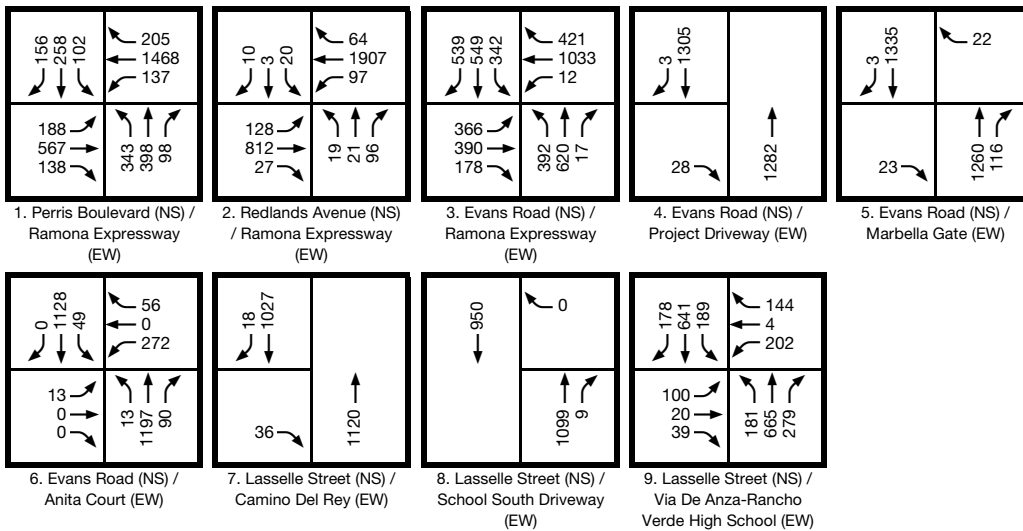
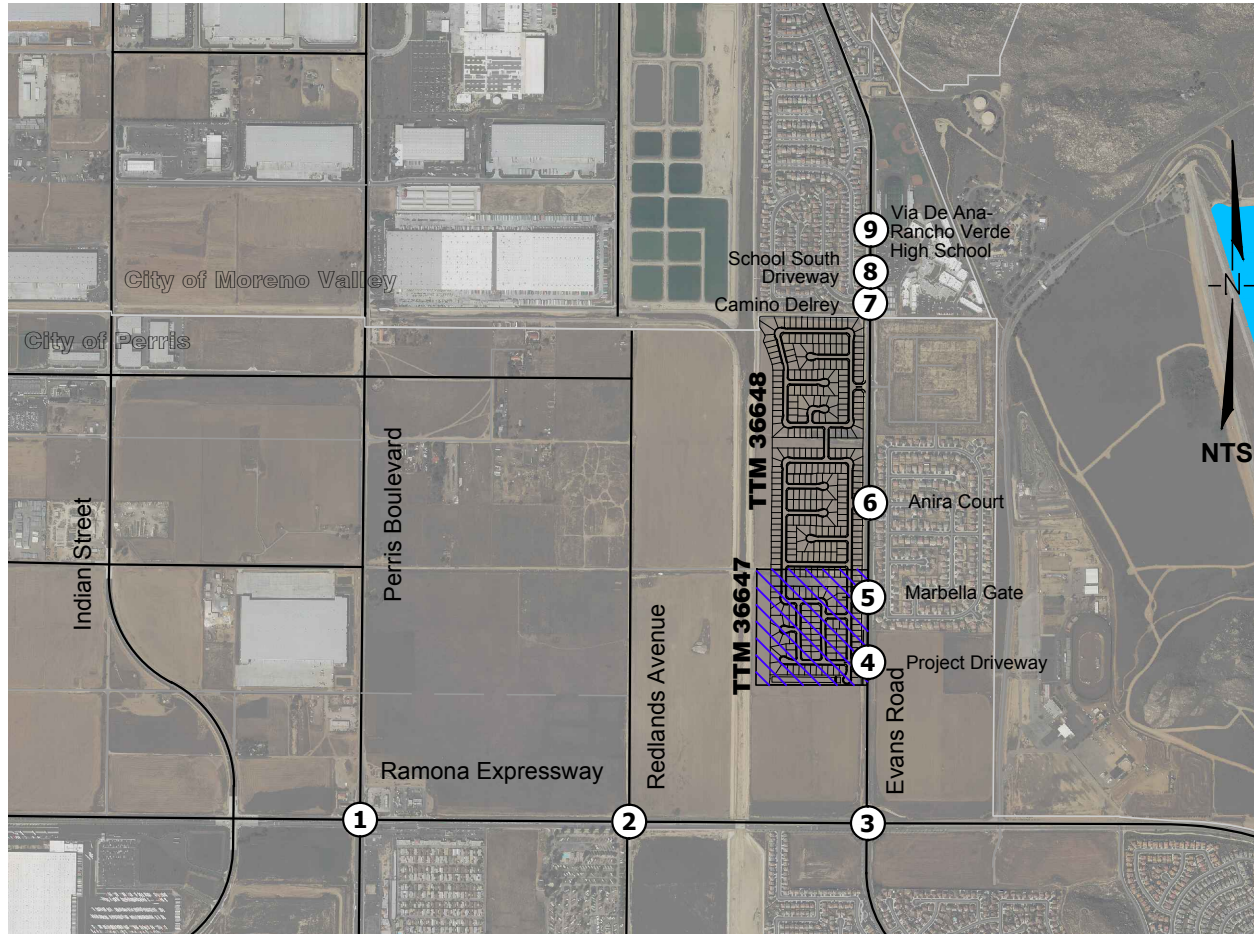
Table 5-2 provides the projected delay and levels of service at the study intersections under existing plus project (2018) conditions with off-site improvements. With the recommended off-site improvements, the study area intersection would operate at an acceptable LOS D or better. The level of service calculation worksheets are provided in Appendix E.

Table 5-2 – Levels of Service – Existing Plus Project (2018) with Improvements

Intersection	Peak Hour	Without Improvements			With Improvements		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
3. Evans Road (NS) Ramona Expressway (EW)	AM	Signal	83.2	F	Signal	49.2	D
	PM		24.1	C		23.9	C

