5.12 TRANSPORTATION AND TRAFFIC

This section of the DSSEIR evaluates the potential for implementation of the 2012 Modified Project to result in transportation and traffic impacts as compared to the 2011 Approved Project. The analysis in this section is based in part on the following technical report:

- *Heritage Fields Project 2012 General Plan Amendment and Zone Change Traffic Impact Analysis*, Urban Crossroads, June 21, 2012 (the "Traffic Study").

A complete copy of this study is included in the Technical Appendices to this DSSEIR as Appendix I. Consistent with the Traffic Study Scope of Work (the "Scope of Work", attached as Appendix 1.1 to the Traffic Study), the Traffic Study performed analyses for years 2015, 2030, and Post-2030 for the 2012 Modified Project for Project Option 1 and Option 2 Scenarios as follows:

- Option 1 - Includes the conversion of Institutional (Education) and Office land uses to Multi-Use (Non-Residential) or Medical and Science (R&D) in District 1 North.

- Option 2 – In addition to the Option 1 conversions in District 1 North, this option includes a relocation of Multi-Use and Retail from District 1 North to District 1 South, as well as changes in Districts 1 North to accommodate approved residential units displaced from a portion of District 1 South.

For consistency with the terminology used in this DSSEIR, this section will use the term "2012 Modified Project", which has the same meaning in this section and in the Traffic Study as in the Scenarios "2012 Modified Project; Option 1" or as "2012 Modified Project Option 2".

5.12.1 Environmental Setting

5.12.1.1 Analysis Scope and Methodology

Pursuant to the approved Scope of Work, the Traffic Study identifies potential impacts of the 2012 Modified Project based on existing traffic conditions and years 2015, 2030 and Post-2030 future traffic conditions. The baseline for this DSSEIR is the 2011 Approved Project, not the existing conditions at the time that the environmental documentation is prepared. Although the existing physical condition would generally be the baseline for analysis, in this case, the impacts of the 2011 Approved Project have been fully analyzed in the context of expected growth and all feasible mitigation has been imposed. The 2011 Approved Project is vested pursuant to a development agreement and would remain vested whether or not the 2012 Modified Project is approved. Therefore, the DSSEIR analysis aims to determine any traffic impacts expected from the proposed changes to the 2011 Approved Project being made by the 2012 Modified Project, and additional mitigation, if required. Nonetheless, for informational purposes only, this report includes the Existing-Plus 2012 Modified Project Option 1, and Existing-Plus 2012 Modified Project Option 2 conditions analyses. These scenarios assume hypothetically that the 2012 Modified Project (Option 1, or Option 2) would be constructed immediately. “Existing” refers to the physical conditions in the study area at the time the Traffic Study was prepared. The Existing-Plus 2012 Modified Project (Option 1, and Option 2) analyses are a theoretical construct; a project of this scale will obviously not occur instantaneously, and this scenario does not take into account the cumulative growth that would realistically occur during the course of development of the 2012 Modified Project, which would include various on-site and off-site infrastructure improvements in conjunction with progressive growth in the

North Irvine Transportation Mitigation (NITM) Program area. The following traffic conditions are analyzed:

Existing Conditions

- 2011 and 2012 peak hour intersection counts and 24-hour segment counts

Existing Plus Project Conditions

- with the 2012 Modified Project Option 1
- with the 2012 Modified Project Option 2

The existing plus project scenario for both Options 1 and 2 assumes the 2012 Modified Project, including the DB Units. The Existing-Plus-2012 Modified Project analysis is below in Section 5.12.4.2.

Interim Year 2015 Analysis

- Interim Year 2015 without Project (Existing Uses plus change to Multi-Use and Medical and Science (R&D) in Districts 1 North and 1 South)
- Interim Year 2015 with Project Option 1
- Interim Year 2015 with Project Option 2

The year 2015 analysis is below in Section 5.12.4.3.

Interim Year Long Term 2030 Analysis

- Long Term Year 2030 without Project (2011 Approved Project - Baseline)
- Long Term Year 2030 with the 2012 Modified Project Option 1
- Long Term Year 2030 with the 2012 Modified Project Option 2

The year 2030 analysis is below in Section 5.12.4.5.

General Plan Buildout (Post-2030) Analysis

- General Plan Buildout (Post 2030) without Project (2011 Approved Project - Baseline)
- General Plan Buildout (Post 2030) with the 2012 Modified Project Option 1
- General Plan Buildout (Post 2030) with the 2012 Modified Project Option 2

The Post-2030 analysis is below in Section 5.12.4.6

Pursuant to the Scope of Work, the analysis in the Traffic Study identifies potential impacts of the 2012 Modified Project based on existing traffic conditions and 2015, 2030 and Post-2030 future traffic conditions. Existing traffic conditions are based on 2011 and 2012 intersection peak hour and 24-hour roadway segment traffic counts. Future traffic conditions have been prepared using the Irvine Transportation Analysis Model, Version 8.4-10 (ITAM 8.4-10) and the City of Lake Forest Traffic Analysis Model (LFTAM). For the Traffic Study, traffic volume changes generated by ITAM 8.4-10 are overlayed on LFTAM datasets within the City of Lake Forest, and the ITAM 8.4-10 is directly utilized for all other locations in the traffic analysis study area.

The three future cumulative growth settings (2015, 2030 and Post-2030) are based on the existing circulation system plus improvements that are planned to be in place in each future time frame and the land use and development growth that is projected in each future time frame.

The NITM Program was established in 2003 to identify mitigation and provide a funding mechanism for transportation improvements and mitigation needed in North Irvine, including in and around the traffic analysis study area for the Proposed Project. The circulation system improvements that are programmed to be fully funded by the NITM Program have been included in the year 2015, year 2030 and Post-2030 scenarios analyzed in this study. Circulation system improvements that are only partially funded by the NITM Program are assumed to be in place only in the Post-2030 scenario when system-wide improvements are assumed.

For locations where partially funded NITM improvements have been identified and where the 2012 Modified Project exceeds adopted impact thresholds based on this analysis, the partially funded NITM improvements are considered first to determine whether they mitigate the 2012 Modified Project impact.

Development projects that have been approved in and around the study area have been included in the future traffic conditions analyzed here along with any circulation system improvements related to those approved projects. Recently approved projects assumed in this analysis include the tract map for PA 40, the IBC Vision Plan, PA 9, and the Western Sector Park Development Plan Project.

5.12.1.2 Study Area

Figure 5.12-1 illustrates the study area that was defined in the approved Scope of Work and that was applied in the Traffic Study analysis that is summarized in this section. The broad study area includes analysis locations in the Cities of Lake Forest, Laguna Hills, Laguna Woods, Mission Viejo, Aliso Viejo, and Tustin. The analysis results verify that the study area encompasses potential traffic impacts associated with the 2012 Modified Project.

5.12.1.3 Performance Criteria

Traffic operations of roadway facilities are described with the term "Level of Service" (“LOS”). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS “A”, representing completely free-flow conditions, to LOS “F”, representing breakdown in flow resulting in stop-and-go conditions. LOS “E” represents operations at or near capacity, an unstable level, where vehicles are operating with the minimum spacing for maintaining uniform flow. Table 5.12-1 summarizes the volume/capacity (V/C) ranges for LOS “A” through “F” for arterial roads and freeway/tollway ramps. The V/C ranges listed for arterial roads are designated in the Orange County Transportation Authority (“OCTA”) Congestion Management Program (“CMP”) as well as the General Plan for Irvine and for the other jurisdictions within the traffic analysis study area. The V/C ranges listed for freeway/tollway segments are based on the V/C and LOS relationships specified in the HCM for basic freeway sections.

Table 5.12-1
Volume/Capacity Ratio Level of Service (LOS) Ranges

LOS	Volume/Capacity (V/C) Ratio Range	
	Arterial Roads	Freeway Segments
A	0.00 - 0.60	0.00 - 0.30
B	0.61 - 0.70	0.31 - 0.50
C	0.71 - 0.80	0.51 - 0.71
D	0.81 - 0.90	0.72 - 0.89
E	0.91 - 1.00	0.90 - 1.00
F	Above 1.00	Above 1.00

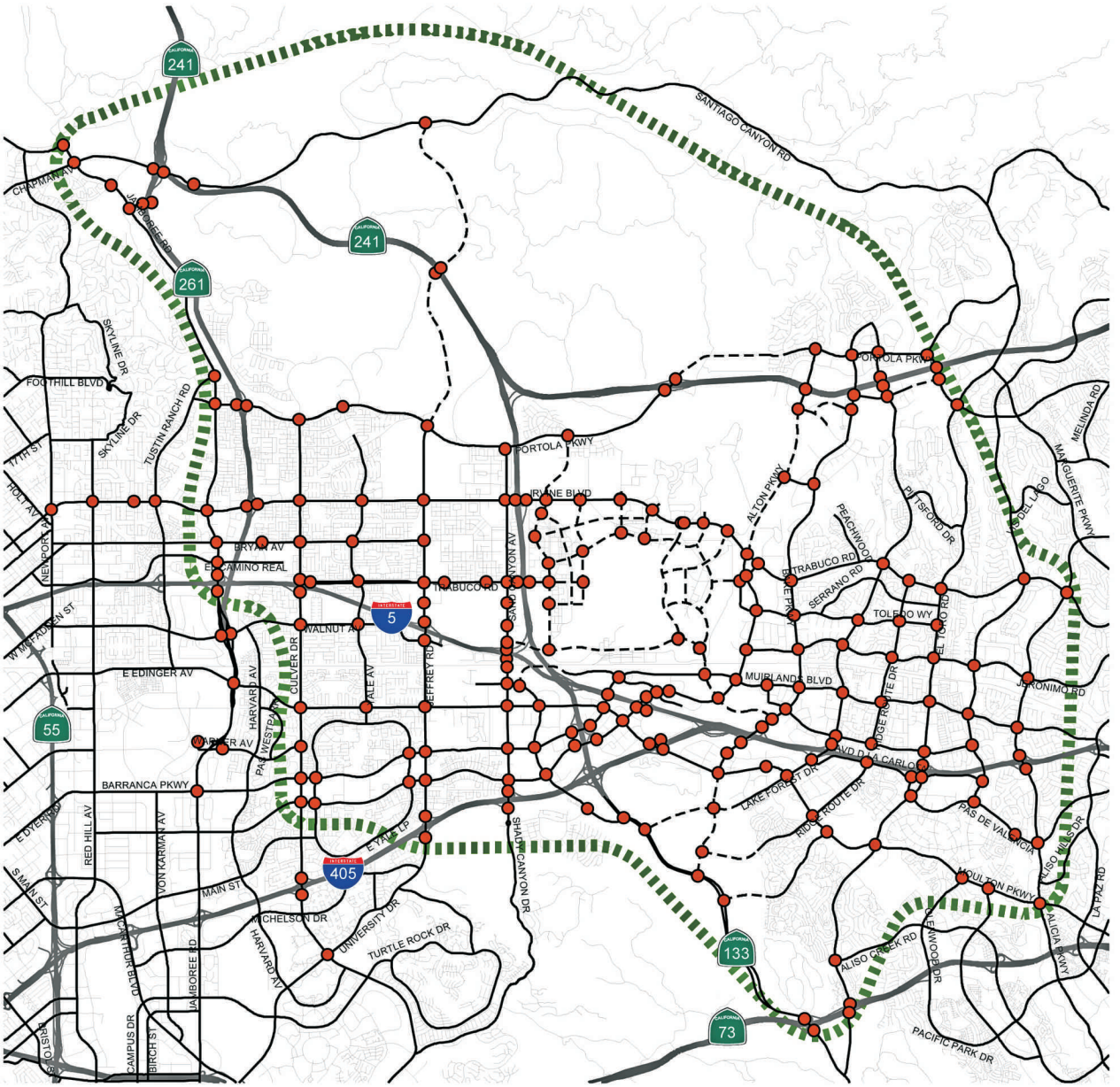
Sources: Urban Crossroads, 2012.

The overall performance criteria applied in this analysis are summarized in Table 5.12-1. The criteria include components for arterial roadways, intersections, freeway/tollway mainline segments and freeway/tollway ramps, and are based on LOS calculation methodologies and performance standards that have been adopted by the governing jurisdictions for the study area and by the OCTA as part of the CMP. When analyzing individual locations on the study area circulation system, the criteria of the jurisdiction in which a given facility is located has been applied in this study. As required in the City's NITM Ordinance, the performance standards applied in this study are consistent with those approved in the 2003 NITM Program Nexus Study (the "Nexus Study").

The arterial roadway criteria involve the use of average daily traffic ("ADT") V/C ratios. The criteria are supplemented by the City's Link Capacity Analysis guidelines which require that arterial deficiencies identified based on ADT V/C ratios be further examined using peak hour data.

The intersection capacity utilization ("ICU") analysis is based on peak hour volumes and uses individual turn movements and the corresponding intersection lane geometry to estimate level of service. Use of the ICU methodology is consistent with the City's traffic analysis guidelines, and, pursuant to standard practice, the ICU methodology assumes that intersections are signalized.

Traffic Analysis Study Area



LEGEND:

Intersection Analysis Location

NITM Program Study Area Boundary

0 11,000

Scale (Feet)

Source: Urban Crossroads 2012

To address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway/tollway ramp intersections at Sand Canyon Avenue/I-5, Irvine Boulevard/SR-133 interchanges and Trabuco Road/SR-133 interchanges are analyzed in this study using the HCM methodology in addition to the ICU methodology. In the HCM intersection analysis methodology, the LOS at an intersection location is determined based on the estimated average delay experienced by all traffic using the intersection. The vehicle delay ranges that correspond to LOS "A" through "F" as specified in the HCM area are summarized in Table 5.12-2.

Table 5.12-2
HCM Intersection Delay Level of Service (LOS) Ranges

LOS	Average Vehicle Delay Signalized	Average Vehicle Delay Unsignalized
A	0 - 10.00 seconds	0 - 10.00 seconds
B	10.01 - 20.00 seconds	10.01 - 15.00 seconds
C	20.01 - 35.00 seconds	15.01 - 25.00 seconds
D	35.01 - 55.00 seconds	25.01 - 35.00 seconds
E	55.01 - 80.00 seconds	35.01 - 50.00 seconds
F	Above 80.00 seconds	Above 50.00 seconds

Source: Urban Crossroads, 2012.

Freeway ramps are analyzed based on AM and PM peak hour ramp volumes taken from intersection volumes at each location in the study area where freeway ramps intersect the arterial system. LOS "E" (V/C not to exceed 1.00) is the performance standard specified in the CMP for arterials that are part of the CMP roadway network, and is applied in this analysis as the performance standard for CMP arterials outside the City, Irvine PA 33 (Spectrum 1/Irvine Center) and PA 36 (Irvine Business Complex/IBC) intersections, the Bake Parkway/I-5 ramp intersections, Alton Parkway at Irvine Boulevard, Bake Parkway at Irvine Boulevard, the Lake Forest Drive/I-5 southbound ramp – Avenida de la Carlota, and Lake Forest/Irvine Center Drive. LOS "D" (V/C not to exceed 0.90) is the performance standard for the remainder of the City and for the remainder of the arterial roadway system in the study area.

For impact analysis purposes, the significance criteria are based on the LOS and either the increase in ICU or V/C due to the 2012 Modified Project. The 2012 Modified Project proposes to amend the City of Irvine General Plan Figure B-1 (Master Plan of Arterial Highways) to delete the on-site extension of Rockfield Boulevard from its existing western terminus to Marine Way, once the OCTA has approved this proposed amendment to the countywide Master Plan of Arterial Highways. The 2012 Modified Project would also amend the General Plan, Objective B-1, Policy (c) regarding LOS "E" consideration as follows:

In conjunction with traffic studies for development proposed in Combined PA 51, a LOS "E" standard would be considered acceptable for intersections impacted in Planning Areas 13, 31, 32, 34, 35, 39 and a portion of Combined PA 51 south of Marine Way. LOS "E" would be acceptable (see previous Figure 3-6,*Proposed Locations Where LOS E May be Acceptable*) subject to the following:

1. Preparation, submittal, processing and approval of a traffic study.

2. Level of Service "E" will only be considered acceptable for an intersection that does not contain a residential quadrant unless the residential development has a net density of 30 dwelling units per acre or greater. Level of Service "E" will not be acceptable along Sand Canyon, except at the Sand Canyon/I-5 Interchange Ramps/Intersections.

3. Participation/funding to an upgraded traffic signal system, as defined in the Traffic Management Systems Operations Study (TMSOS), and/or an Advance Traffic Management System (ATMS), which may be in place at the time of processing of an individual traffic study. The City, in conjunction with specific traffic studies, shall determine the level of participation/funding required by using criteria and a process developed concurrently with the processing of each traffic study.

Because freeway ramps and mainline segments are part of the CMP highway network, the Traffic Study uses LOS "E" as being acceptable. The freeway mainline and freeway ramp criteria are based on peak hour V/C ratios. The freeway mainline and ramp capacities are based on information contained in the Caltrans Highway Design Manual and the Caltrans Ramp Meter Design Manual. This methodology and criteria have been used for other traffic impact analyses throughout Orange County. The Modified Project is considered to significantly contribute to new/worsened freeway mainline deficiencies in cases where the peak hour V/C increases by more than 0.03 from the 2011 Approved Project to 2012 Modified Project conditions.

For the roadway link V/C and intersection ICU analyses, a significant impact occurs if the roadway link or intersection is deficient without the Project (LOS "F" for CMP intersections or LOS "E" or "F" for all roadway links and all other intersections), and the Project contribution to the "with project" ICU or V/C is .02 or more except at CMP locations outside the City and at County of Orange locations. A significant impact also occurs if the intersection is not deficient without the 2012 Modified Project (LOS "E" for CMP intersections or LOS "D" or better for all other intersections), and the 2012 Modified Project contribution to the "with project" ICU or V/C causes it to become deficient (LOS "F" for CMP intersections or LOS "E" or "F" for all other intersections).

5.12.1.4 Relationship to Other Studies

Several recent studies that have been carried out for locations in the vicinity of the Proposed Project Site are of relevance to the traffic analysis presented here. The projects and studies briefly summarized below have all been approved and have been incorporated into the traffic models that are applied in the Traffic Study that is summarized in this section.

Great Park Neighborhoods General Plan Amendment/Zone Change and VTTM 17008 Amendment Traffic Study (May 2011), and VTTMs 17364, 17283 Amended, 17366, 17368, and 17202 Traffic Study (May 2011) – These studies evaluated project modifications that included the following actions: locating 1,100 low- density residential units, previously located on a programmatic basis within Districts 5 and 7, in the locations depicted on the Vesting Tentative Tract Maps ("VTTMs"), changes to the General Plan land use designation and the associated zoning of these units from Low Density (0-5 du/ac) to Multi-Use (0-40 du/ac); locating 1,500 residential units in a portion of the Transit Oriented District ("TOD") located within PA 51, to the locations depicted on the VTTMs; locating the 1,269 density bonus units, which had not previously been located on a programmatic basis, in the locations depicted on the VTTMs; locating the remaining 1,025 residential units on the VTTMs; transferring non-residential development intensities between certain zones; and realigning Ridge Valley and "O" Street at Irvine Boulevard. These changes were achieved and implemented through the approved General Plan Amendment, Zone Change, five VTTMs, VTTM and VTPM amendments and Master Plans pursuant to Zoning Ordinance Section 2-17-2, and 9-51-6, Parks Plans, Master Landscape and Trails Plan and Master Wall and Fence Plan amendment approved by the City in September 2011.

Great Park Western Sector Development Plan Traffic Study (August 2011) - In 2011, the Great Park Corporation sought approval of a Minor Modification to the approved Orange County Great Park Master Plan and a Park Design, which were associated with implementation of the Western Sector Park Development Plan. The Western Sector Park Development Plan consists of minor modifications that would result in: the transfer of non-residential square footage from the northeastern area to the southwestern area of the park; remove the Air Museum and Concessions/Retail, and replace them with the Artist in Residency Facility, the proposed Community Ice Facility, and the proposed Nature Education Garden; and replacement of the existing Air Museum Hangar with Hangar 244. The Western Sector Park Development Plan was approved by the GPC Board and the Irvine City Council on October 20, 2011. Note that the Minor Modification was approved by the Director of Community Development on October 19, 2011 and the Park Design was approved on October 20, 2011.

North Irvine Transportation Mitigation (NITM) Program Nexus Study (April 2003) and North Irvine Transportation Mitigation (NITM) Program Five-Year Review (June 2010) - The nexus study summarized in the first report (completed in April 2003) was carried out as part of the NITM Program, which established a funding mechanism for the transportation improvement mitigation measures identified in the Environmental Impact Reports (EIRs) for three future development projects in north Irvine; 1) Spectrum 8/PA40, 2) Irvine Northern Sphere Area (PAs 5B, 6, 8A and 9), and 3) the Orange County Great Park. The second report (completed in June 2010) summarized the results of a comprehensive NITM Program review. The circulation system improvements that are programmed to be fully funded by the NITM Program have been included in the year 2015, year 2030 and Post-2030 scenarios analyzed in this study.

City of Irvine Planning Area 40 Vesting Tentative Tract Map 17277 Traffic Study (Reference 7) and City of Irvine Planning Area 40/Planning Area 12 (Traveland Site) GPA/ZC and Planning Areas 1 and 9 Density Transfer Traffic Study (June 2008) – These reports, which was completed in October 2010 and June 2008, respectively, presented the findings of traffic studies carried out to determine the impacts of a GPA/ZC for City PAs 40 and 12 as well as a subsequent VTTM for a major portion of PA40. The land use and circulation assumptions for PA40 VTTM 17277 and the PA40/PA12 GPA/ZC project are applied in this study as part of the background conditions.

Bake Parkway – Marine Way Circulation System Amendment Traffic Study (June 2008)– This report, which was completed in June 2008, identified potential traffic circulation needs associated with the relocation of the Bake Parkway at Marine Way intersection from its original General Plan location to a location further northeast on Bake Parkway. The Bake Parkway/Marine Way configuration associated with this approved Circulation System Amendment and the related roadway improvements identified in the traffic study are assumed in the background conditions applied in this study.

5.12.1.5 Existing Roadway Network

Figure 5.12-2 identifies the existing circulation system in the study area together with existing midblock lanes on arterial roadways and the number of existing travel lanes on freeway/tollway mainline segments. Current average daily traffic ("ADT") counts for midblock arterial roadway segments and AM and PM peak hour turn movement counts at intersection locations in the study area were conducted in 2011 and 2012. ADT midblock and peak hour intersection traffic count worksheets for each location that was

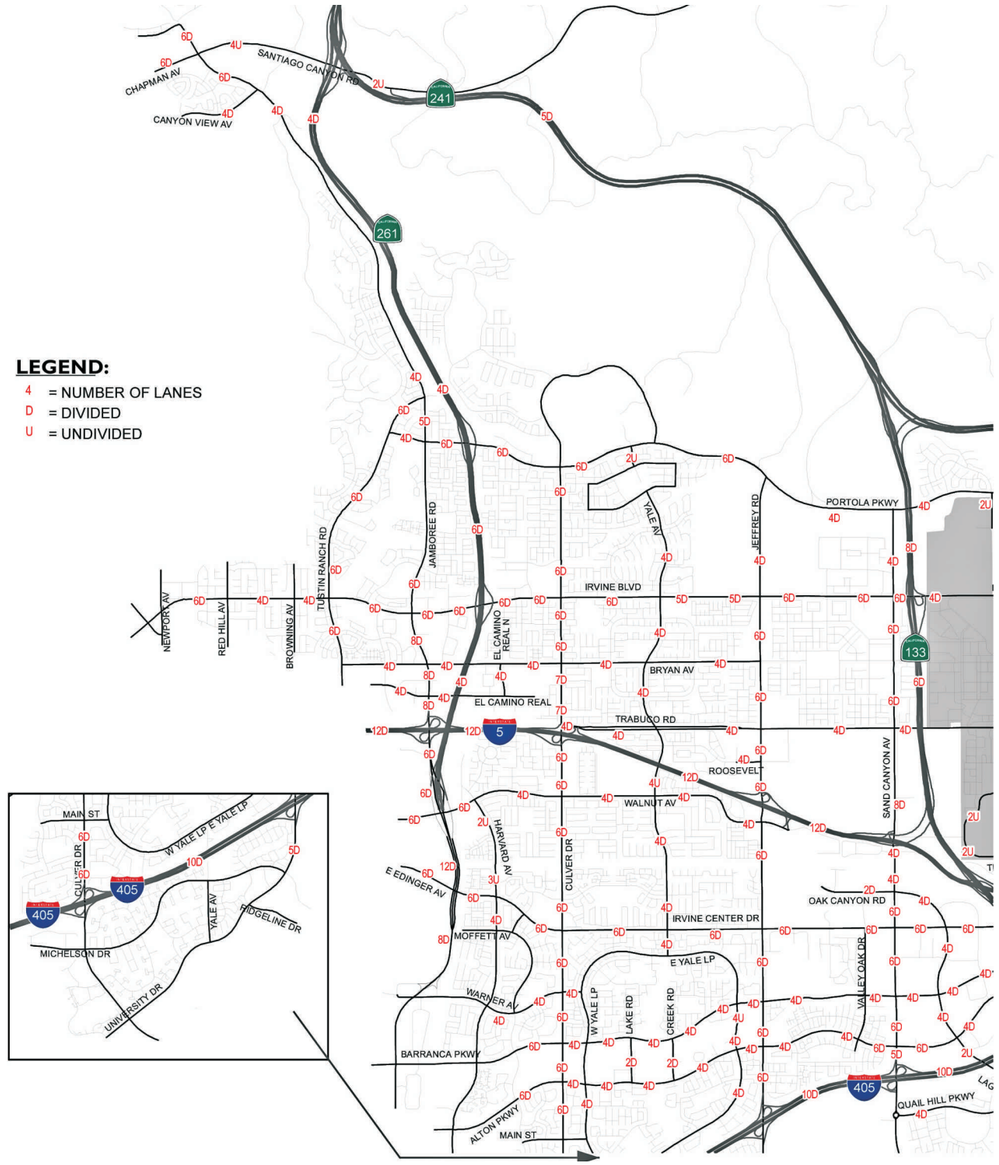
analyzed on the arterial roadway system in the study area are included in Appendices 4.1 and 4.2 to the Traffic Study (Appendix I). Existing freeway mainline count data is consistent with the City PA 6 Traffic Study (AFA, 2011) and PA 33 (Lots 105 and 107/108) Traffic Study (Stantac, 2012), which were taken from the Caltrans Performance Management System (PeMS). Data was extracted for a typical five-day workweek and counts were then averaged.

5.12.1.6 Existing Average Daily Traffic Volumes and Levels of Service

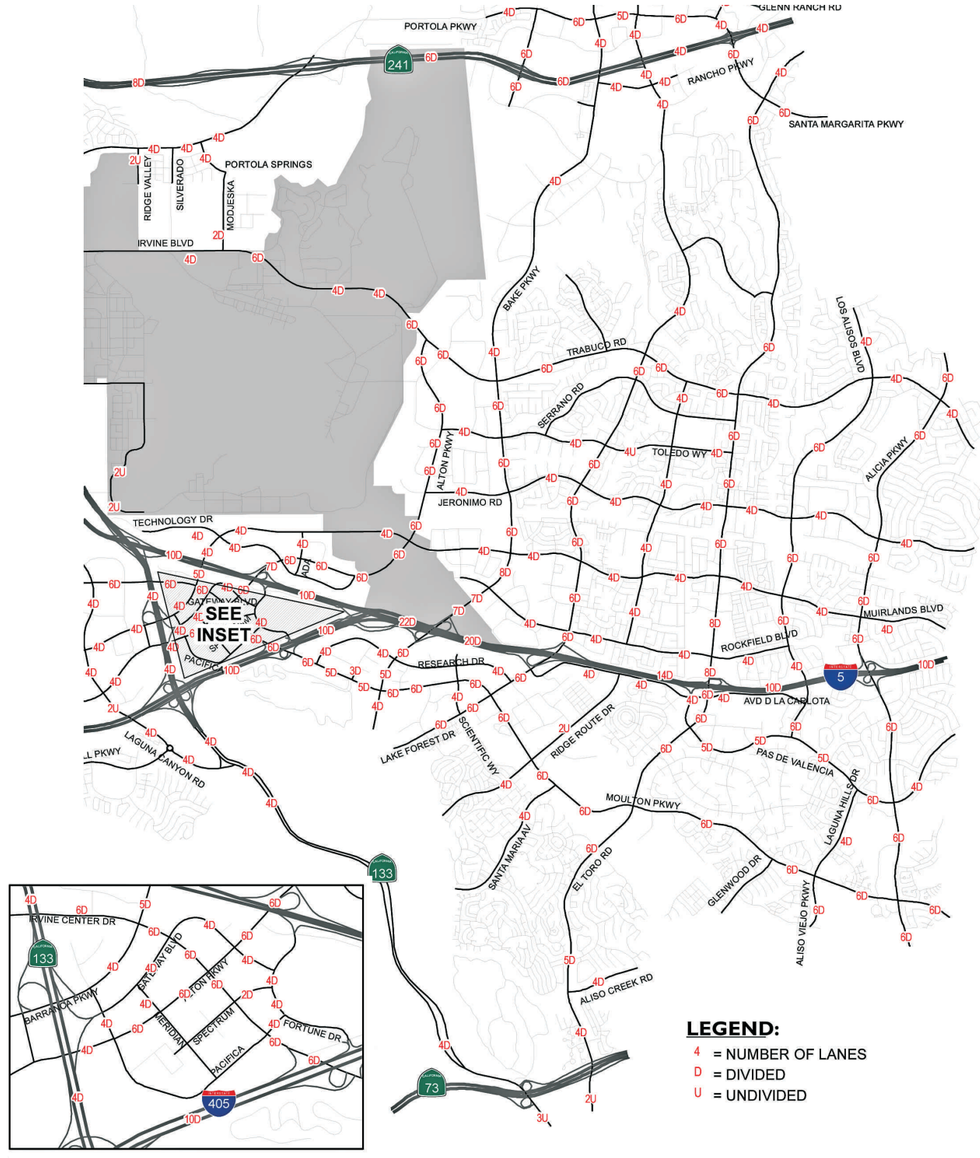
Current ADT volumes and corresponding V/C ratios on the arterial roadway system and the freeway/tollway system in the study area are illustrated in Figures 5.12-3 and 5.12-4. Based on the ADT V/C LOS performance criteria above, the arterials in the study area generally appear to operate at acceptable levels of service with the exception of the following locations:

- Alicia Pkwy (south of Jeronimo Rd)
- Alicia Pkwy (north of Muirlands Bl)
- Alicia Pkwy (I-5 NB Ramps to Muirlands Bl)
- Alicia Pkwy (south of I-5 SB Ramps)
- Avenida Carlota (Paseo de Valencia to El Toro Rd)
- Bake Pkwy (north of Commercentre Dr)
- Bake Pkwy (north of Irvine Bl)
- Bake Pkwy (north of Muirlands Bl)
- Bake Pkwy (south of Rockfield Bl)
- Culver Dr (Main St to San Leandro)
- Culver Dr (San Leandro to I-405 NB Ramps)
- El Toro (I-5 SB Ramps to Avenida Carlota)
- El Toro (north of SR-73)
- El Toro (south of SR-73)
- Jamboree Rd (north of Michelle Dr)
- Jamboree Rd (south of Michelle Dr)
- Laguna Canyon Rd/SR-133 (north of SR-73 NB Ramps)
- Lake Forest (south of Rockfield)
- Portola Pkwy (south of SR-241 SB Ramps)
- Sand Canyon (north of Oak Canyon)
- Santa Margarita (south of SR-241)
- University Dr (I-405 SB Ramps to Michelson Dr)