XXX = Exceeds LOS Standard

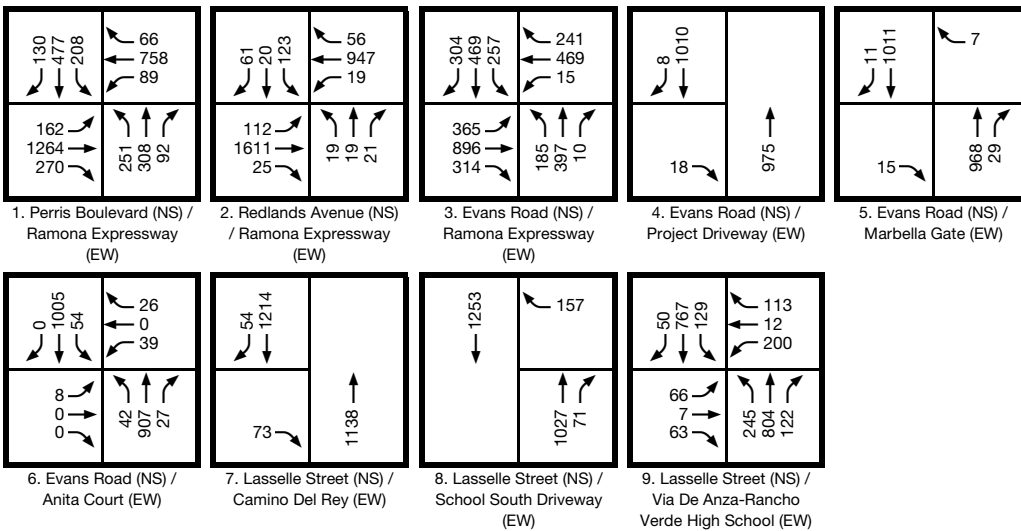
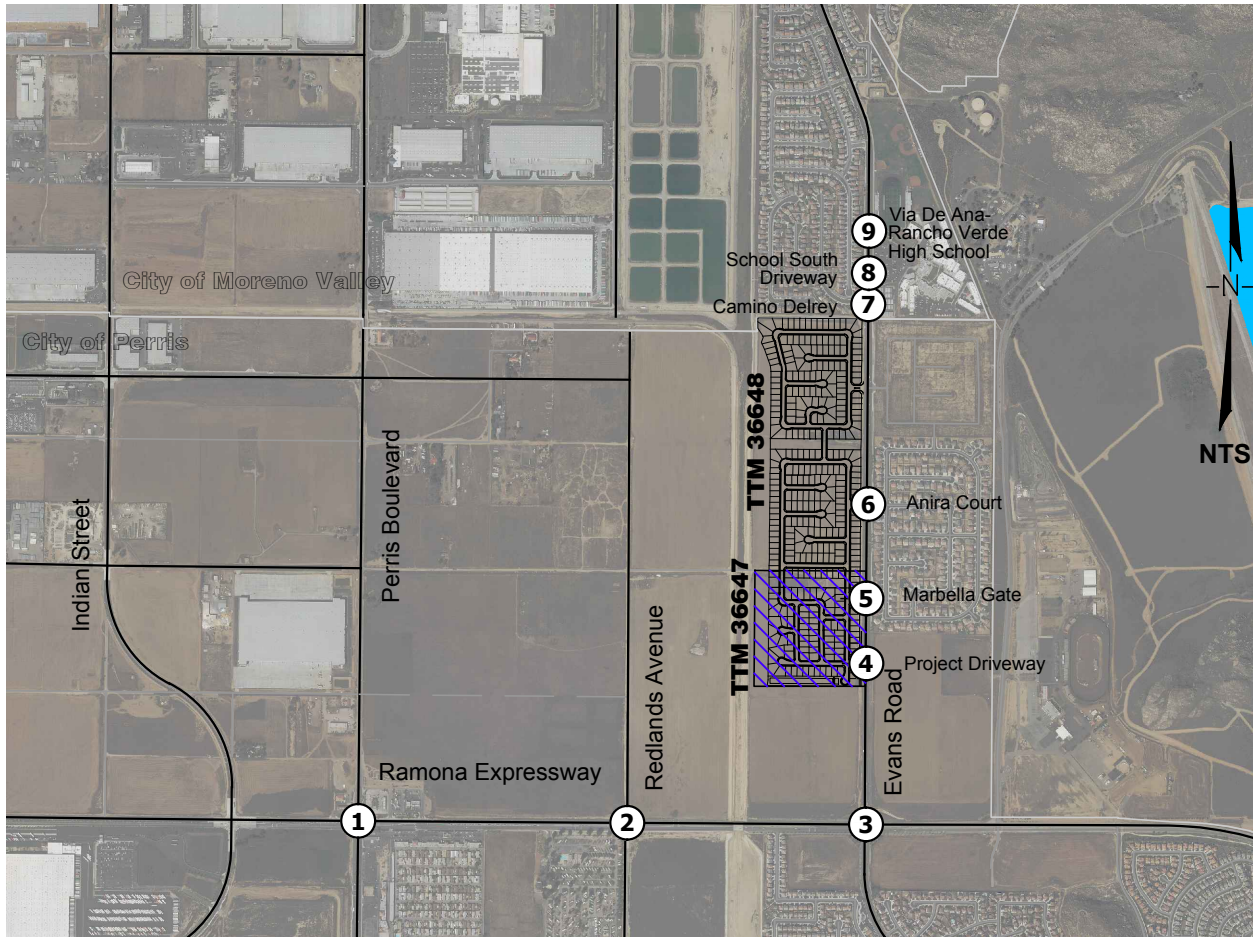
Figure 5-A – Existing Plus Project (2018) AM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Figure 5-B – Existing Plus Project (2018) PM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Levels of Service – Existing Plus Ambient Growth Plus Project (2020) Conditions

The existing plus ambient growth plus project (2020) scenario includes existing traffic, an ambient growth of three percent per year for two years to 2020 (a total of six percent) and project traffic. Table 5-3 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus project conditions without off-site improvements. These levels of service vary from LOS A to E. The existing plus ambient growth plus project AM and PM peak hour intersection turning movement volumes are shown on Figure 5-C and Figure 5-D, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study area intersection operates at an unacceptable LOS:

3. Evans Road (NS) / Ramona Expressway (EW)

Table 5-3 – Levels of Service – Existing Plus Ambient Growth Plus Project (2020) Conditions

Intersection	Peak Hour	Without Project			With Project		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
1. Perris Boulevard (NS) Ramona Expressway (EW)	AM PM	Signal	32.6 28.9	C C	Signal	32.8 28.8	C C
2. Redlands Avenue (NS) Ramona Expressway (EW)	AM PM	Signal	22.4 23.6	C C	Signal	22.4 22.9	C C
3. Evans Road (NS) Ramona Expressway (EW)	AM PM	Signal	94.4 23.0	F C	Signal	99.7 25.4	F C
4. Evans Road (NS) Project Driveway (EW)	AM PM	<i>Does Not Exist</i>			OWSC	16.2 13.3	C B
5. Evans Road (NS) Marbella Gate (EW)	AM PM	TWSC	20.7 12.3	C B	TWSC	21.0 13.0	C B
6. Evans Road (NS) Anira Court (EW)	AM PM	Signal	27.8 8.5	C A	Signal	29.2 9.4	C A
7. Lasselle Street (NS) Camino Delrey (EW)	AM PM	OWSC	15.1 19.4	C C	OWSC	15.1 16.2	C C
8. Lasselle Street (NS) School South Driveway (EW)	AM PM	OWSC	14.5 19.7	B C	OWSC	14.6 17.3	B C
9. Lasselle Street (NS) Via De Anza-Rancho Verde High School (EW)	AM PM	Signal	27.9 29.6	C C	Signal	28.3 25.5	C C

OWSC = One Way Stop Controlled and TWSC = Two Way Stop Controlled

XXX = Exceeds LOS Standard

Levels of Service Existing Plus Ambient Growth Plus Project (2020) with Improvements

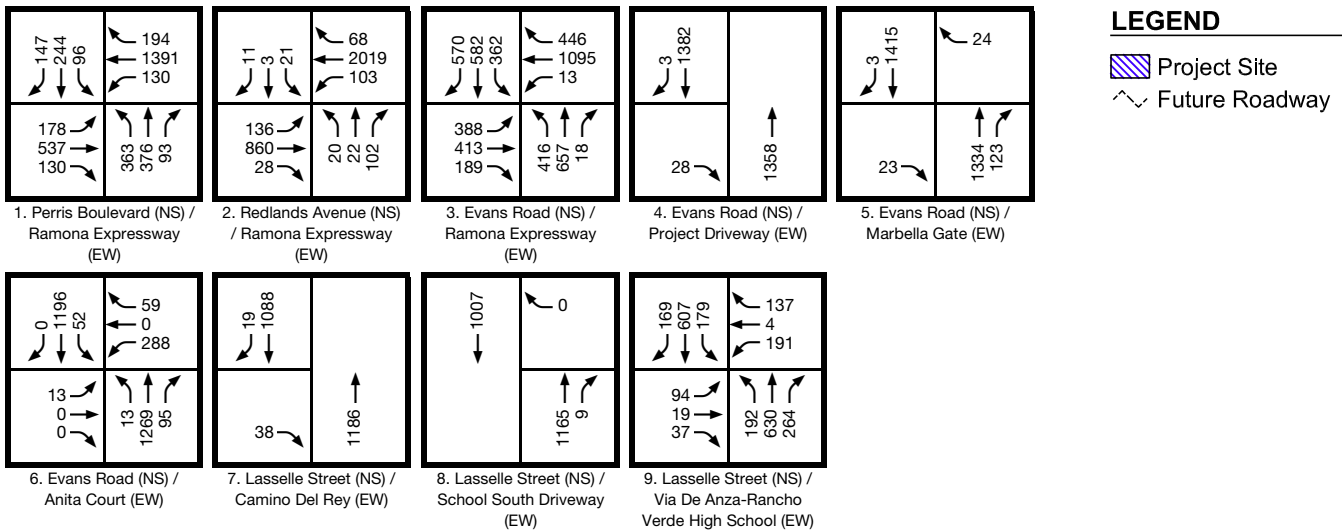
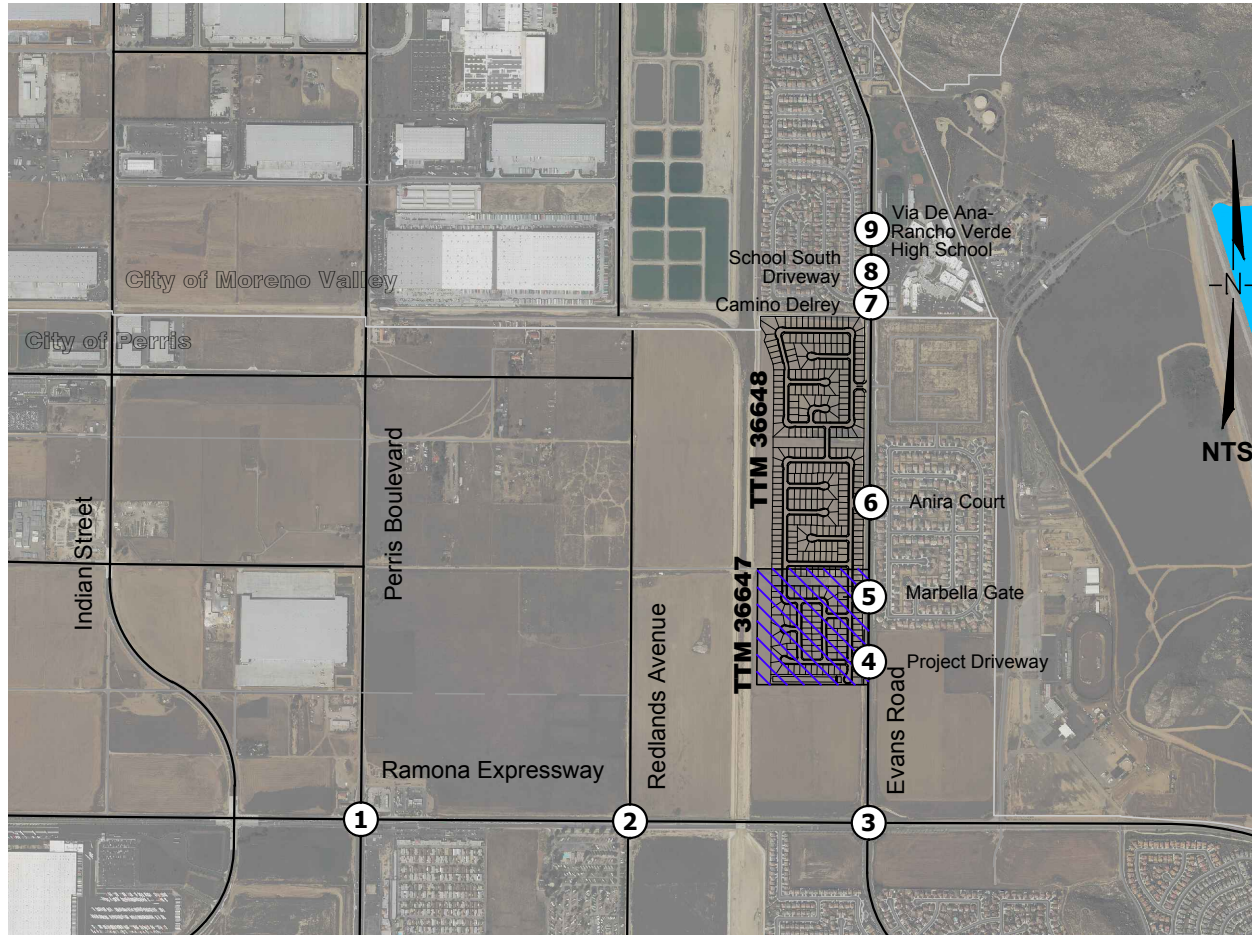
Table 5-4 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus project (2020) conditions with off-site improvements. With the recommended off-site improvements, the study area intersection would operate at an acceptable LOS D or better. The level of service calculation worksheets are provided in Appendix E.