Existing Circulation System



West Study Area

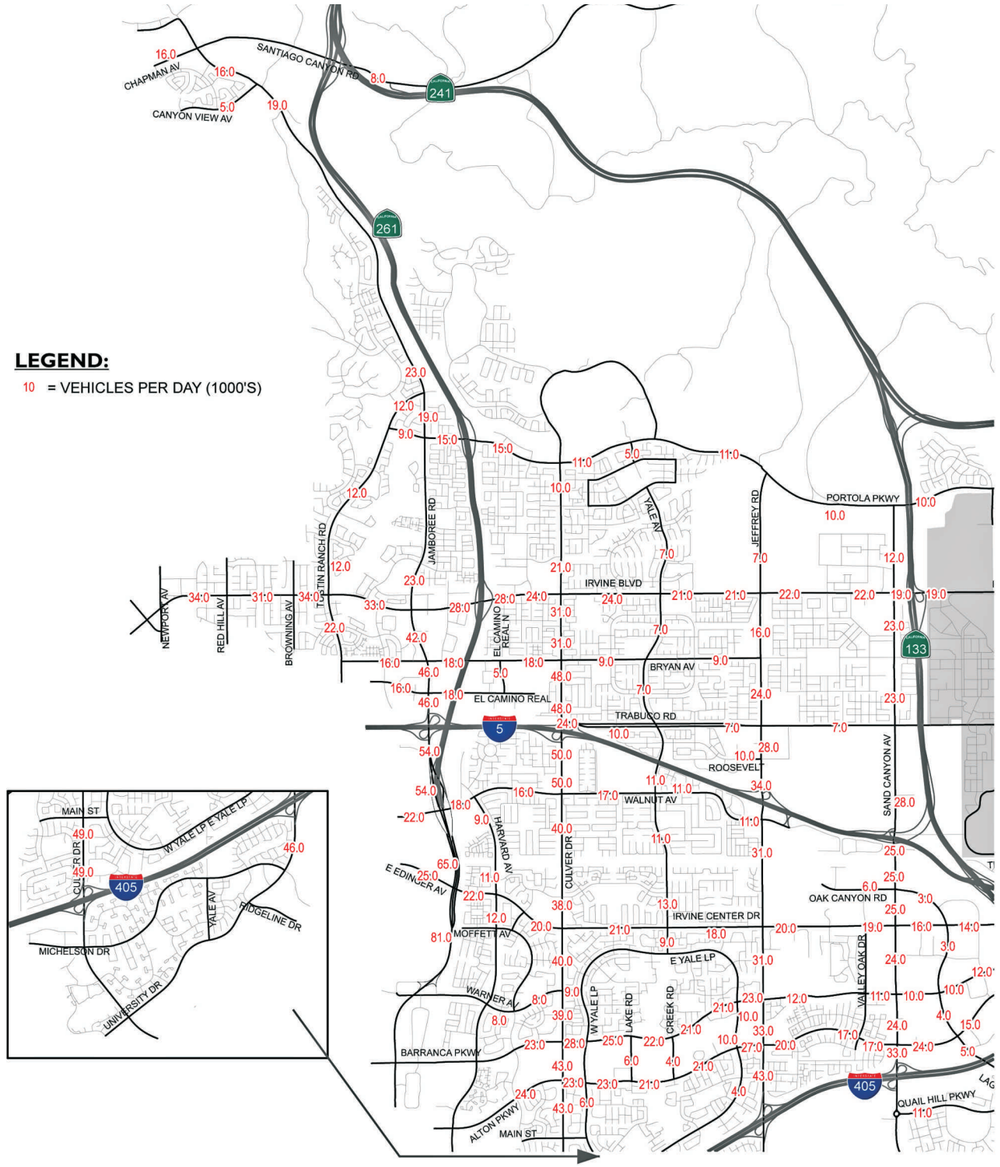


East Study Area

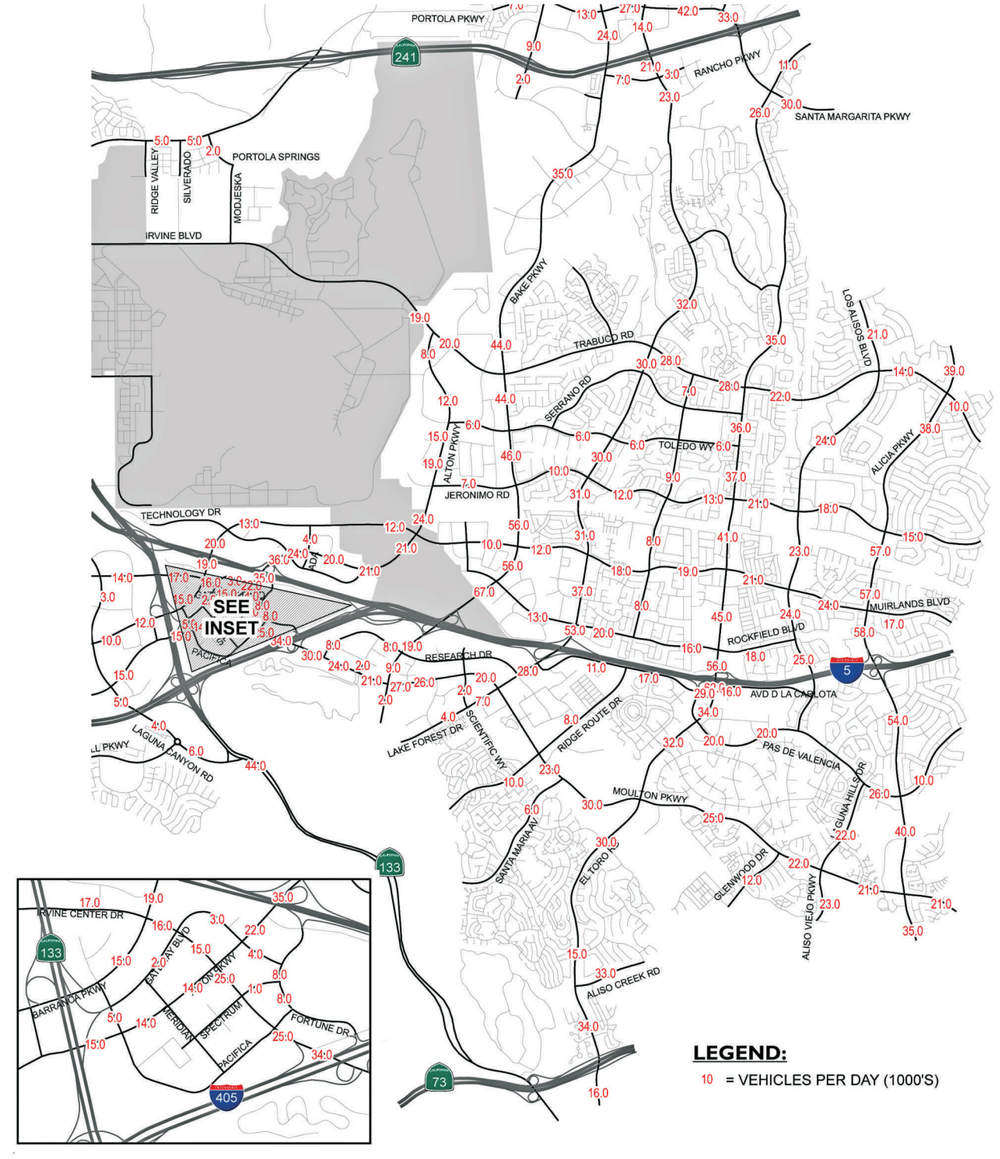
0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Existing ADT Volumes



West Study Area

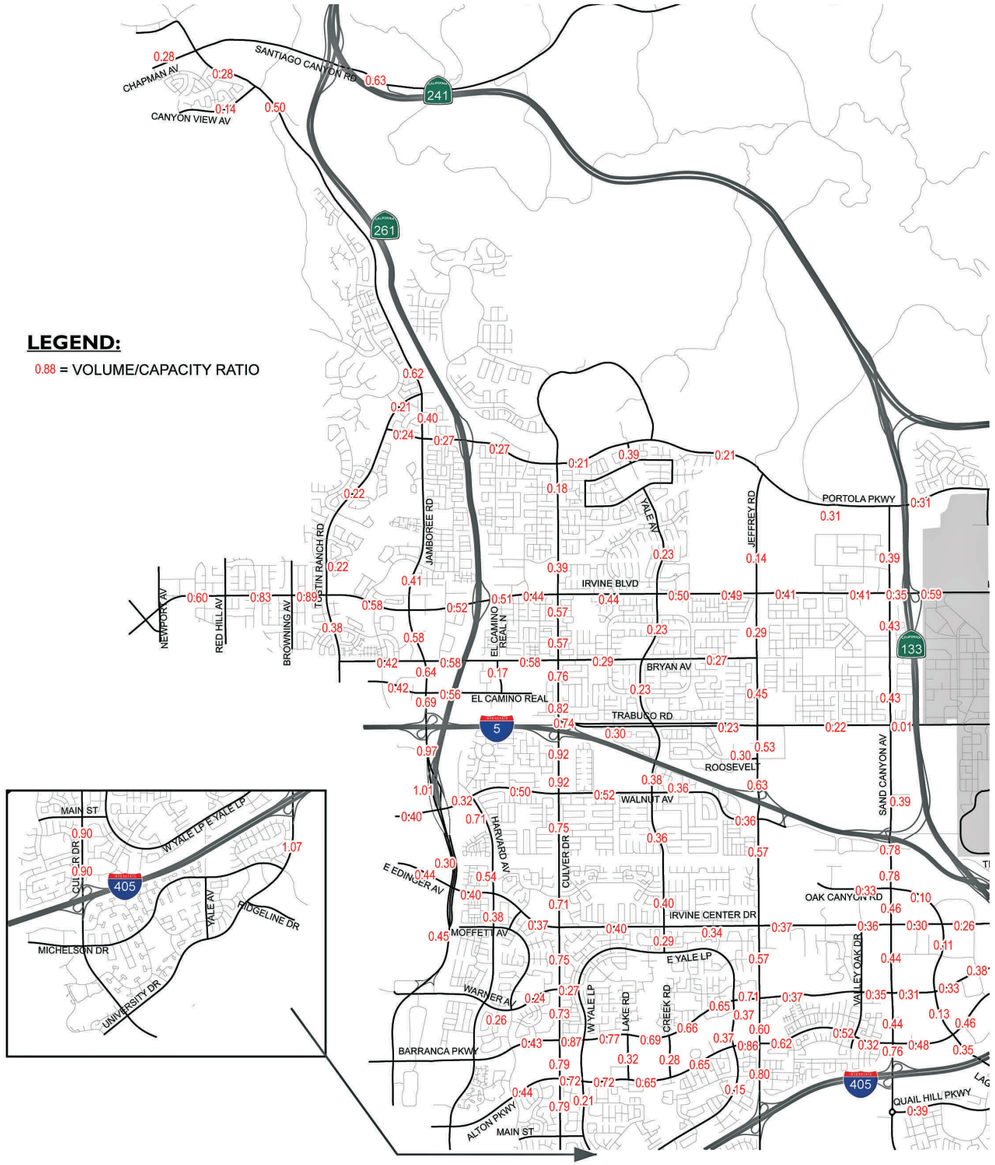


East Study Area

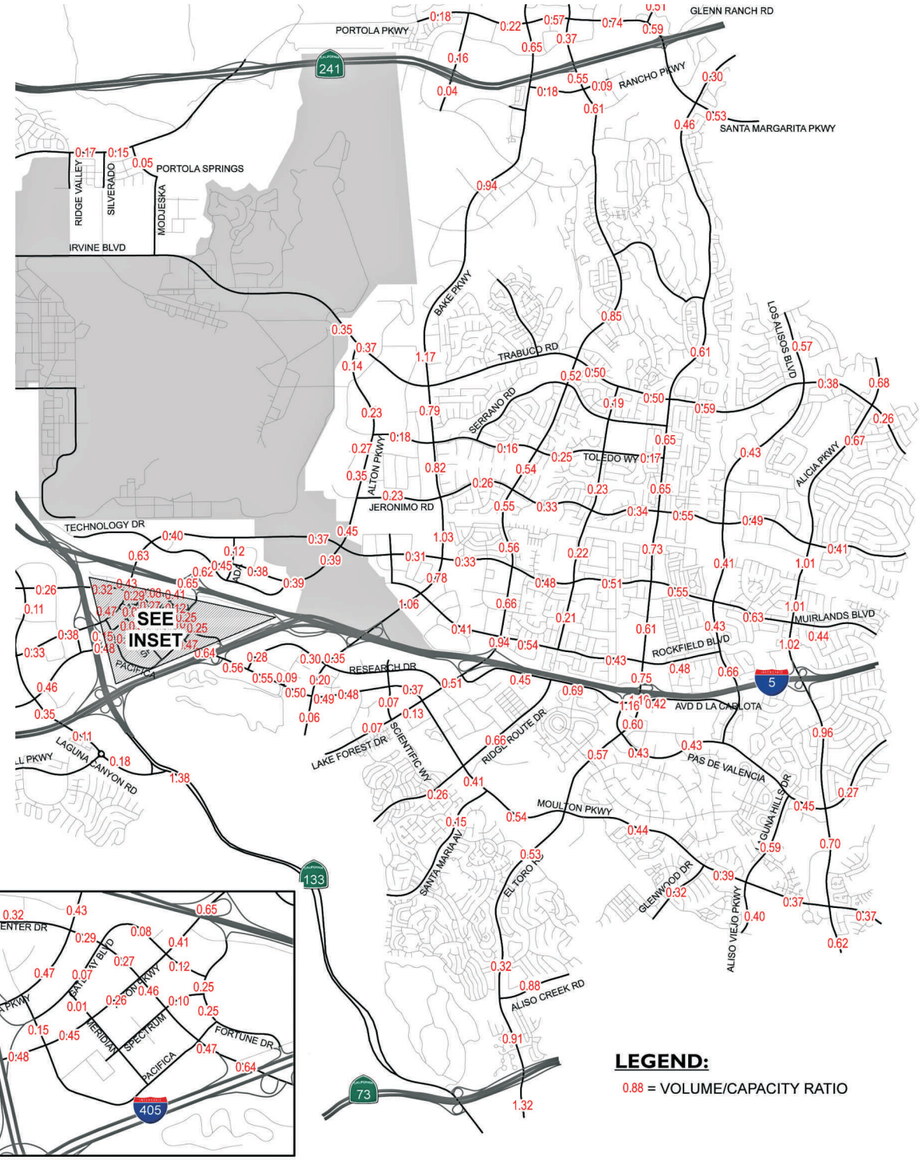
0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Existing ADT V/C Ratios



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

5.12.1.7 Existing Peak Hour Intersection Levels of Service

Existing ICU values were calculated for the intersections illustrated in Figure 5.12-5 using peak hour traffic count data in combination with the existing lane configuration of each location. Use of the ICU methodology is consistent with the traffic analysis guidelines of the City and the OCTA CMP, and, by standard practice, the ICU methodology assumes that intersections are signalized. The existing conditions intersections peak hour levels of service are summarized in Table 5.12-3.

Table 5.12-3
Existing Intersection LOS Summary (ICU Methodology)

Intersection	Funded NITM[1]	LOS E OK	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Newport Av at Irvine Bl			0.63	B	0.58	A
Red Hill Av at Irvine Bl	**F**		0.64	B	0.69	B
Browning Av at Irvine Bl			0.75	C	0.70	B
Tustin Ranch Rd at Irvine Bl	**F**		0.83	D	0.79	C
Jamboree Rd at Tustin Ranch Rd	**P**		0.49	A	0.59	A
Jamboree Rd at Portola Pw			0.56	A	0.74	C
Jamboree Rd at Irvine Bl	**F**	Yes	0.78	C	0.70	B
Jamboree Rd at Bryan Av			0.64	B	0.66	B
Jamboree Rd at El Camino Real			0.59	A	0.66	B
Jamboree Rd at I-5 NB Ramps			0.78	C	0.86	D
Jamboree Rd at I-5 SB Ramps			0.79	C	0.73	C
Jamboree Rd SB at Walnut Av			0.77	C	0.53	A
Jamboree Rd NB at Walnut Av			0.32	A	0.49	A
Jamboree Rd at Edinger Av		Yes	0.56	A	0.55	A
Jamboree Rd NB at Warner Av			0.31	A	0.81	D
Jamboree Rd at Barranca Pw		Yes	0.75	C	0.90	D
SR-261 SB Ramps at Portola Pw			0.31	A	0.35	A
SR-261 NB Ramps at Portola Pw			0.27	A	0.37	A
SR-261 SB Ramps at Irvine Bl			0.44	A	0.48	A
SR-261 NB Ramps at Irvine Bl			0.43	A	0.53	A
Culver Dr at Portola Pk			0.39	A	0.40	A
Culver Dr at Irvine Bl			0.61	B	0.64	B
Culver Dr at Bryan Av			0.66	B	0.58	A
Culver Dr at Trabuco Rd	**F**		0.59	A	0.65	B
Culver Dr at I-5 SB Ramps	**F**		0.60	A	0.74	C
Culver Dr at Walnut Av	**F**		0.68	B	0.76	C
Culver Dr at ICD			0.61	B	0.62	B
Culver Dr at Warner Av			0.62	B	0.62	B
Culver Dr at Barranca Pw	**P**		0.72	C	0.77	C
Culver Dr at Alton Pkwy			0.75	C	0.82	D
Culver Dr at I-405 NB Ramps			0.51	A	0.73	C
Culver Dr at I-405 SB Ramps			0.54	A	0.70	B
Culver Dr at University	**F**		0.70	B	0.90	D
Yale Av at Irvine Bl	**F**		0.59	A	0.74	C
Yale Av at Bryan Av			0.31	A	0.39	A

Table 5.12-3

Existing Intersection LOS Summary (ICU Methodology)

Intersection	Funded NITM[1]	LOS E OK	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Yale Av at Trabuco Rd			0.37	A	0.39	A
Yale Av at Walnut Av			0.40	A	0.63	B
Yale Av at ICD			0.51	A	0.55	A
W Yale Lp at Barranca Pw			0.54	A	0.52	A
E Yale Lp at Barranca Pw			0.58	A	0.52	A
W Yale Loop at Alton Pw			0.49	A	0.64	B
E Yale Lp at Alton Pw			0.65	B	0.62	B
Jeffrey Rd at Portola Pw			0.34	A	0.35	A
Jeffrey Rd at Irvine Bl			0.47	A	0.55	A
Jeffrey Rd at Bryan Av			0.45	A	0.37	A
Jeffrey Rd at Trabuco Rd			0.45	A	0.42	A
Jeffrey Rd at Roosevelt			0.56	A	0.57	A
Jeffrey Rd at I-5 NB Ramps			0.52	A	0.59	A
Jeffrey Rd at Walnut Av	**F**		0.67	B	0.66	B
Jeffrey Rd at ICD	**F**		0.51	A	0.82	D
Jeffrey Rd at Barranca Pw	**P**		0.68	B	0.69	B
Jeffrey Rd at Alton Pw	**F**		0.86	D	0.78	C
Jeffrey Rd at I-405 NB Ramps	**P**		0.71	C	0.68	B
University Dr at I-405 SB Ramps			0.61	B	0.54	A
Sand Canyon Av at Portola Pw			0.27	A	0.29	A
Sand Canyon Av at Irvine Bl			0.50	A	0.49	A
Sand Canyon Av at Trabuco Pw	**F**		0.39	A	0.37	A
Sand Canyon Av at I-5 NB Ramps	**F**		0.67	B	0.50	A
Sand Canyon Av at Marine Wy			0.59	A	0.60	A
Sand Canyon Av at I-5 SB Ramps	**F**		0.67	B	0.61	B
Sand Canyon Av at Oak Canyon	**F**		0.50	A	0.51	A
Sand Canyon Av at ICD			0.42	A	0.43	A
Sand Canyon Av at Barranca Pw			0.43	A	0.44	A
Sand Canyon Av at Alto	**F**		0.54	A	0.63	B
Sand Canyon Av at I-405 NB Ramps	**F**		0.56	A	0.41	A
Sand Canyon Av at I-405 SB Ramps			0.74	C	0.51	A
Laguna Canyon Rd at ICD			0.20	A	0.27	A
Laguna Canyon Rd at Barranca Pw			0.27	A	0.26	A
Laguna Canyon Rd at Alton Pw			0.41	A	0.37	A
SR-133 SB Ramps at Irvine Bl			0.39	A	0.43	A
SR-133 NB Ramps at Irvine Bl			0.46	A	0.48	A
Banting at Barranca Pkwy			0.58	A	0.41	A
Banting at Alton Pw			0.54	A	0.41	A
Laguna Canyon Rd at Old Laguna Canyon Rd	**F**		0.90	C	0.89	D
Laguna Canyon Rd at SR-73 NB Ramps		Yes	1.00	E	0.83	D
Laguna Canyon Rd at SR-73 SB Ramps		Yes	0.32	A	0.38	A
Portola Pw at SR-241 NB Ramps			0.16	A	0.10	A
Portola Pw at SR-241 SB Ramps			0.15	A	0.20	A
Barranca Pw at Technology	**P**		0.47	A	0.62	B
Barranca Pw at I-5 HOV Ramp		Yes	0.46	A	0.35	A

Table 5.12-3
Existing Intersection LOS Summary (ICU Methodology)

Intersection	Funded NITM[1]	LOS E OK	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Barranca Pw at ICD		Yes	0.48	A	0.55	A
Barranca Pw at Pacifica		Yes	0.52	A	0.61	B
Pacifica at Gateway		Yes	0.51	A	0.55	A
Alton Pw at Portola Pw			0.40	A	0.23	A
Alton Pw at SR-241 Ramps			0.18	A	0.28	A
Alton Pw at Irvine Bl	**F**	Yes	0.45	A	0.49	A
Alton Pw at Toledo Wy			0.38	A	0.36	A
Alton Pw at Jeronimo Rd			0.35	A	0.77	C
Alton Pw at Barranca Pw			0.45	A	0.58	A
Alton Pw at Ada			0.29	A	0.42	A
Alton Pw at Technology	**P**		0.39	A	0.55	A
Alton Pw at I-5 NB Ramps	**F**	Yes	0.62	B	0.38	A
Alton Pw at Enterprise		Yes	0.60	A	0.54	A
Alton Pw at ICD	**P**	Yes	0.54	A	0.45	A
Alton Pw at Pacifica		Yes	0.53	A	0.33	A
Fortune Dr /I-5 SB Ramps		Yes	0.27	A	0.52	A
Enterprise Dr at Fortune Dr		Yes	0.40	A	0.70	B
ICD at Enterprise Dr	**P**	Yes	0.59	A	0.54	A
ICD at I-405 SB Ramps	**P**	Yes	0.59	A	0.55	A
Bake Pw at Portola Pw			0.71	A	0.58	A
Bake Pw at Irvine Bl	**F**	Yes	0.73	C	0.72	C
Bake Pw at Toledo Wy			0.68	C	0.63	B
Bake Pw at Jeronimo Rd	**F**		0.81	D	0.76	C
Bake Pw at Muirlands Bl			0.58	A	0.64	B
Bake Pw at Rockfield Bl			0.54	A	0.63	B
Bake Pw at I-5 NB Ramps		Yes	0.82	D	0.58	A
Bake Pw at I-5 SB Ramps	**F**	Yes	0.67	B	0.72	C
Bake Pw at Research Dr			0.36	A	0.46	A
Bake Pw at ICD			0.34	A	0.39	A
Lake Forest Dr at SR-241 NB Ramp			0.29	A	0.35	A
Lake Forest Dr at Portola Pw			0.46	A	0.69	B
Lake Forest Dr at SR-241 SB Ramp			0.38	A	0.40	A
Lake Forest Dr at Trabuco Rd			0.55	A	0.59	A
Lake Forest Dr at Toledo Wy			0.52	A	0.52	A
Lake Forest Dr at Jeronimo Rd	**P**		0.69	B	0.67	B
Lake Forest Dr at Muirlands Bl	**F**		0.54	A	0.72	C
Lake Forest Dr at Rockfield Bl	**P**	Yes	0.54	A	0.68	B
Lake Forest Dr at I-5 NB Ramps			0.44	A	0.66	B
Lake Forest Dr at Avenida Carlota/I-5 SB	**F**	Yes	0.70	B	0.70	B
Lake Forest Dr at ICD			0.41	A	0.51	A
Ridge Route Dr at Muirlands Bl			0.48	A	0.60	A
Ridge Route Dr at Rockfield Bl	**P**		0.38	A	0.47	A
Ridge Route Dr at Avenida Carlota			0.30	A	0.63	B
Ridge Route at Moulton Pw			0.44	A	0.60	A
Paseo de Valencia at Ave	**P**		0.47	A	0.58	A

Table 5.12-3

Existing Intersection LOS Summary (ICU Methodology)

Intersection	Funded NITM[1]	LOS E OK	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
Santa Maria Av at Moulton Pw			0.42	A	0.65	B
El Toro Rd at Muirlands Bl			0.62	B	0.74	C
El Toro Rd at Rockfield Bl			0.52	A	0.55	A
El Toro Rd at I-5 NB Ramps		Yes	0.61	B	0.82	D
El Toro Rd at Avenida Carlota	**P**	Yes	01.03	F	1.26	F
El Toro Rd at Paseo de Valencia			0.47	A	0.58	A
El Toro Rd at Moulton Pw		Yes	0.59	A	0.53	A
El Toro Rd at Aliso Creek Rd			0.71	C	**0.93**	**E**
El Toro Rd at SR-73 NB Ramps		Yes	0.69	B	0.68	B
El Toro Rd at SR-73 SB Ramps		Yes	0.45	A	0.66	B
I-5 NB Ramps at Trabuco Rd			0.49	A	0.54	A
Laguna Canyon Rd at Quail Hill Pw			0.24	A	0.28	A
Bake Pw at Commercentre Dr			0.56	A	0.56	A
Ridge Route Dr at Trabuco Rd			0.49	A	0.59	A
Ridge Route Dr at Toledo Wy			0.33	A	0.30	A
Ridge Route Dr at Jeronimo Rd			0.45	A	0.46	A
Glenn Ranch Rd at Portola Pw			0.57	A	0.55	A
Portola Pw East at SR-241 Ramps			0.43	A	0.59	A
El Toro Rd at Portola Pw			0.64	B	0.61	B
El Toro Rd at Trabuco Rd			0.68	B	0.56	A
El Toro Rd at Toledo Wy			0.54	A	0.46	A
El Toro Rd at Jeronimo Rd	**P**		0.65	B	0.77	C
Los Alisos Bl at Trabuco Rd			0.66	B	0.68	B
Los Alisos Bl at Jeronimo Rd	**P**		0.69	B	0.78	C
Muirlands Bl at Los Alisos Bl	**P**		0.67	B	0.74	C
Los Alisos Bl at Rockfield Bl	**P**		0.64	B	0.69	B
Los Alisos Bl at Avenida Carlota			0.61	B	0.50	A
Los Alisos Bl at Paseo de Valencia			0.41	A	0.46	A
Moulton Pw at Glenwood/Indian Creek			0.46	A	0.53	A
Laguna Hills Dr at Paseo de Valencia			0.59	A	0.70	B
Moulton Pw at Laguna Hills Dr			0.53	A	0.61	B
Trabuco Rd at Alicia Pw			0.70	B	0.64	B
Jeronimo Rd at Alicia Pw			0.72	C	0.72	C
Alicia Pw at Muirlands Bl	**P**		0.68	B	0.82	D
I-5 NB Ramps at Alicia Pw			0.55	A	0.59	A
I-5 SB Ramps at Alicia Pw			0.75	C	0.82	D
Alicia Pw at Paseo de Valencia			0.59	A	0.61	B
Moulton Pw at Alicia Pw			0.58	A	0.67	B
Scientific Wy at ICD			0.49	A	0.64	B
Loop Rd at Jamboree Rd			0.41	A	0.28	A
Sand Canyon Av at Burt Rd			0.65	B	0.55	A
Jamboree Rd at Santiago Canyon Rd			0.52	A	0.57	A
Jamboree Rd at Chapman Av			0.44	A	0.76	B
SR-241/SR-261 SB Ramps at Chapman Av			0.34	A	0.45	A
SR-241/SR-261 NB Ramps at Chapman Av			0.37	A	0.60	A

Table 5.12-3
Existing Intersection LOS Summary (ICU Methodology)

Intersection	Funded NITM[1]	LOS E OK	Existing Conditions			
			AM Peak Hour		PM Peak Hour	
			ICU	LOS	ICU	LOS
SR-241 NB Ramp at Santiago Canyon Rd			0.28	A	0.35	A
Jamboree Rd at Canyon View			0.61	B	0.33	A
El Camino Real N at Bryan Av			0.37	A	0.39	A
Bake Pw N at Rancho Pw North			0.58	A	0.73	C
Lake Forest Dr at Rancho Pw North			0.36	A	0.45	A
Bake Pw at Rancho Pkw			0.69	B	0.65	B
Ridge Valley at Portola Pw			0.26	A	0.16	A
Modjeska / A St at Irvine Bl			0.44	A	0.43	A

Source: Urban Crossroads, 2012.
Bold = Deficient Intersection
[1]. Fully Funded (F), Partially Funded (P)

Based on the intersection LOS performance criteria outlined above, the study area intersections generally appear to operate at acceptable levels of service during peak hours with the exception of the following intersection:

- El Toro Road at Aliso Creek Road

5.12.1.8 Existing Freeway Ramp Levels of Service

Existing AM and PM peak hour ramp volumes were taken from intersection counts at each location in the study area where freeway ramps intersect the arterial system. The observed peak hour ramp volumes were applied together with the ramp capacities described above to calculate existing AM and PM peak hour ramp V/C ratios and corresponding LOS values. The freeway ramp analysis presented here differs from the above peak hour intersection analysis in that the ramp analysis here involves the peak hour V/C of the ramp itself, whereas the intersection analysis involves the ICU value of the intersection of the ramp with the arterial street.

To address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road interchanges have been analyzed using the HCM methodology in addition to the ICU methodology. The resulting existing conditions peak hour levels of service based on the HCM methodology are summarized in Table 4.2 of the Traffic Study included in Appendix I). As the summary table indicates, each of the ramp intersections generally operates at an acceptable LOS (i.e., LOS D or better).

Figure 5.12-6 illustrates the interchange locations where freeway ramps were analyzed. Freeway ramps are part of the CMP highway network and the acceptability threshold in the CMP is LOS E. Table 4-3 of the Traffic Study included in Appendix I presents a summary of the levels of service at existing Freeway/Tollway Ramps. The freeway ramps generally operate at acceptable service levels during the peak hours under existing traffic conditions, with the exception of the following ramp junctions:

- I-5 Southbound Off-Ramp to Bake Parkway

Table 4-3 of the Traffic Study included in Appendix I presents a summary of the levels of service at existing Freeway/Tollway Ramps.

5.12.1.9 Existing Freeway Mainline Levels of Service

To determine existing peak hour operating conditions for mainline freeway segments, peak hour traffic count data was compiled for the freeway system in the traffic analysis study area. The AM and PM peak hour freeway mainline volumes were applied together with the capacities described above for mixed-flow (general purpose) lanes and high-occupancy vehicle ("HOV") lanes to calculate existing peak hour V/C ratios, by direction, for freeway mainline segments in the study area. When evaluating existing freeway conditions (i.e., based on traffic count data), the V/C and LOS criteria are applicable only in situations where the observed traffic volume occurs in stable flow. When the peak hour V/C ratio on a freeway mainline segment nears 1.0, unstable conditions can occur which may result in a breakdown in traffic flow. This breakdown in flow causes a reduction in capacity (vehicle speeds drop below the speed at which maximum capacity is available), and hence the V/C increases, causing a further reduction in speed. At the same time, the reduction in capacity and increase in V/C causes queue build-up and the stop-and-go conditions can extend for a considerable distance upstream of the problem freeway segment. Furthermore, this occurrence, and its severity (i.e., length of queue), can vary from day to day even when day-to-day fluctuations in traffic volumes are relatively small.

Table 4-3 of the Traffic Study included in Appendix I summarizes existing AM and PM peak hour V/C ratios for freeway mainline segments in the study area. The freeway mainline segments operate at acceptable service levels (LOS "E" or better) during the peak hours under existing traffic conditions, with the exception of the following location:

- I-5 Southbound South of Alicia Pkwy

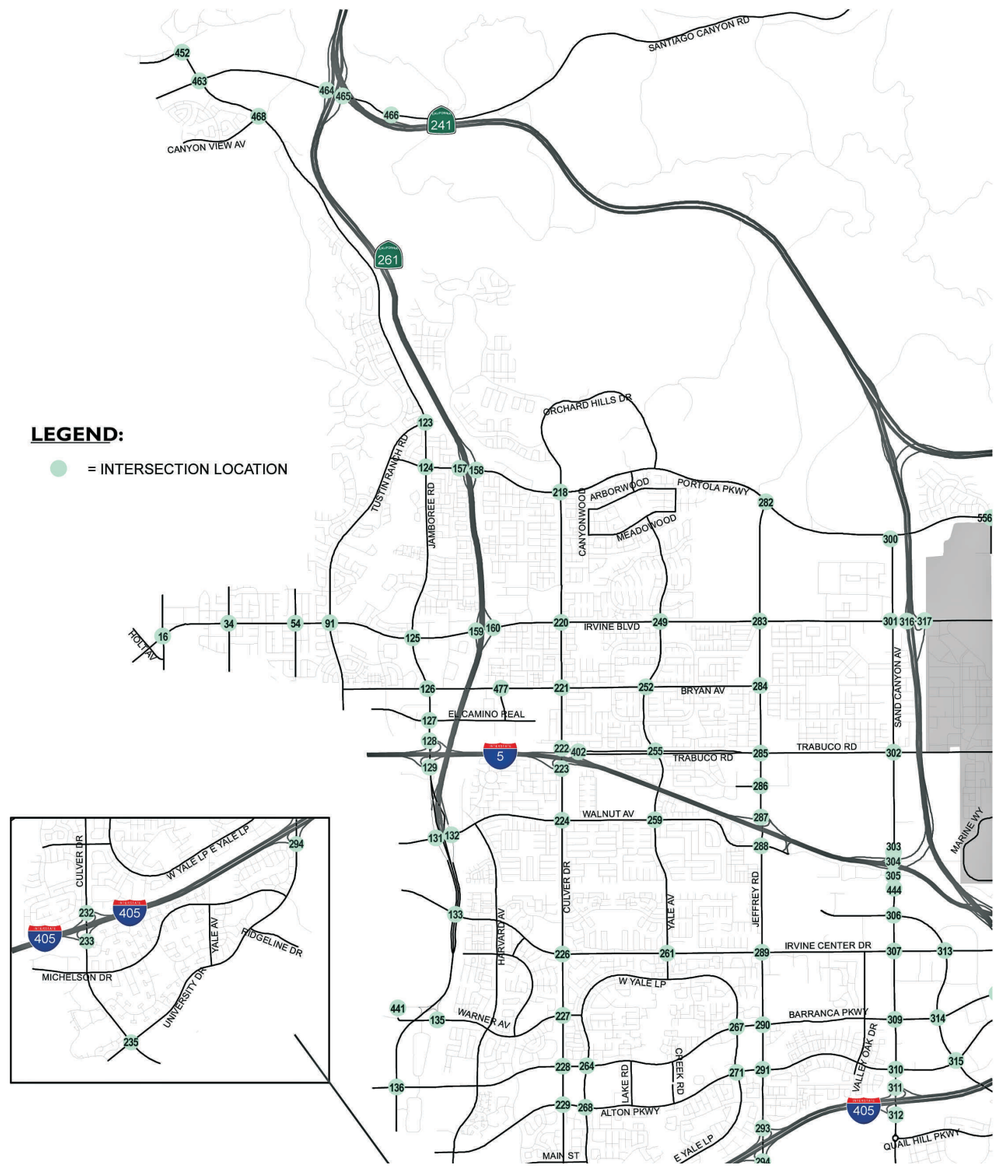
The LOS results based on V/C indicate measures of demand and are used as a basis for future mainline segment analysis in the Traffic Study. Note that future traffic volumes presented in the Traffic Study represent "demand" and no attempt is made to estimate operating conditions such as discussed here (i.e., only the V/C LOS based on the future demand traffic volume is reported).