Table 5-4 – Levels of Service – Existing Plus Project (2018) with Improvements

Intersection	Peak Hour	Without Improvements			With Improvements		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
3. Evans Road (NS) Ramona Expressway (EW)	AM	Signal	83.2	F	Signal	49.2	D
	PM		24.1	C		23.9	C

XXX = Exceeds LOS Standard

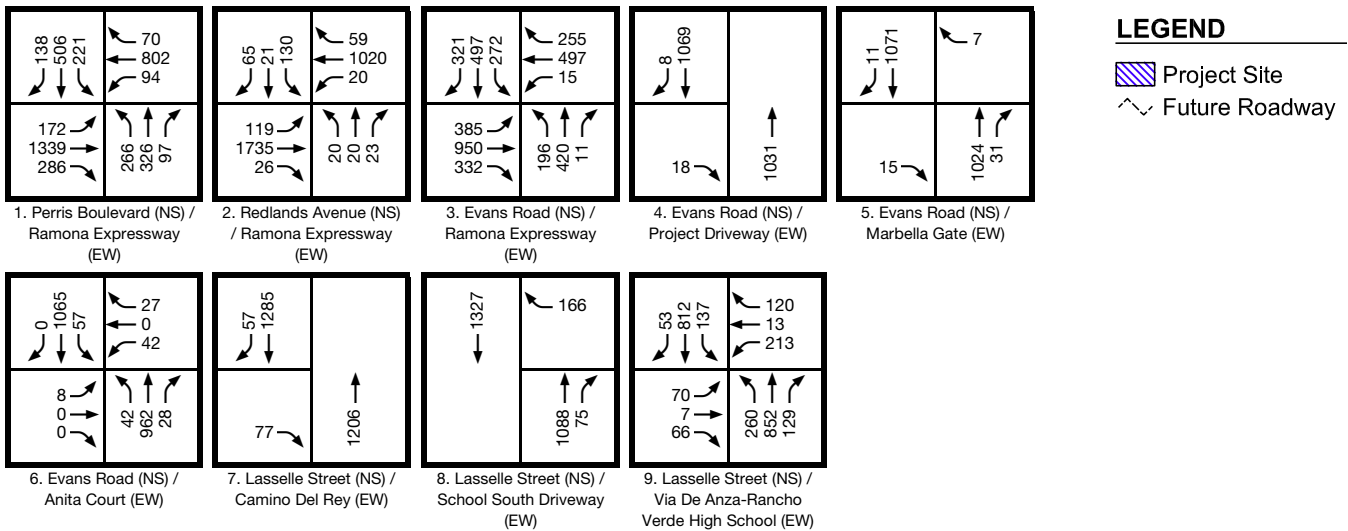
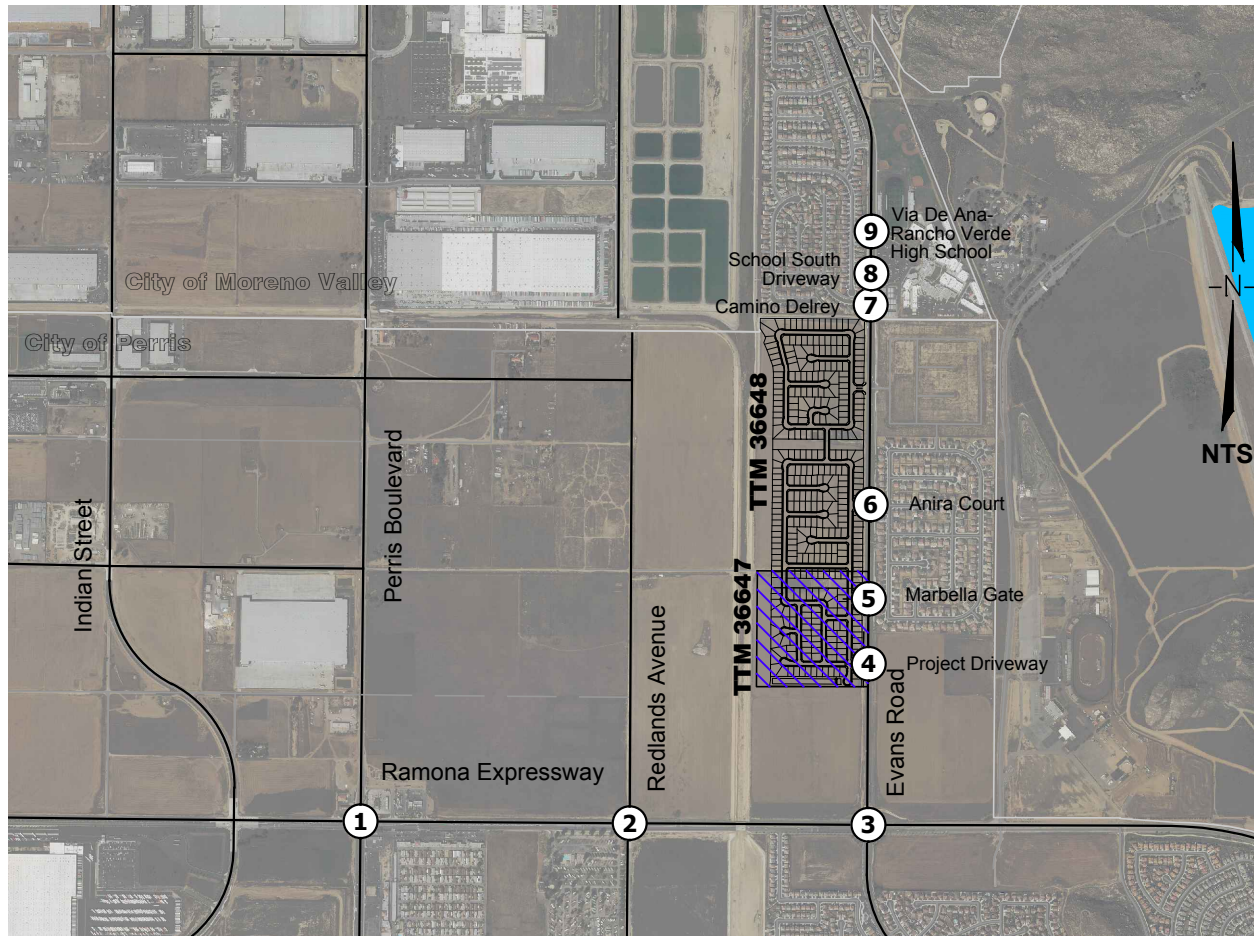
Figure 5-C – Existing Plus Ambient Growth Plus Project (2020) AM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Figure 5-D – Existing Plus Ambient Growth Plus Project (2020) PM Peak Hour Intersection Volumes