5.12.1.10 Planned Circulation System

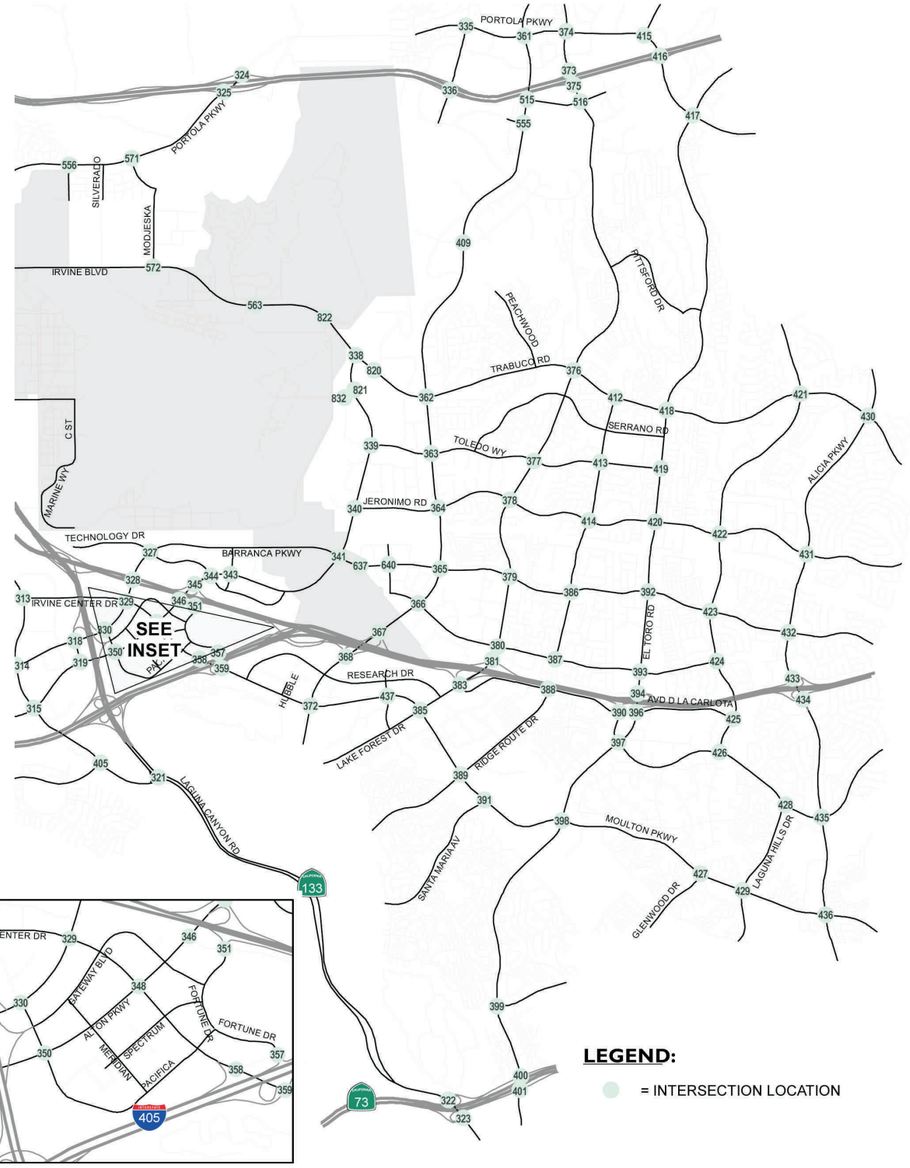
The circulation system that is planned in the traffic analysis study area under year 2015 conditions is illustrated on Figure 5.12-7. On-site roadways within Districts 1 North, 1 South, 4, 7 and 8 are planned to be constructed for the 2012 Modified Project.

Midblock travel lanes on individual segments of the year 2030 roadway network are shown in Figure 5.12-8. The year 2015 and year 2030 circulation systems only assume improvements that are committed for construction (i.e., public agency capital improvement programs, state transportation improvement program, etc.) or would be constructed as part of previously entitled development by 2015 or 2030.

Existing Intersection Location Map



West Study Area

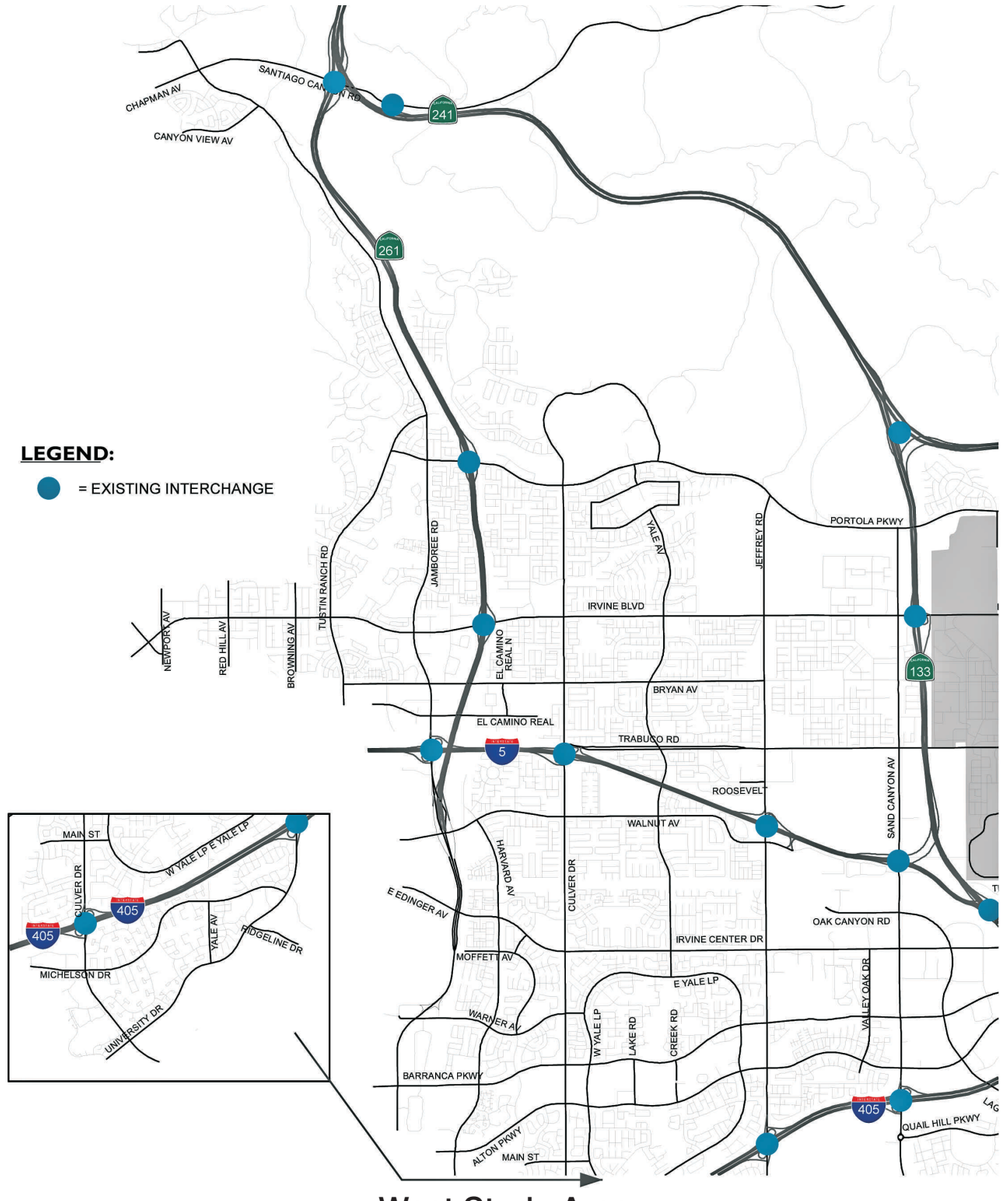


East Study Area

0 6,000
Scale (Feet)

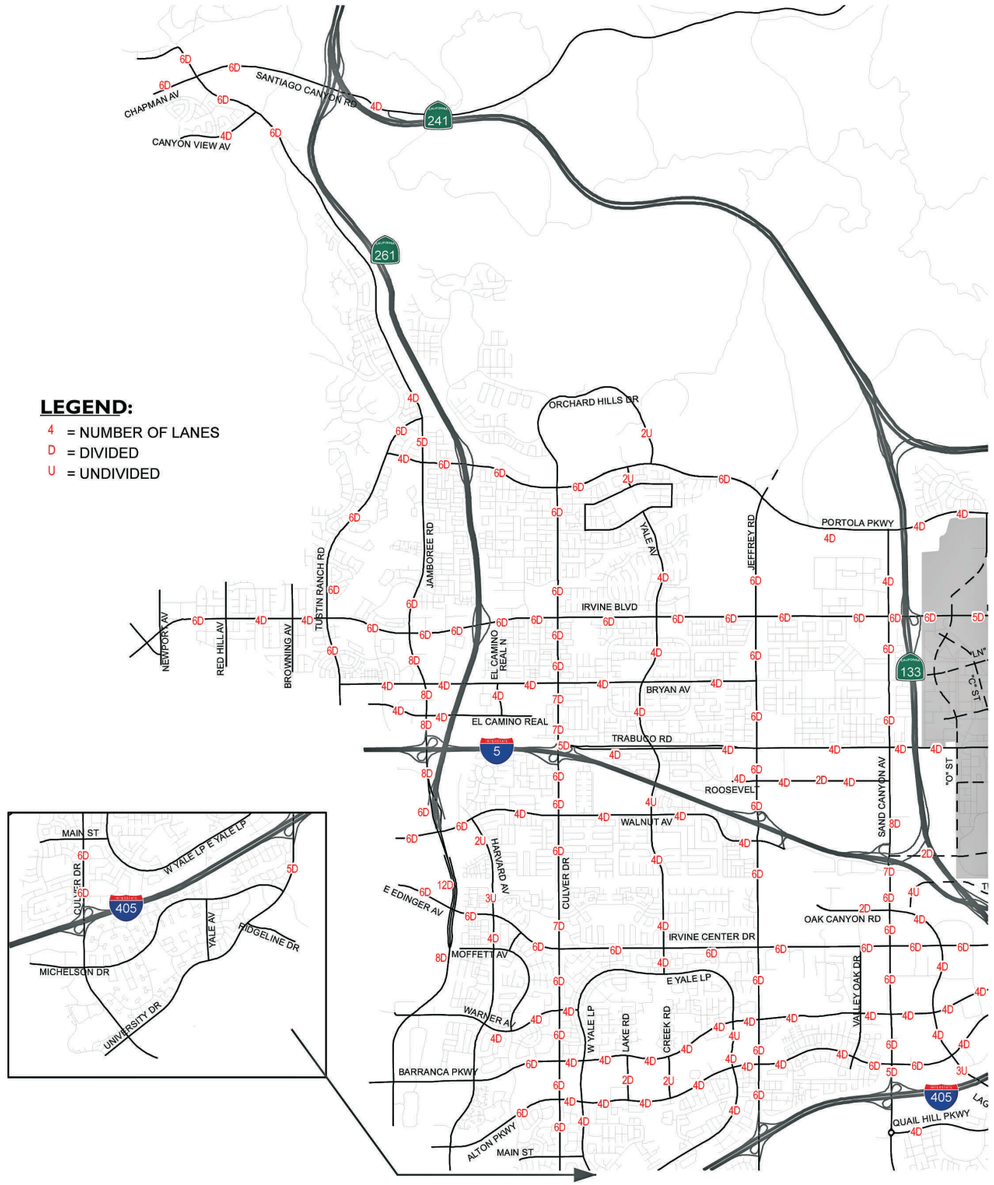
Source: Urban Crossroads 2012

Existing Freeway Interchange Locations

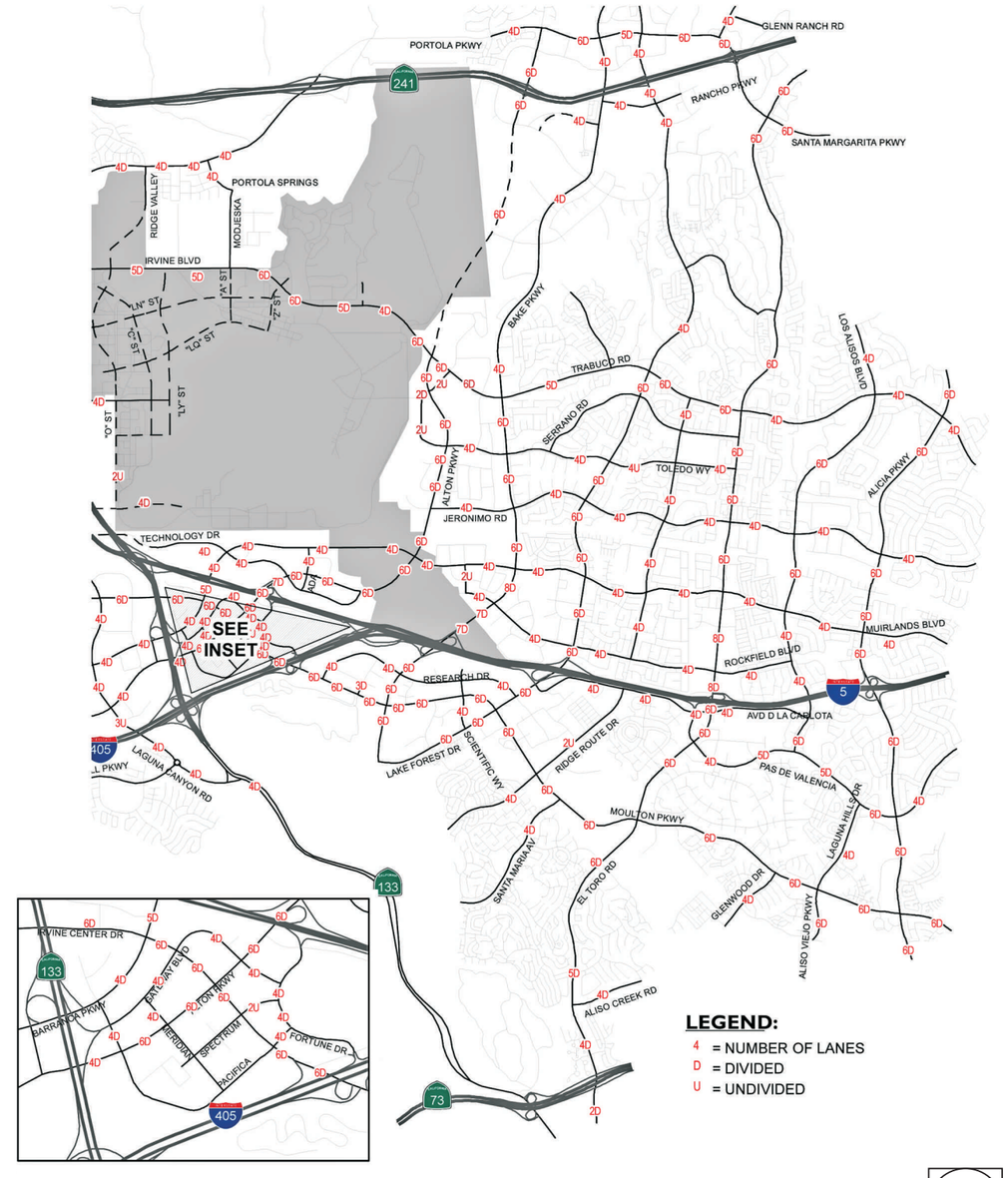


Source: Urban Crossroads 2012

2015 Circulation System



West Study Area

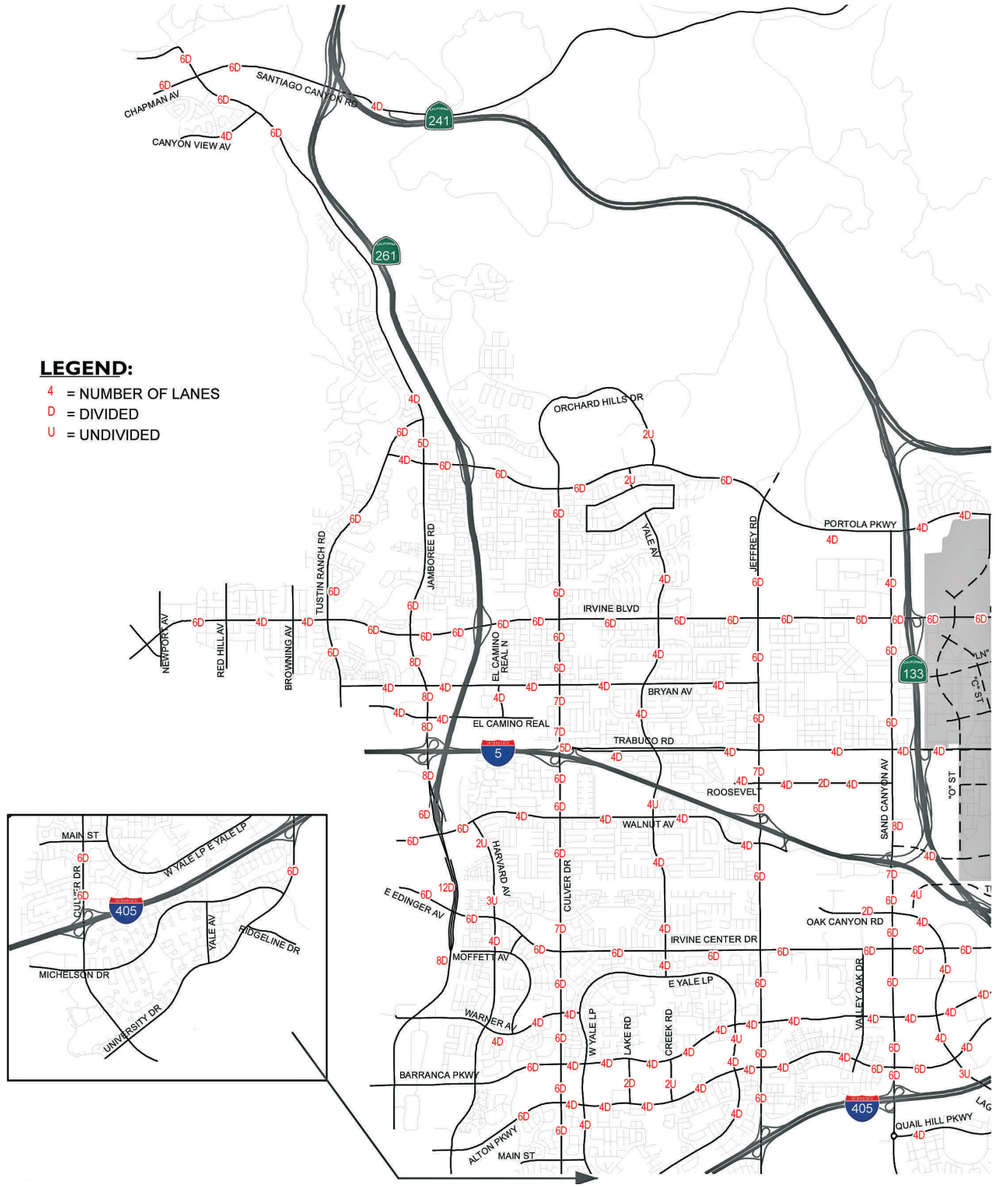


East Study Area

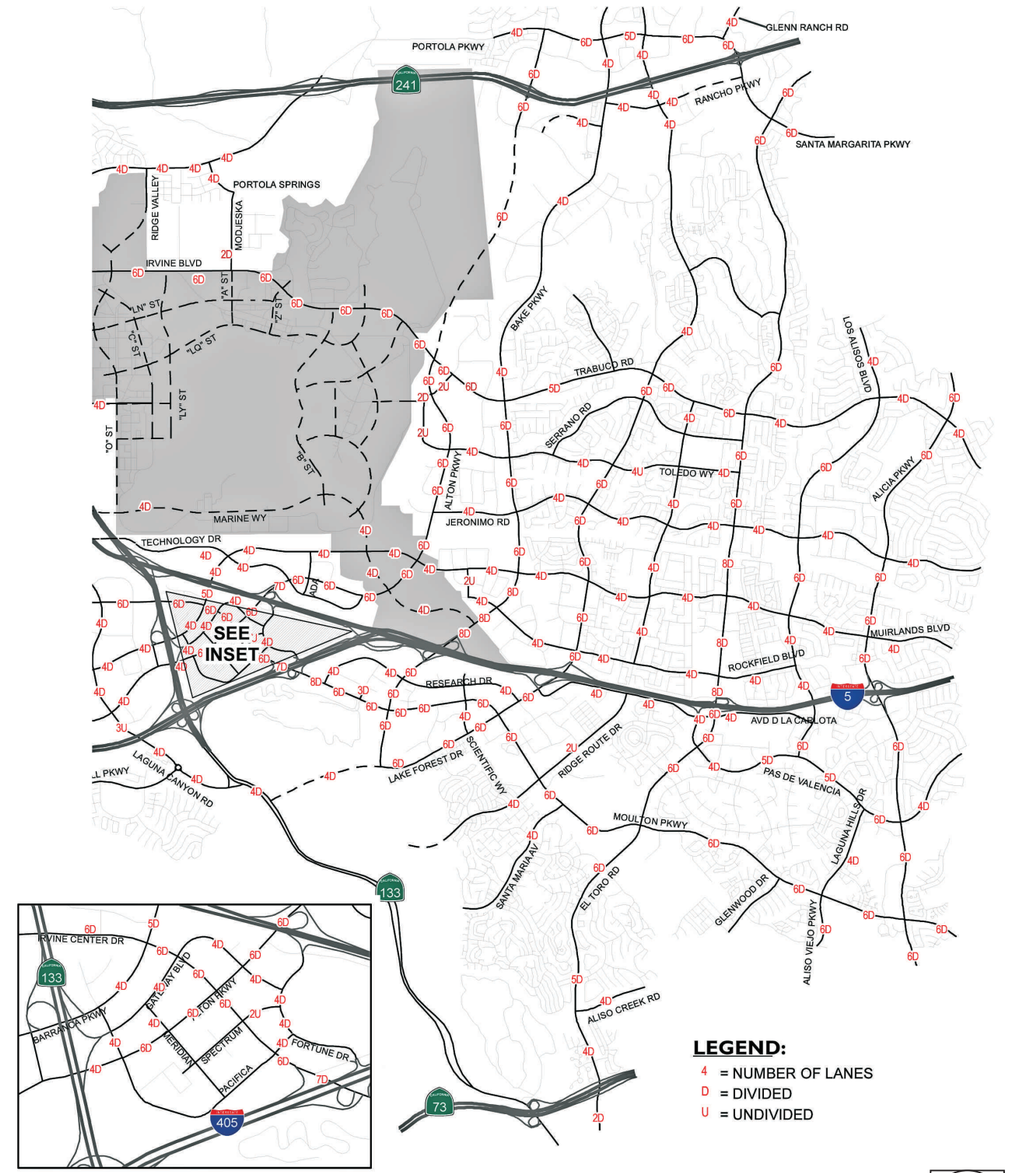
0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

2030 Circulation System



West Study Area

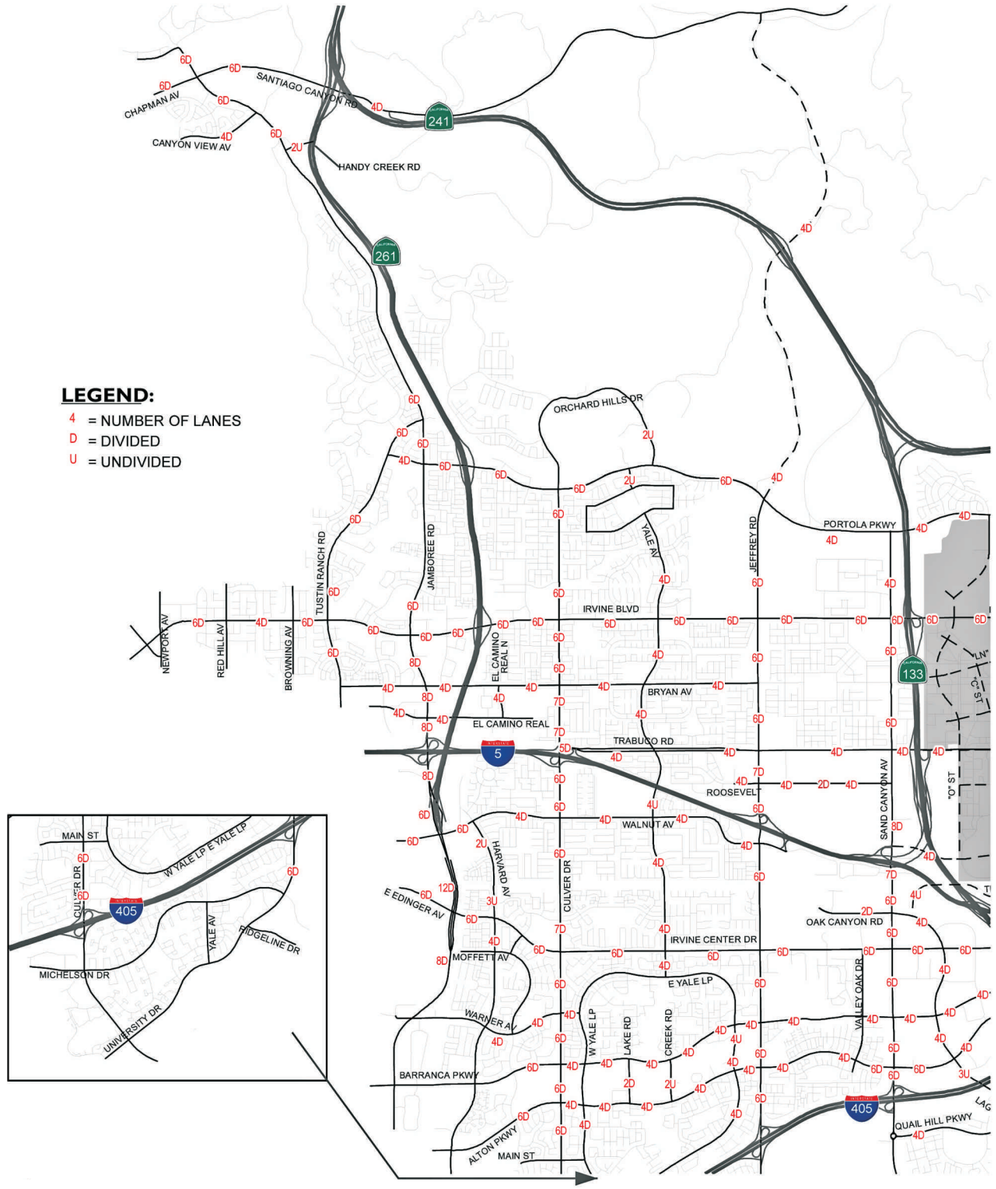


East Study Area

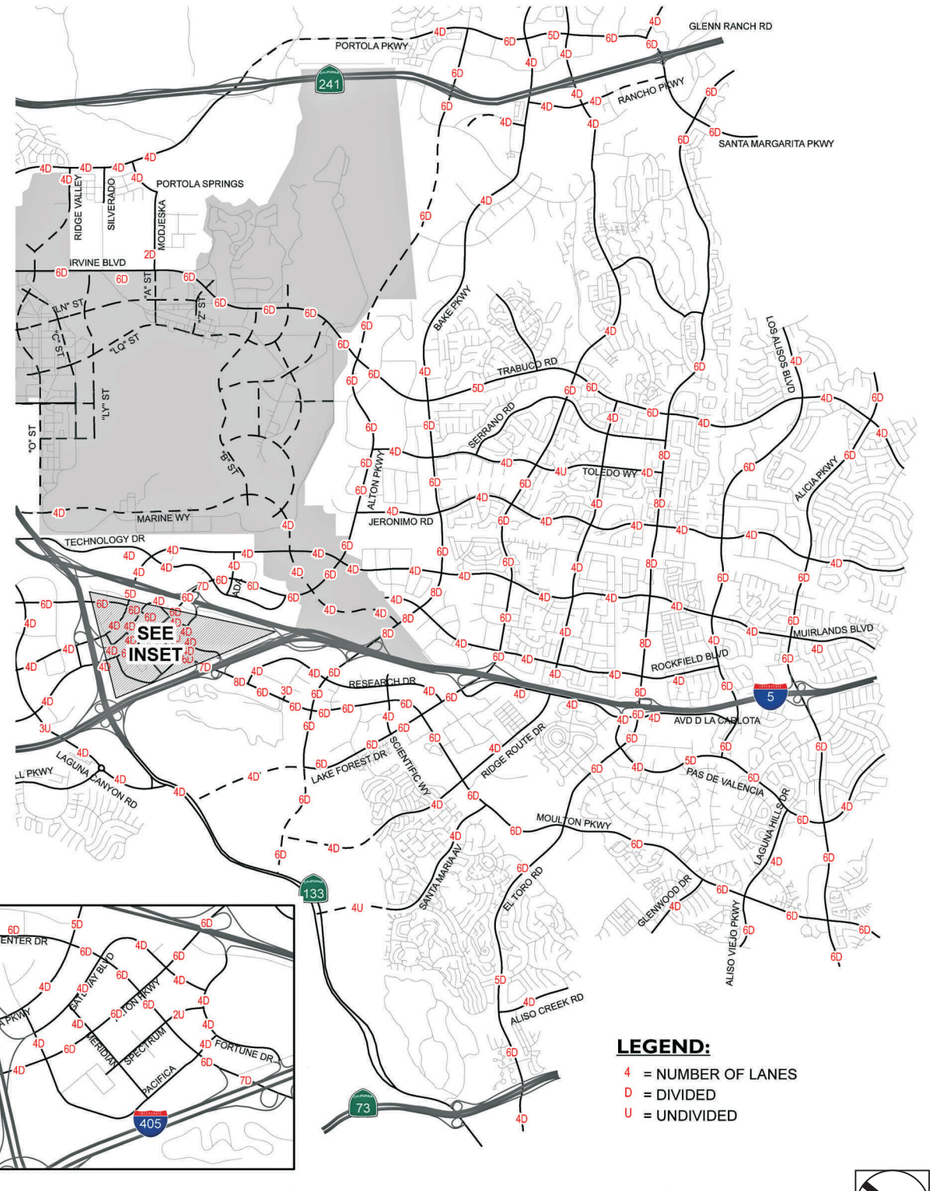
0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

General Plan Buildout (Post-2030) Circulation System



West Study Area



East Study Area

LEGEND:
4 = NUMBER OF LANES
D = DIVIDED
U = UNDIVIDED

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

The Post-2030 highway network is depicted in Figure 5.12-9. The Post-2030 scenario assumes full buildout of the General Plan Circulation Elements for the City and its neighboring cities as well as the Orange County Master Plan of Arterial Highways ("MPAH"). This includes a number of unfunded, and therefore non-committed, planned circulation system improvements.

Table 4-5 in the Traffic Study (Appendix I) presents the committed roadway improvements for years 2010-2015. Table 4-6 in the Traffic Study lists the improvements that are committed to be in place by 2030, and Table 4-7 in the Traffic Study lists the improvements assumed for Post-2030. Tables 4-8 through 4-10 in the Traffic Study present the intersection committed projects for years 2015, 2030 and Post-2030 which represent the background circulation assumptions for each year.

5.12.2 Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the City has determined that a project would normally have a significant effect on the environment if the project would:

T-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

T-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

T-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

T-4 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

T-5 Result in inadequate emergency access.

T-6 Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Chapter 8, *Impacts Found Not to Be Significant*, substantiates the City's determination in the Initial Study for the 2012 Modified Project (Appendix A to this DSSEIR) that impacts associated with the following impacts would be less than significant:

- Impact T-3
- Impact T-4
- Impact T-5

Accordingly, these impacts will not be addressed in the following analysis.