LEGEND

- Project Site
- Future Roadway

Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) Conditions

The existing plus ambient growth plus project (2020) scenario includes existing traffic, an ambient growth of three percent per year for two years to 2020 (a total of six percent), other projects in the project area provided by the City of Perris and project traffic. Table 5-5 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus cumulative plus project (2020) conditions without off-site improvements. These levels of service vary from LOS A to F. The existing plus ambient growth plus cumulative plus project AM and PM peak hour intersection turning movement volumes are shown on Figure 5-E and Figure 5-F, respectively. The levels of service are based upon the existing geometrics for the study intersections. The level of service calculation worksheets are provided in Appendix E. The following study intersection is expected to operate at an unacceptable level of service:

3. Evans Road (NS) / Ramona Expressway (EW)

Table 5-5 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) Conditions

Intersection	Peak Hour	Without Project			With Project		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
1. Perris Boulevard (NS) Ramona Expressway (EW)	AM PM	Signal	36.2 29.7	D C	Signal	36.2 32.9	D C
2. Redlands Avenue (NS) Ramona Expressway (EW)	AM PM	Signal	30.2 26.0	C C	Signal	32.8 25.4	C C
3. Evans Road (NS) Ramona Expressway (EW)	AM PM	Signal	126.0 37.9	F D	Signal	133.0 39.5	F D
4. Evans Road (NS) Project Driveway (EW)	AM PM	<i>Does Not Exist</i>			OWSC	76.5 30.8	F F
5. Evans Road (NS) Marbella Gate (EW)	AM PM	TWSC	16.8 14.5	C B	TWSC	19.2 14.8	C B
6. Evans Road (NS) Anira Court (EW)	AM PM	Signal	21.8 8.0	C A	Signal	22.7 9.5	C A
7. Lasselle Street (NS) Camino Delrey (EW)	AM PM	OWSC	14.8 18.1	B C	OWSC	14.8 18.3	B C
8. Lasselle Street (NS) School South Driveway (EW)	AM PM	OWSC	14.5 19.5	B C	OWSC	14.6 19.6	B C
9. Lasselle Street (NS) Via De Anza-Rancho Verde High School (EW)	AM PM	Signal	27.1 24.7	C C	Signal	26.6 24.8	C C

OWSC = One Way Stop Controlled and TWSC = Two Way Stop Controlled

OFL = Overflow conditions; Delay > 200 sec

XXX = Exceeds LOS Standard

Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) with Improvements

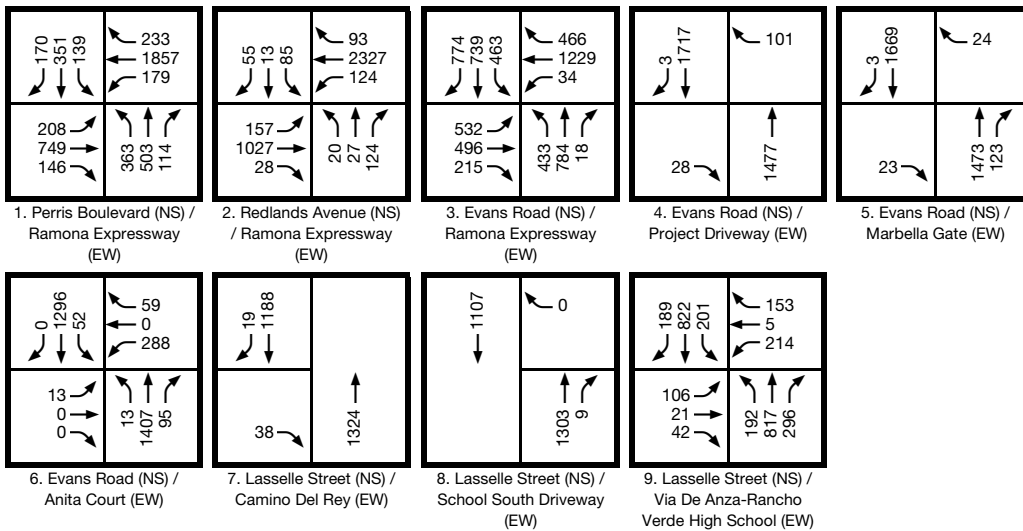
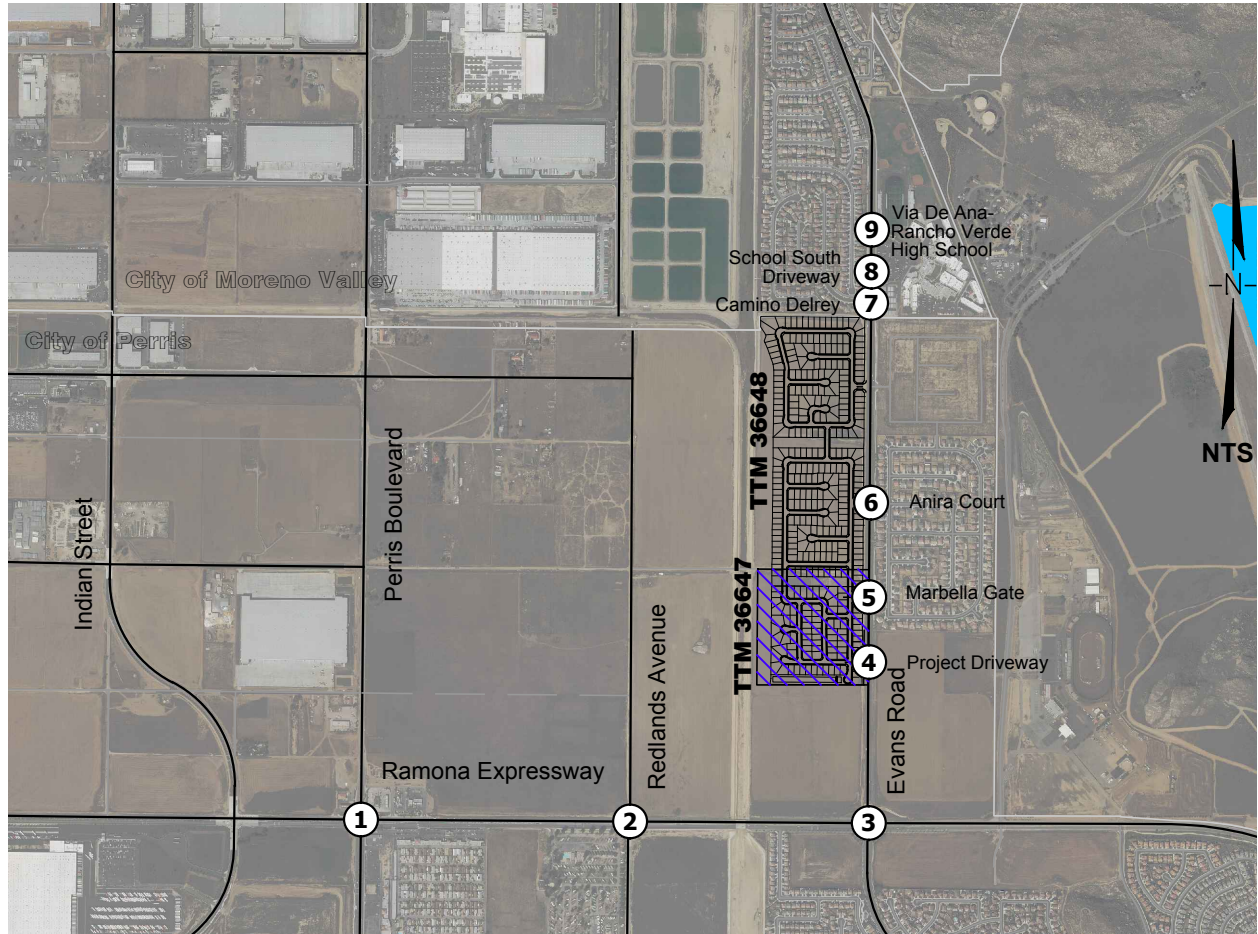
Table 5-6 provides the projected delay and levels of service at the study intersections under existing plus ambient growth plus cumulative plus project (2020) conditions with off-site improvements. With the recommended off-site improvements, the study area intersection would operate at an acceptable E or better. The level of service calculation worksheets are provided in Appendix E.