5.12.3 The 2011 Approved Project

The 2011 Certified EIR concluded that with the 2011 Approved Project all intersections and roadway/freeway/tollway/ramp segments would operate at acceptable levels of service with the existing or planned improvements. However, inasmuch as the primary responsibility for approving and/or completing certain improvements located outside of Irvine lies with agencies other than the City (i.e., City of Lake Forest, Laguna Woods, Mission Viejo, County of Orange, and Caltrans), there is the potential that significant impacts may not be fully mitigated if such improvements are not completed for reasons beyond the City's control (i.e., the City cannot undertake or require improvements outside of its jurisdiction). Should that occur, impacts relating to traffic generated by the 2011 Approved Project would remain significant.

5.12.4 Environmental Impacts of the 2012 Modified Project

Project Design Features

The following project design feature applies to the 2012 Modified Project to help to reduce and avoid potential impacts related to traffic.

PDF 12-1 The 2012 Modified Project's optional conversion of non-residential square footage to residential units, if implemented, will be subject to a traffic analysis to assess traffic impacts, if any, due to the specific changes in land use and will include a reduction in allowable Multi-Use intensity in terms of equivalent traffic generation (excluding DB units) based on AM peak, PM peak, and ADT. Conversions to other non-residential uses within the Multi-Use category, if implemented, will also be subject to a traffic analysis to assess traffic impacts, if any, and shall be reflected in terms of equivalent traffic generation based on AM peak, PM peak, and ADT.

The following impact analysis addresses impacts that the Initial Study disclosed as potentially significant impacts of the 2012 Modified Project, as compared to the 2011 Approved Project. The applicable impacts are identified in brackets after the impact statement.

IMPACT 5.12-1: TRIP GENERATION ASSOCIATED WITH THE 2012 MODIFIED PROJECT WOULD NOT IMPACT LEVELS OF SERVICE FOR THE EXISTING AREA ROADWAY SYSTEM, AS COMPARED TO THE APPROVED PROJECT. [IMPACTS T-1 AND T-2]

Impact Analysis:

5.12.4.1 Proposed Trip Generation

Trip generation rates used in the Heritage Fields Project 2012 GPA/ZC Traffic Study are derived from Irvine Traffic Model (ITAM) socio-economic conversion factors, production attraction rates, and time of day trip table factors. ITAM converts production-attraction trip tables to directional origin-destination tables by time period, using Vehicle Trips in Motion factors. Trip rates are responsive to this flow of data processing in ITAM, and they directly account for the resulting travel patterns which are analyzed in the Traffic Study.

The land use and trip generation for the project site for without Project, 2012 Modified Project Option 1, and 2012 Modified Project Option 2 under 2015, 2030, and Post-2030 conditions is summarized in Tables 3-2 to 3-8 of the traffic study. The peak hour and average daily trip generation based on the land use trip rates for the 2012 Modified Project under each of the future timeframes (2015, 2030 and Post-2030) is summarized in Table 5.12-4.

For interim year conditions, the 2012 Modified Project change in allowable uses and intensities involves District 1 South and portions of District 1 North. Within the footprint of those land uses in District 1 North and 1 South which change in either Option 1 or Option 2, the Without Project scenario assumes existing occupied land uses. Outside of the footprint of those land uses which change in District 1 North and 1 South, development assumptions in the current City of Irvine Transportation Analysis Model (ITAM) version 8.4-10 Year 2015 are utilized in this analysis.

Under 2015 conditions, the 2012 Modified Project is forecast to generate 1,911 more AM peak hour trips, 2,263 more PM peak hour trips and 23,623 more daily trips compared to Without Project conditions.

Under 2030/Post-2030 conditions, the 2012 Modified Project with Option 1 or Option 2 is forecast to generate 1,377 more AM peak hour trips, 846 more PM peak hour trips and 9,784 more daily trips compared to 2011 Approved Project (baseline) conditions.

Table 5.12-4
ITAM Trip Generation Comparison between Without Project (2015) or 2011 Approved Project (Baseline, 2030 & Post-2030) and the 2012 Modified Project[1]

Timeframe/Scenario	AM Peak Hour Trips	PM Peak Hour Trips	Average Daily Trips
Year 2015			
Without Project	3,741	3,823	41,272
2012 Modified Project	5,652	6,086	64,895
Difference	*1,911*	*2,263*	*23,623*
Year 2030/Post-2030			
2011 Approved Project (Baseline)	10,902	12,131	127,930
2012 Modified Project	12,279	12,977	137,714
Difference	*1,377*	*846*	*9,784*

Source: Urban Crossroads, 2012.
[1] Trip Generation summaries include trips generated by Density Bonus units which are not subject to the ADT limitations in the zoning code.

Trip distribution patterns for the 2012 Modified Project were developed using the ITAM traffic model and are presented here for each of the future timeframes that were analyzed (2015, 2030 and Post-2030). The 2015, 2030 and Post-2030 trip distribution patterns for the 2012 Modified Project with Option 1 are shown in Exhibits 3-2 through 3-4, and the 2012 Modified Project Option 2 trip distribution patterns are depicted in Exhibits 3-5 through 3-7 of the Traffic Study (Appendix I).

5.12.4.2 Existing-Plus 2012 Modified Project

Existing-Plus-2012 Modified Project Circulation System and ADT Volumes

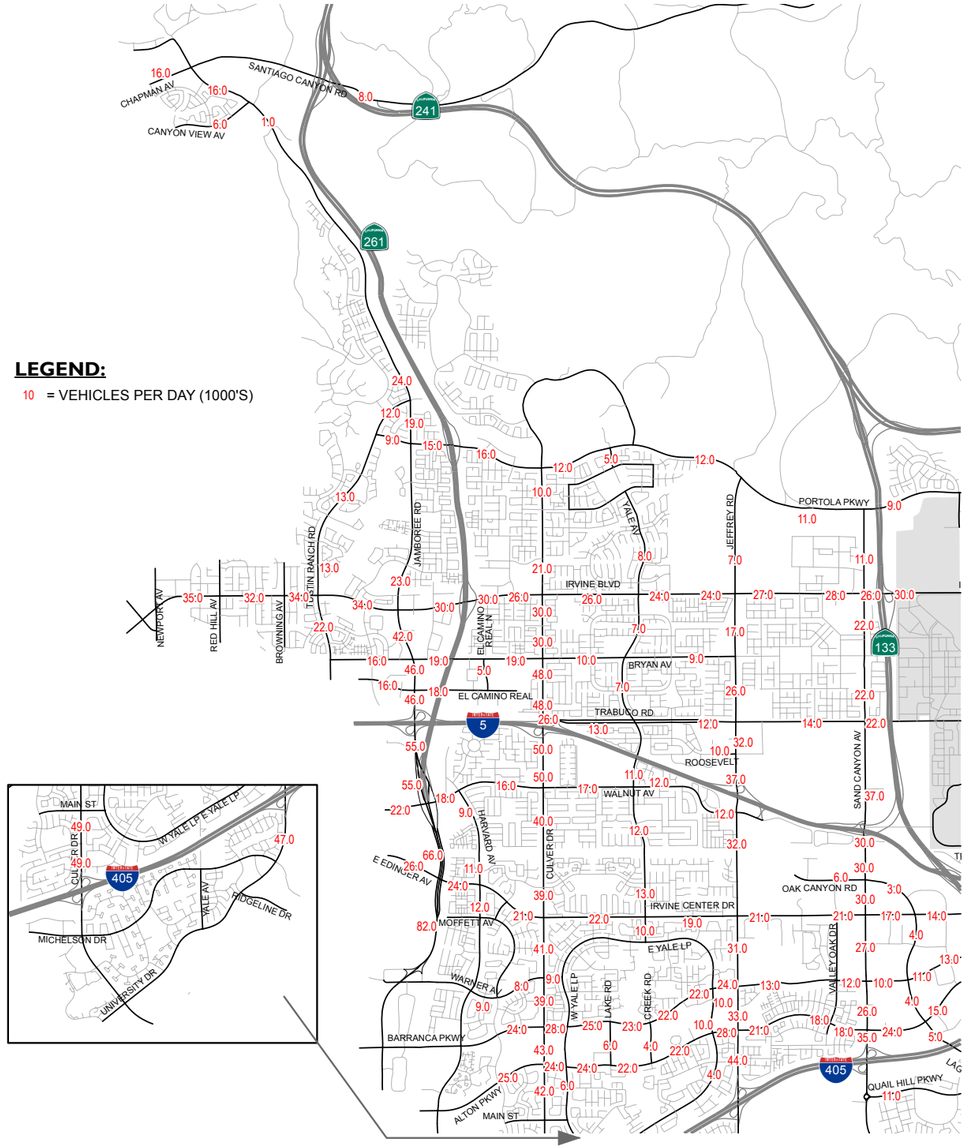
The baseline for this DSSEIR is the 2011 Approved Project, not the existing conditions at the time that the environmental documentation is prepared. Nonetheless, for informational purposes only, the Traffic Study includes the Existing-Plus 2012 Modified Project Option 1, and Existing-Plus 2012 Modified Project Option 2 conditions analyses. These scenarios hypothetically assume that the 2012 Modified Project (Option 1, and Option 2) would be constructed immediately. "Existing" refers to the conditions in the study area at the time the Traffic Study was prepared. The Existing-Plus-2012 Modified Project (Option 1, and Option 2) analyses are a theoretical construct; a project of this scale will obviously not occur instantaneously, and this scenario does not take into account the cumulative growth that would realistically occur during the course of development of the 2012 Modified Project, which would include various on-site and off-site infrastructure improvements in conjunction with progressive growth in the NITM area.

The Existing-Plus-2012 Modified Project average daily traffic ("ADT") volumes are illustrated in Figures 5.12-10 and 5.12-11, respectively. The Existing-Plus-2012 Modified Project corresponding V/C ratios for Option 1and Option 2 are illustrated in Figures 5.12-12 and 5.12-13, respectively. Based on the ADT V/C performance criteria and impact thresholds set forth in Table 5.12-1, thirteen (13) arterial roadway segments are potentially impacted by the 2012 Modified Project for Option 1 or Option 2:

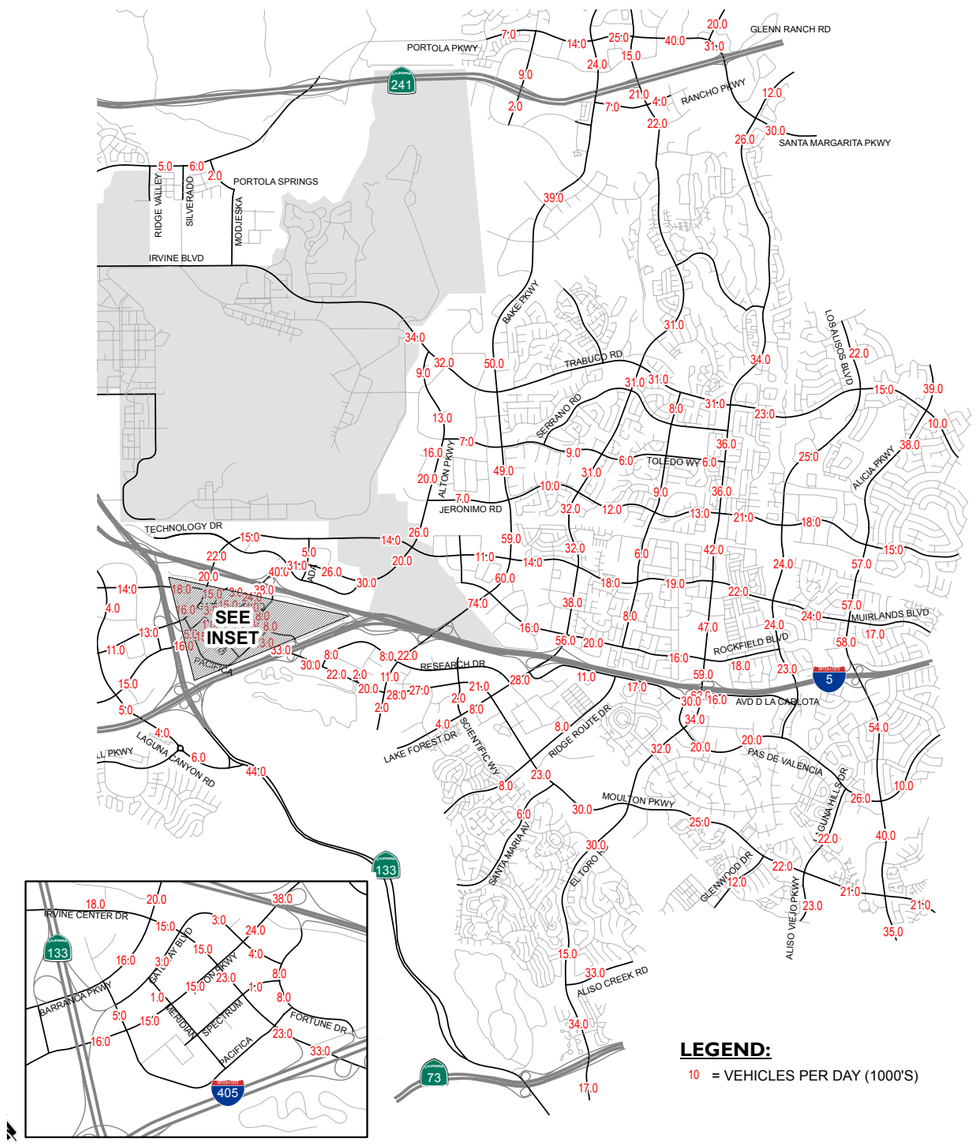
- Avenida Carlota (Paseo de Valencia to El Toro Rd)
- Bake Pkwy (north of Commercentre Dr)
- Bake Pkwy (north of Irvine Bl)
- Bake Pkwy (north of Muirlands Bl)
- Bake Pkwy (south of Rockfield Bl)
- El Toro Rd (south of SR-73)
- Lake Forest Dr (south of Rockfield Bl)
- Irvine Bl (east of SR-133 Northbound Ramps)
- Sand Canyon Av (I-5 Southbound Ramps to Burt Rd)
- Sand Canyon Av (Burt Rd to Oak Cyn/Laguna Cyn Rd)
- University Dr (I-405 SB Ramps to Michelson Dr)
- Culver Dr (Main St to San Leandro)
- Culver Dr (San Leandro to I-5 NB Ramps)

Consistent with the City's traffic study guidelines, these locations are further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under existing-plus-project with 2012 Modified Project with Option 1 and Option 2 conditions are summarized in Table 5-1 of the Traffic Study (Appendix I). As the summary table indicates, arterial roadway segments are forecast to operate at acceptable levels of service during peak hours.