Table 5-6 – Levels of Service – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) with Improvements

Intersection	Peak Hour	Without Improvements			With Improvements		
		Traffic Control	Delay (sec)	LOS	Traffic Control	Delay (sec)	LOS
3. Evans Road (NS) Ramona Expressway (EW)	AM	Signal	133.0	F	Signal	57.0	E
	PM		39.5	D		33.5	C

XXX = Exceeds LOS Standard

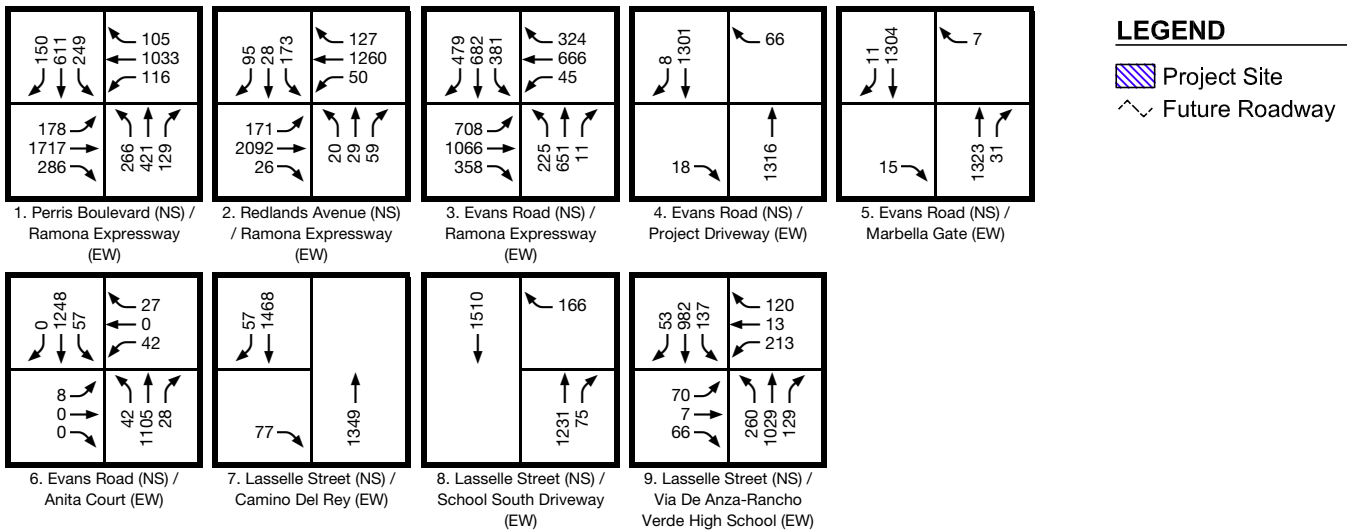
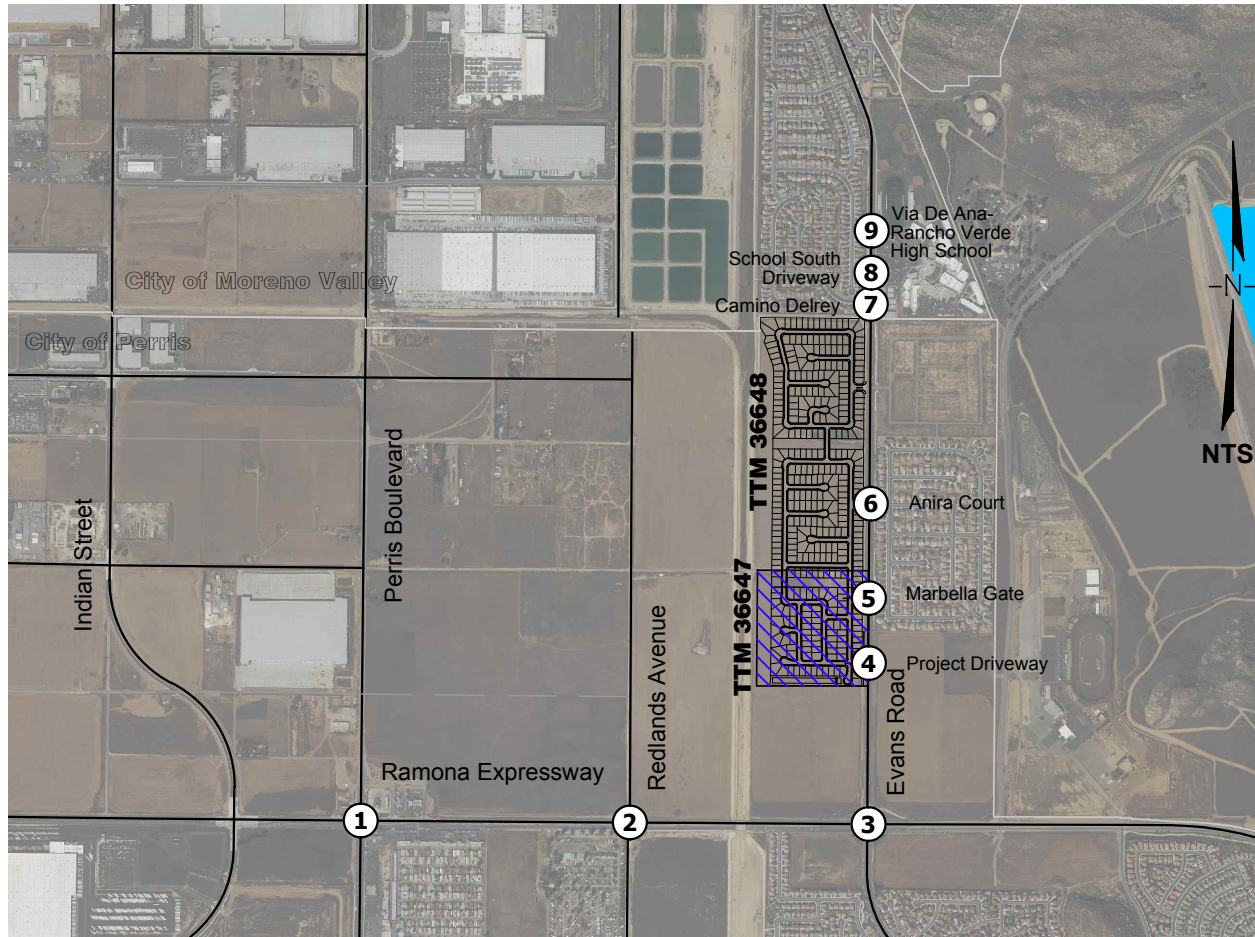
Figure 5-E – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) AM Peak Hour



LEGEND

- Project Site
- Future Roadway

Figure 5-F – Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) PM Peak Hour



FINDINGS AND RECOMMENDATIONS

Traffic Impacts and Level of Service Analysis

Proposed Mitigation Measures – Existing Plus Project (2018) Conditions

With the recommended mitigation measures presented in Table 6-1 and Figure 6-A, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus project (2018) scenario.

Table 6-1 – Summary of Improvements for Existing Plus Project (2018) Conditions

Intersection	Scenario	Northbound			Southbound			Eastbound			Westbound			Traffic Control
		L	T	R	L	T	R	L	T	R	L	T	R	
1. Perris Boulevard (NS) Ramona Expressway (EW)	Existing	2	2	1	2	2	1	2	3	1	2	3	S	Signal
2. Redlands Avenue (NS) Ramona Expressway (EW)	Existing	1	1	S	1	1	1	1	3	1	1	3	1	Signal
3. Evans Road (NS) Ramona Expressway (EW)	Existing Improvements	2 2	2 2	S S	2 2	2 2	1 1OL	2 2	3 3	1f 1f	1 1	2 2	1 1	Signal Signal
4. Evans Road (NS) Project Driveway (EW)	Existing Improvements	NA NA	2 2	NA NA	NA NA	2 2	NA S	NA NA	NA 1	NA 1	NA NA	NA NA	NA NA	NA OWSC
5. Evans Road (NS) Marbella Gate (EW)	Existing Improvements	NA NA	3 2	S S	NA NA	2 2	1 S	NA NA	NA 1	NA 1	NA NA	LR NA	NA 1	OWSC TWSC
6. Evans Road (NS) Anira Court (EW)	Existing Improvements	NA 1	3 2	S S	1 1	2 2	NA S	NA 1	NA 1	NA S	1 1	NA 1	1 S	Signal Signal
7. Lasselle Street (NS) Camino Delrey (EW)	Existing	NA	2	NA	NA	2	S	NA	NA	1	NA	NA	NA	OWSC
8. Lasselle Street (NS) School South Driveway (EW)	Existing	NA	2	S	NA	2	NA	NA	NA	NA	NA	NA	1	OWSC
9. Lasselle Street (NS) Via De Anza-Rancho Verde High School (EW)	Existing	1	2	1	1	2	S	1	1	S	1	1	1OL	Signal

OWSC = One Way Stop Controlled

TWSC = Two Way Stop Controlled

NA = Not Applicable

S = Lane is shared with through movement

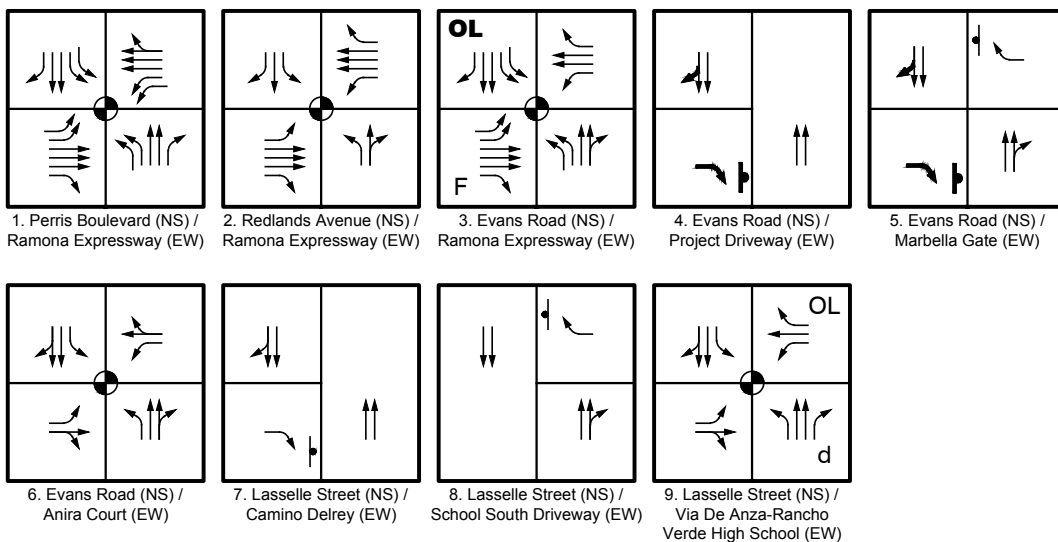
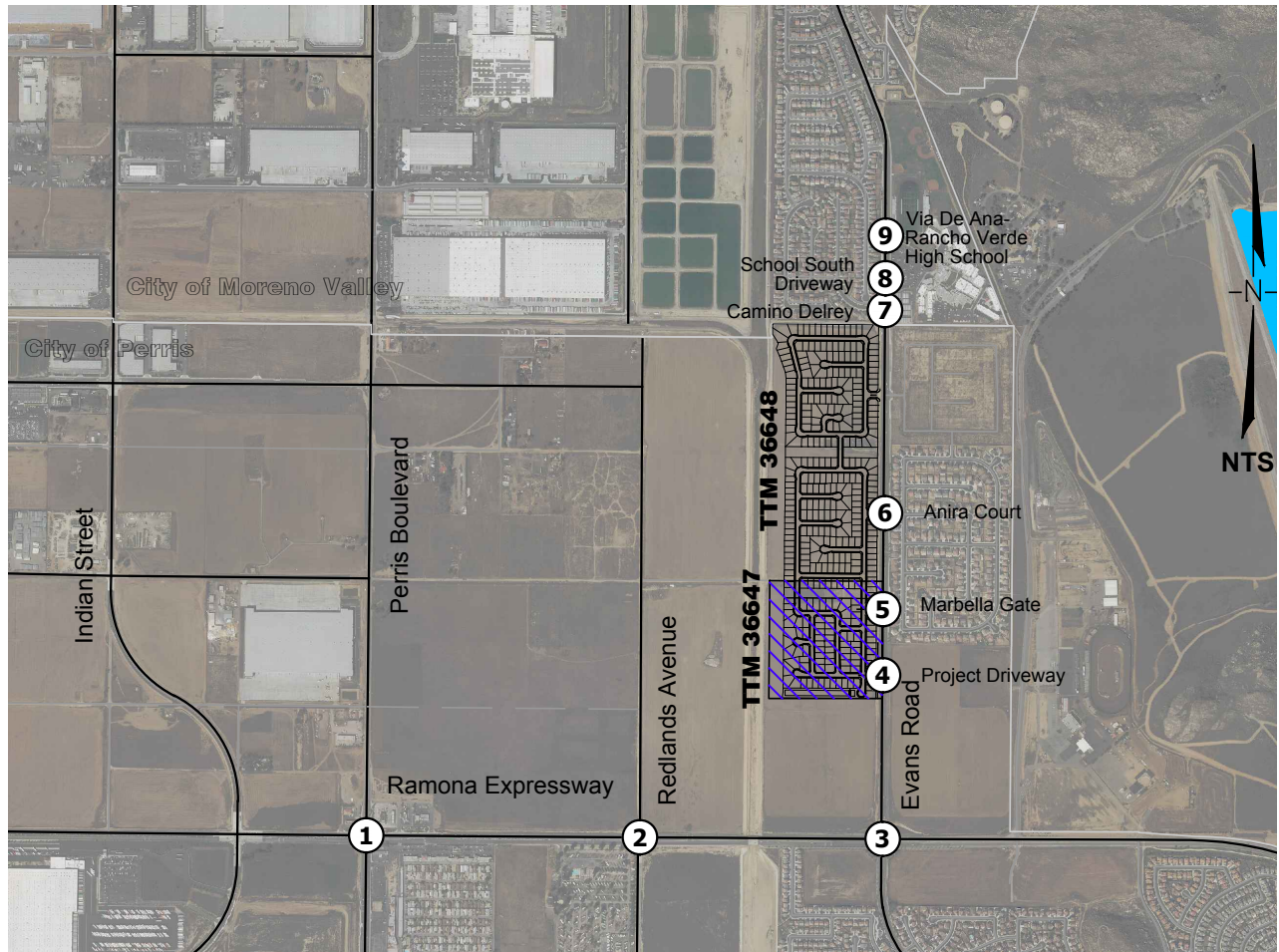
LR = Lane shared by left-turn and right-turn movements

LT = Lane shared by left-turn and through movements

f = Free right-turn movement

OL = Overlap right-turn movement with left-turn movement

Figure 6-A – Summary of Improvements for Existing Plus Project (2018) Conditions



LEGEND

- Existing Traffic Signal
- Existing Stop Sign
- Proposed Stop Sign
- Existing Lane Geometrics
- Proposed Lane Geometrics
- F Existing Free Right Turn
- OL Existing Overlap Right Turn
- d Existing Defacto Right Turn
- Project Site
- Future Roadway

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Proposed Mitigation Measures – Existing Plus Ambient Growth Plus Project (2020) Conditions

With the recommended mitigation measures presented in , the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus project (2020) scenario.

Table 6-2 and Figure 6-B, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus project (2020) scenario.

Table 6-2 – Summary of Improvements for Existing Plus Ambient Growth Plus Project (2020) Conditions

Intersection	Scenario	Northbound			Southbound			Eastbound			Westbound			Traffic Control
		L	T	R	L	T	R	L	T	R	L	T	R	
1. Perris Boulevard (NS) Ramona Expressway (EW)	Existing	2	2	1	2	2	1	2	3	1	2	3	S	Signal
2. Redlands Avenue (NS) Ramona Expressway (EW)	Existing	1	1	S	1	1	1	1	3	1	1	3	1	Signal
3. Evans Road (NS) Ramona Expressway (EW)	Existing Improvements	2 2	2 2	S S	2 2	2 2	1 1OL	2 2	3 3	1f 1f	1 1	2 2	1 1	Signal Signal
4. Evans Road (NS) Project Driveway (EW)	Existing Improvements	NA NA	2 2	NA NA	NA NA	2 2	NA S	NA NA	NA NA	NA 1	NA NA	NA NA	NA NA	NA OWSC
5. Evans Road (NS) Marbella Gate (EW)	Existing Improvements	NA NA	3 2	S 1	NA NA	2 2	1 1	NA NA	NA NA	NA 1	NA NA	LR NA	NA 1	OWSC TWSC
6. Evans Road (NS) Anira Court (EW)	Existing Improvements	NA 1	3 2	S S	1 1	2 2	NA S	NA 1	NA 1	NA S	1 1	NA 1	1 S	Signal Signal
7. Lasselle Street (NS) Camino Delrey (EW)	Existing	NA	2	NA	NA	2	S	NA	NA	1	NA	NA	NA	OWSC
8. Lasselle Street (NS) School South Driveway (EW)	Existing	NA	2	S	NA	2	NA	NA	NA	NA	NA	NA	1	TWSC

OWSC = One Way Stop Controlled

TWSC = Two Way Stop Controlled

NA = Not Applicable

S = Lane is shared with through movement

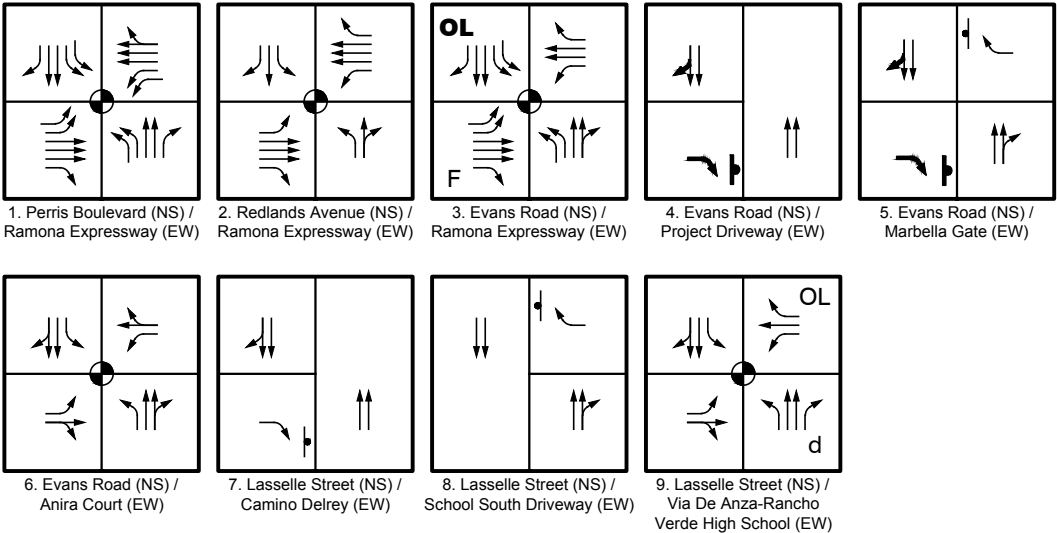
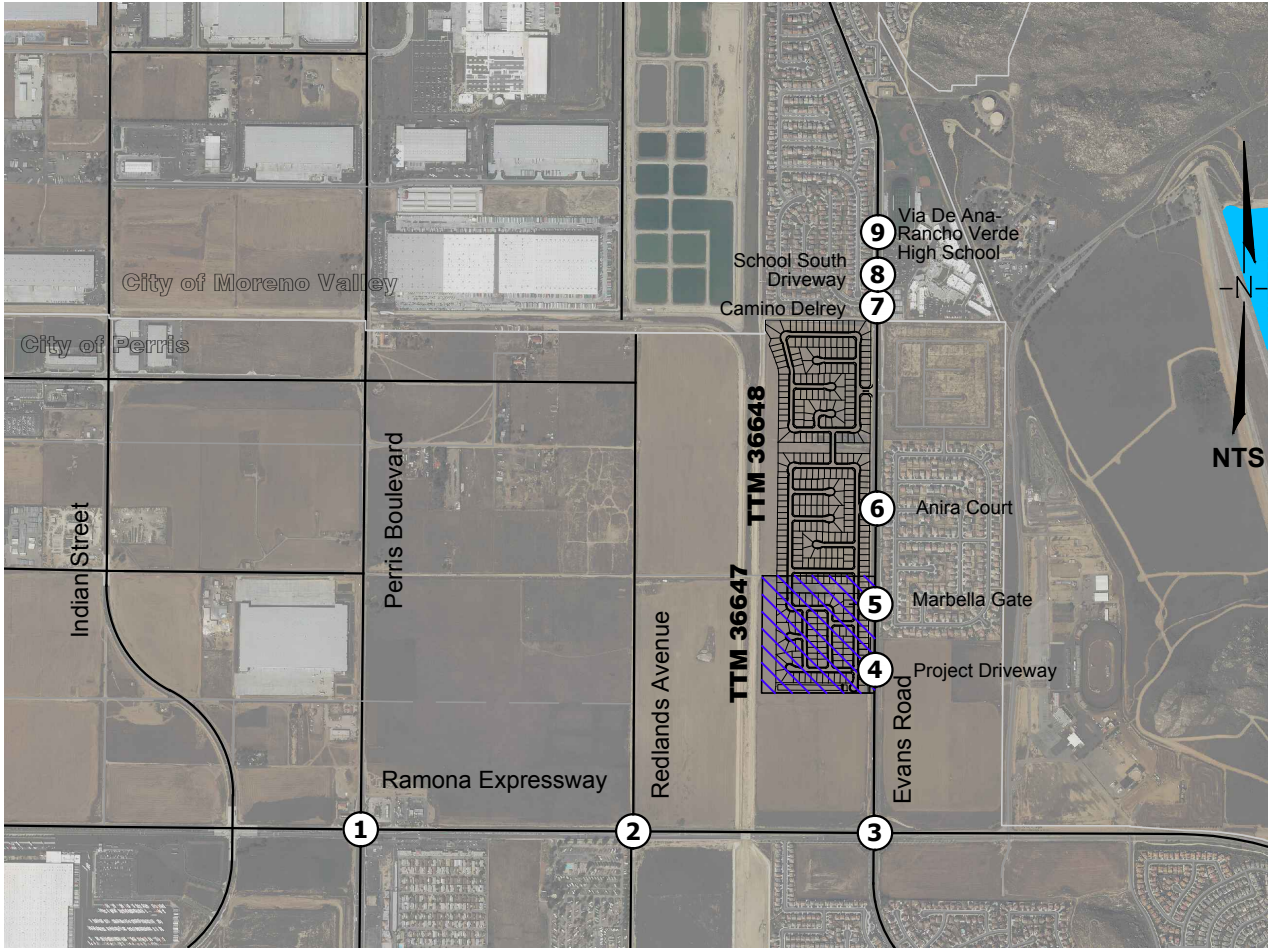
LR = Lane shared by left-turn and right-turn movements

LT = Lane shared by left-turn and through movements

f = Free right-turn movement

OL = Overlap right-turn movement with left-turn movement

Figure 6-B – Summary of Improvements for Existing Plus Ambient Growth Plus Project (2020) Conditions



LEGEND

- Existing Traffic Signal
- Existing Stop Sign
- Proposed Stop Sign
- Existing Lane Geometrics
- Proposed Lane Geometrics
- F Existing Free Right Turn
- OL Existing Overlap Right Turn
- d Existing Defacto Right Turn
- Project Site
- Future Roadway

Proposed Mitigation Measures – Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions

With the recommended improvement presented in Table 6-3 and Figure 6-C, the level of service at the impacted study area intersection is expected to improve to meet the required level of service under the existing plus ambient growth plus cumulative projects plus project (2020) scenario.

Table 6-3 – Summary of Improvements for Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) Conditions

Intersection	Scenario	Northbound			Southbound			Eastbound			Westbound			Traffic Control
		L	T	R	L	T	R	L	T	R	L	T	R	
1. Perris Boulevard (NS) Ramona Expressway (EW)	Existing	2	2	1	2	2	1	2	3	1	2	3	S	Signal
2. Redlands Avenue (NS) Ramona Expressway (EW)	Existing	1	1	S	1	1	1	1	3	1	1	3	1	Signal
3. Evans Road (NS) Ramona Expressway (EW)	Existing Improvements	2 2	2 2	S S	2 2	2 2	1 1OL	2 2	3 3	1f 1f	1 1	2 2	1 1	Signal Signal
4. Evans Road (NS) Project Driveway (EW)	Existing Improvements	NA NA	2 2	NA NA	NA NA	2 2	NA S	NA NA	NA NA	NA 1	NA NA	NA NA	NA NA	NA OWSC
5. Evans Road (NS) Marbella Gate (EW)	Existing Improvements	NA NA	2 2	1 1	NA NA	2 2	NA 1	NA NA	NA NA	NA 1	NA NA	NA NA	1 1	OWSC TWSC
6. Lasselle Street (NS) Camino Delrey (EW)	Existing	NA	2	NA	NA	2	S	NA	NA	1	NA	NA	NA	OWSC
7. Lasselle Street (NS) School South Driveway (EW)	Existing	NA	2	S	NA	2	NA	NA	NA	NA	NA	NA	1	OWSC
8. Lasselle Street (NS) Via De Anza-Rancho Verde High Scho	Existing	1	2	1	1	2	S	1	1	S	1	1	1OL	Signal

OWSC = One Way Stop Controlled

TWSC = Two Way Stop Controlled

NA = Not Applicable

S = Lane is shared with through movement

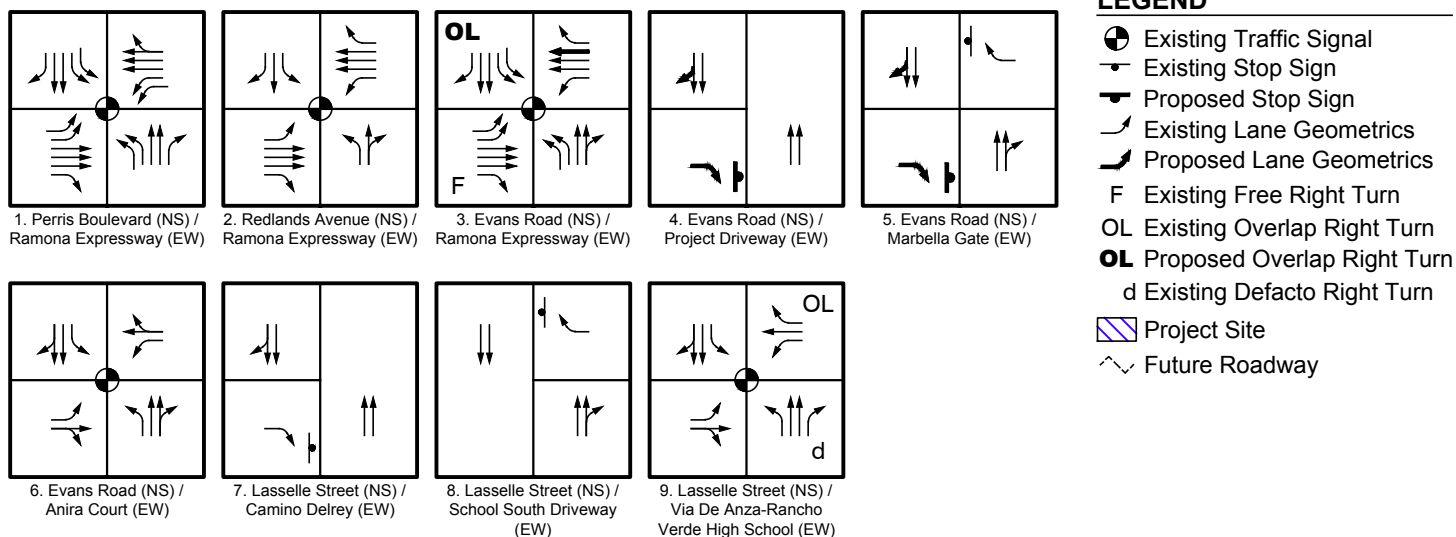
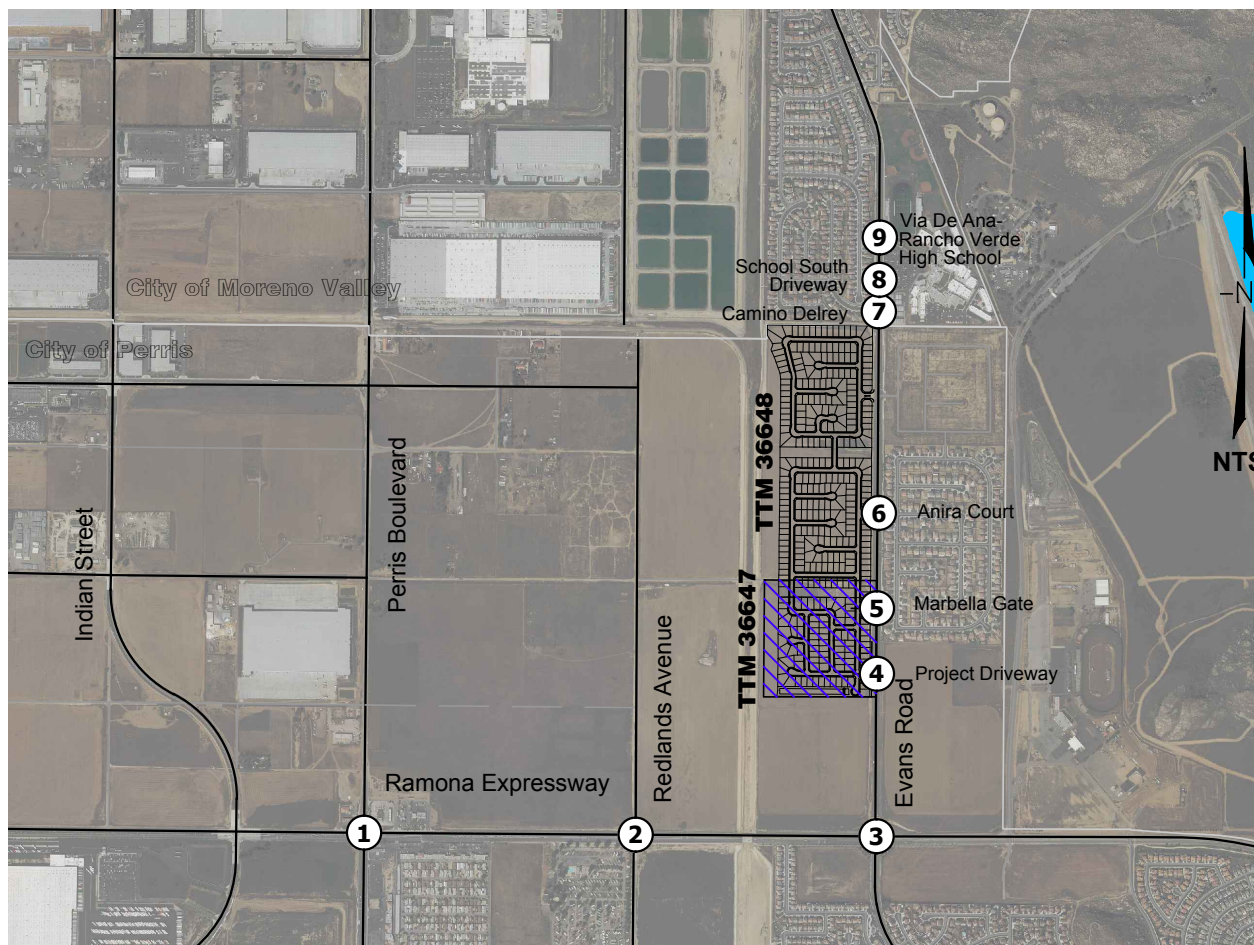
LR = Lane shared by left-turn and right-turn movements

LT = Lane shared by left-turn and through movements

f = Free right-turn movement

OL = Overlap right-turn movement with left-turn movement

Figure 6-C – Summary of Improvements for Existing Plus Ambient Growth Plus Cumulative Plus Project (2020) Conditions



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■ Traffic Signal Warrants

The California MUTCD states that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Peak hour traffic signal warrant analysis should only be considered as an “indicator” of the likelihood of an unsignalized intersection warranting a traffic signal. Intersections that exceed the peak hour warrant are more likely to meet one or more of the other volume based signal warrants. The Manual on Uniform Traffic Control Devices (MUTCD) also advises that a traffic control signal should not be installed unless:

- One or more of the traffic signal warrants is satisfied;
- An engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection; and
- It will not seriously disrupt progressive traffic flow.

For existing (2018) traffic conditions, the peak hour traffic control signal warrant is satisfied for the following study area unsignalized intersection(s) (see Appendix D for technical calculations):

8. Lasselle Street (NS) / School South Driveway (EW)

For existing plus project (2018) traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus project (2020) traffic conditions, no additional study area unsignalized intersections are expected to meet the peak hour traffic control signal warrant (see Appendix D for technical calculations).

For existing plus ambient growth plus other projects plus project (2020) traffic conditions, the peak hour traffic control signal warrant is expected to be satisfied for the following additional study area unsignalized intersection(s) (see Appendix D for technical calculations):

4. Evans Road (NS) / Project Driveway (EW)

The following study area unsignalized intersections do not satisfy the peak hour traffic signal warrant in any study scenario (see Appendix D for technical calculations):

5. Evans Road (NS) / Marbella Gate (EW)
7. Lasselle Street (NS) / Camino Del Rey (EW)

■ Circulation Recommendations

This traffic impact analysis demonstrates that the cumulative traffic impacts that TTM36647 contributes toward can be mitigated to meet the required level of service if the following recommended improvements are adopted.

On-Site Recommendations

Roadways

- Construct full width improvements on all internal roadways.
- Construct partial width improvements on the westerly side of Evans Road at its ultimate cross-section as a primary arterial adjacent to project boundary line.

Intersections

- Construct the intersection of Evans Road and Marbella Gate to restrict movement to right-in and right-out only from the driveway and for Marbella Gate with the following geometrics:
 Northbound: Two through lanes. One right turn lane.
 Southbound: Two through lane. One right turn lane.
 Eastbound: One right turn lane. Stop controlled.
 Westbound: One right turn lane. Stop controlled.
- Construct the intersection of Evans Road and Project Driveway to restrict movement to right-in and right-out only from the driveway with the following geometrics:
 Northbound: Two through lanes.
 Southbound: Two through lanes. One right turn lane.
 Eastbound: One right turn lane. Stop controlled.
 Westbound: Not Applicable.

■ Safety and Operational Improvements

- Sight distance at the project entrance roadway should be reviewed with respect to standard City of Perris sight distance standards at the time of preparation of final grading, landscape and street improvement plans.
- Participate in the phased construction of off-site traffic signals through payment of project's fair share of traffic signal mitigation fees.
- Signing/stripping should be implemented in conjunction with detailed construction plans for the project site.

■ Regional Funding Mechanisms

The project will participate in the cost of off-site improvements through payment of the following "fair share" mitigation fees:

- Transportation Uniform Mitigation Fee (TUMF), current at time of construction.
- City of Perris Development Impact Fee (DIF), current at time of construction.

These fees should be collected and utilized as needed by City of Perris to construct the improvements necessary to maintain the required level of service.

■ Project Mitigation Summary

Table 6-4 summarizes the proposed mitigation measure and associated funding mechanism.

Table 6-4 – Project Mitigation Summary

No.	Intersection	Jurisdiction	Target LOS	LOS w/o Mitigation		Mitigation Measure	LOS with Mitigation		Funding Mechanism
				AM	PM		AM	PM	
Existing Conditions									
3	Evans Road (NS) Ramona Expressway (EW)	City of Perris	E	F	C	Construct the southbound signal to provide an overlapping right turn.	D	C	Project Developer
Cumulative Conditions									
3	Evans Road (NS) Ramona Expressway (EW)	City of Perris	E	F	D	Cosntruct a third westbound through lane.	E	C	TUMF Fees



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