Existing-Plus-2012 Modified Project Option 1 ADT Volumes



West Study Area

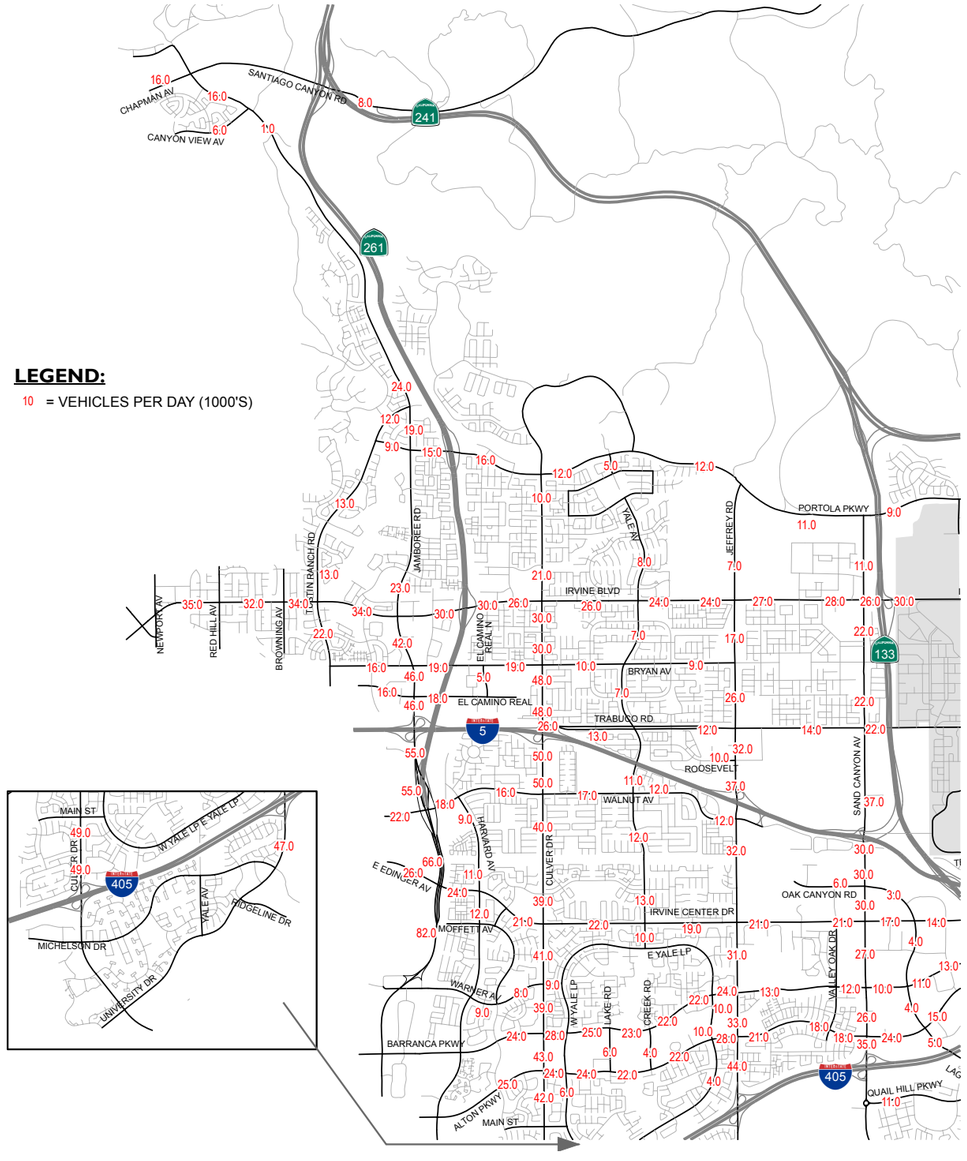


East Study Area

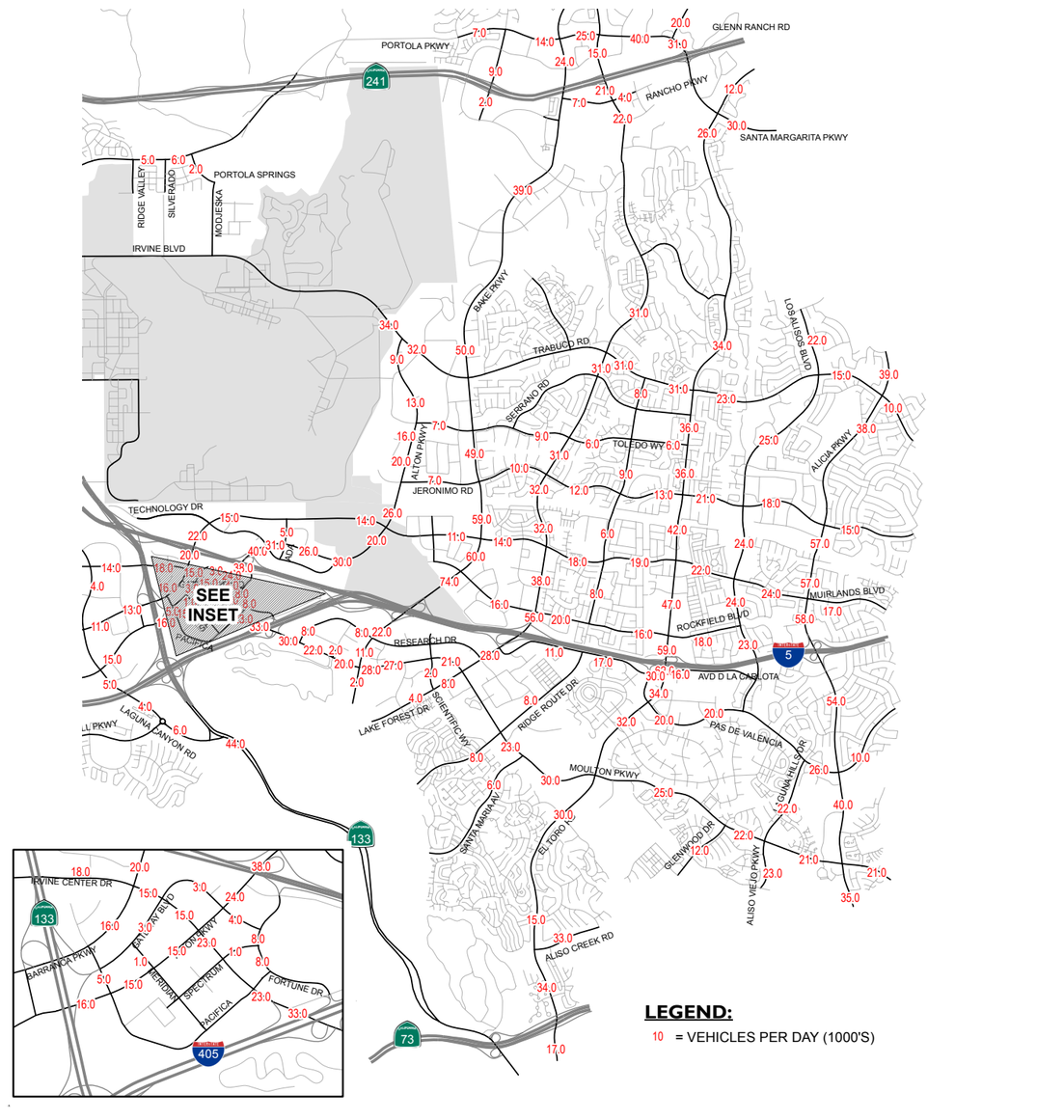
0 0.5 1
Miles

Source: Urban Crossroads 2012

Existing-Plus-2012 Modified Project Option 2 ADT Volumes



West Study Area



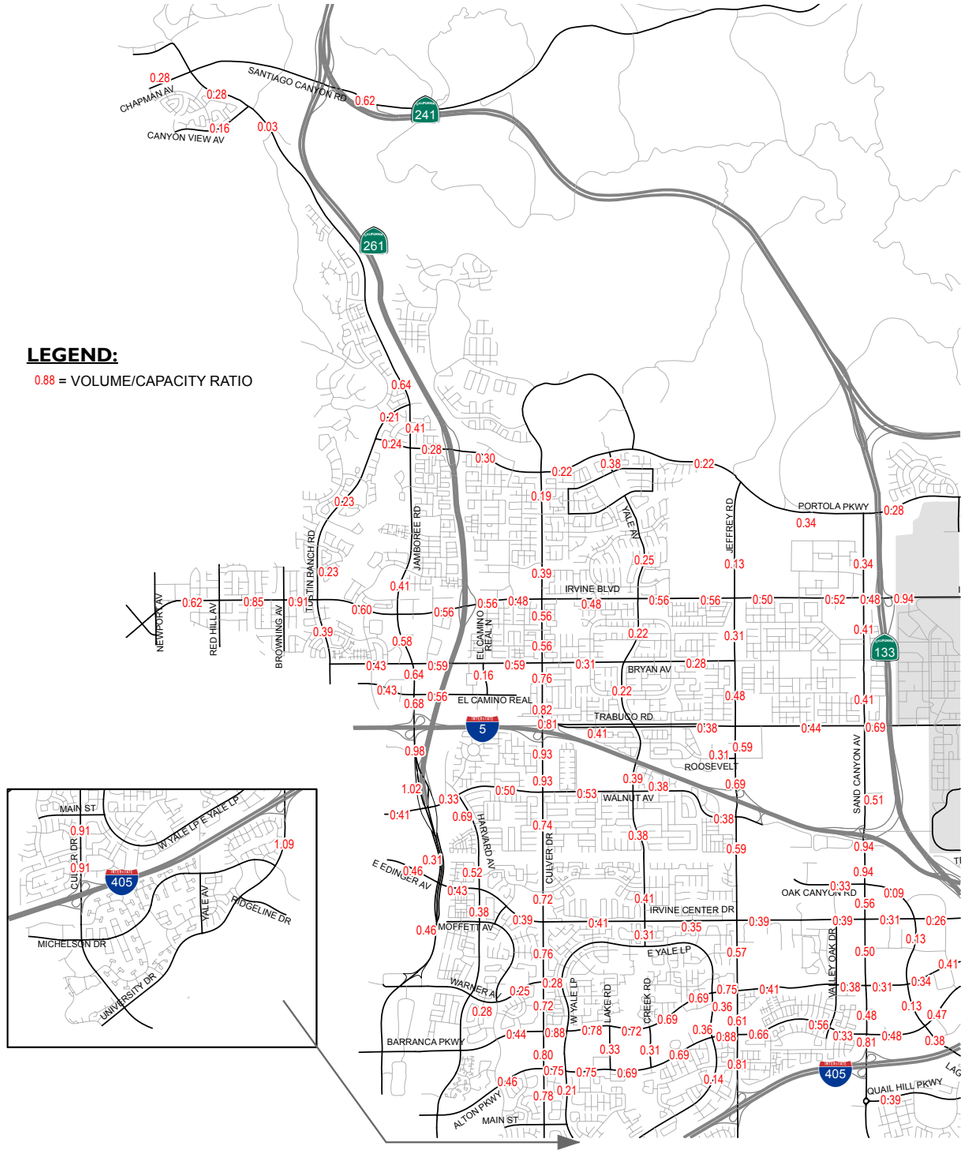
East Study Area

LEGEND:
10 = VEHICLES PER DAY (1000'S)

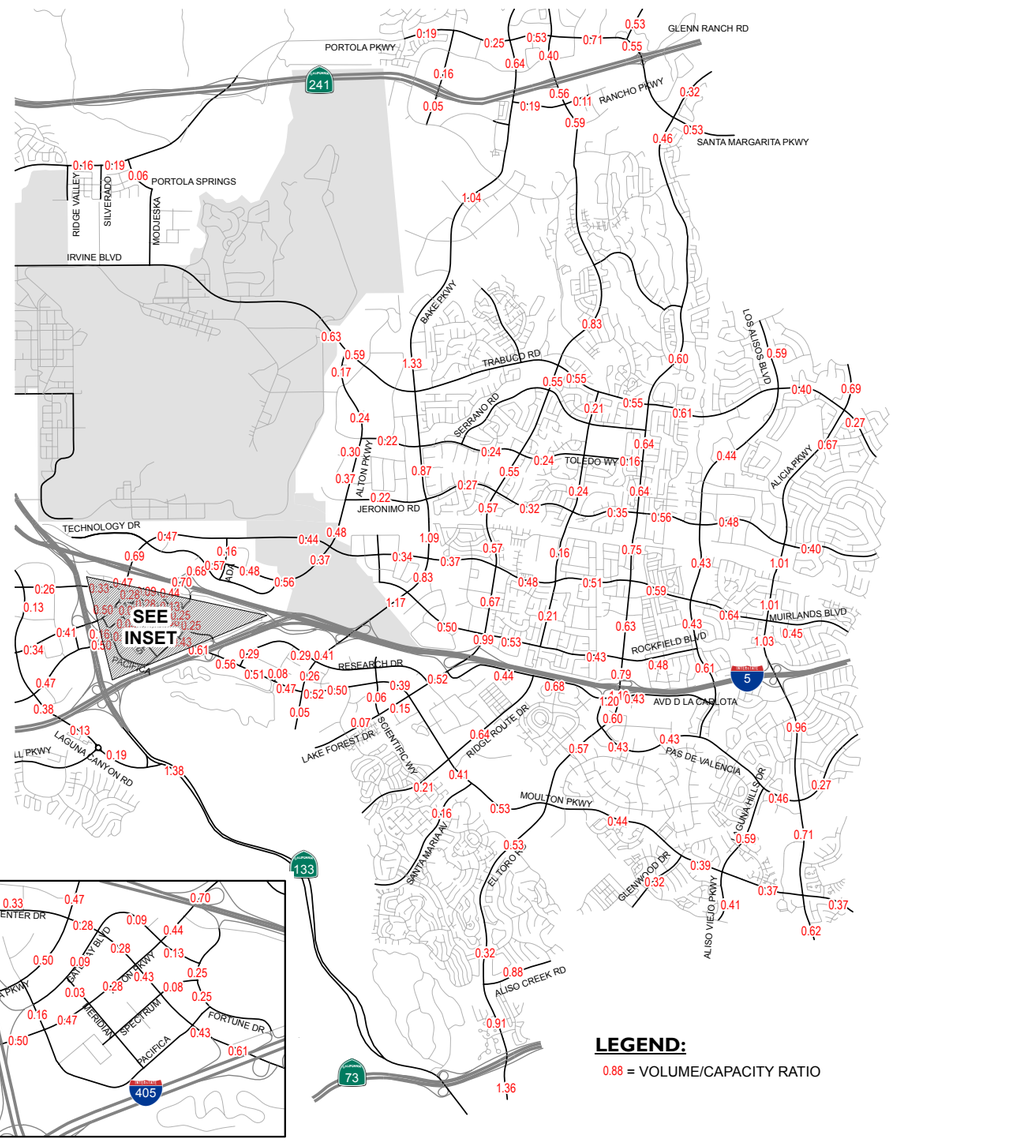
0 0.5 1
Miles

Source: Urban Crossroads 2012

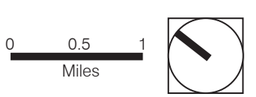
Existing-Plus-2012 Modified Project Option 1 ADT V/C Ratios



West Study Area

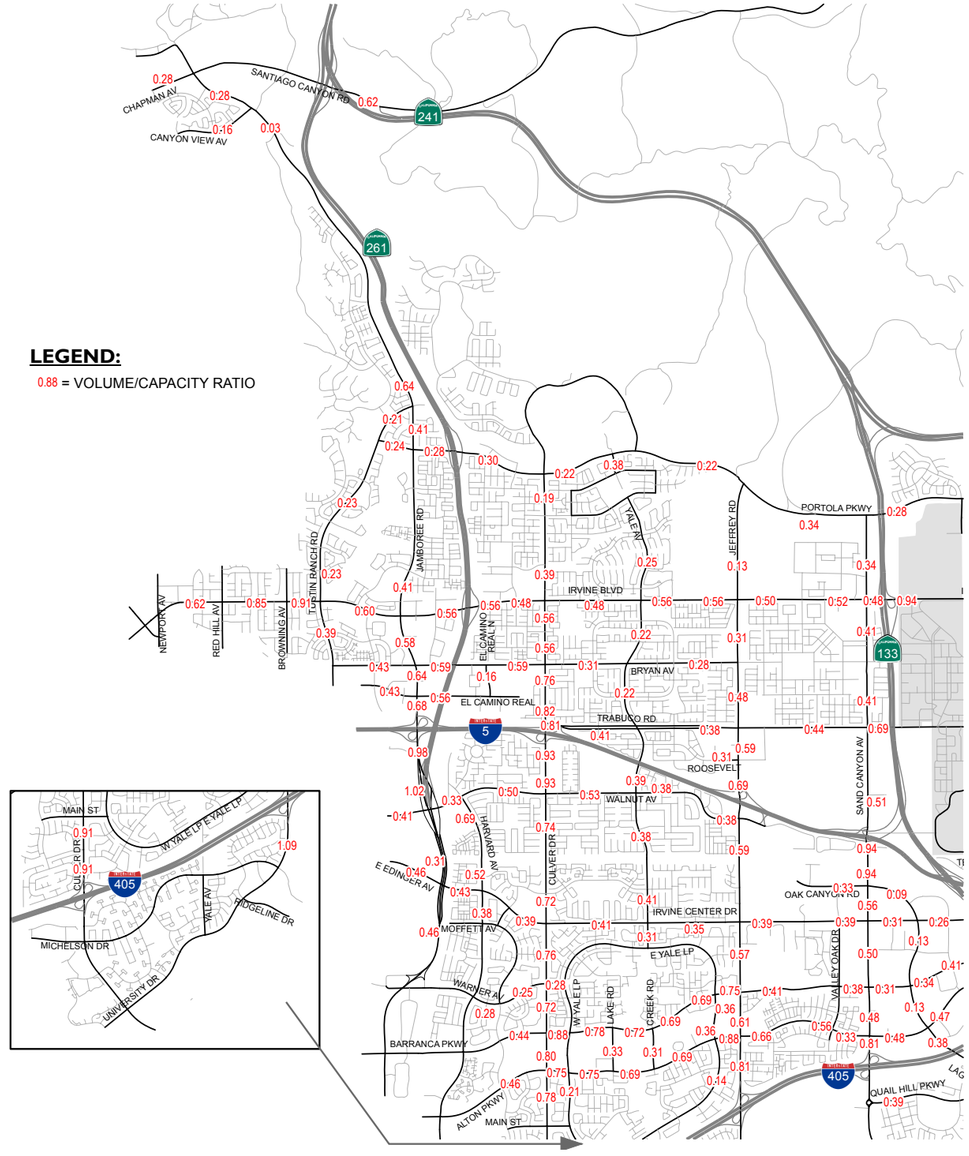


East Study Area

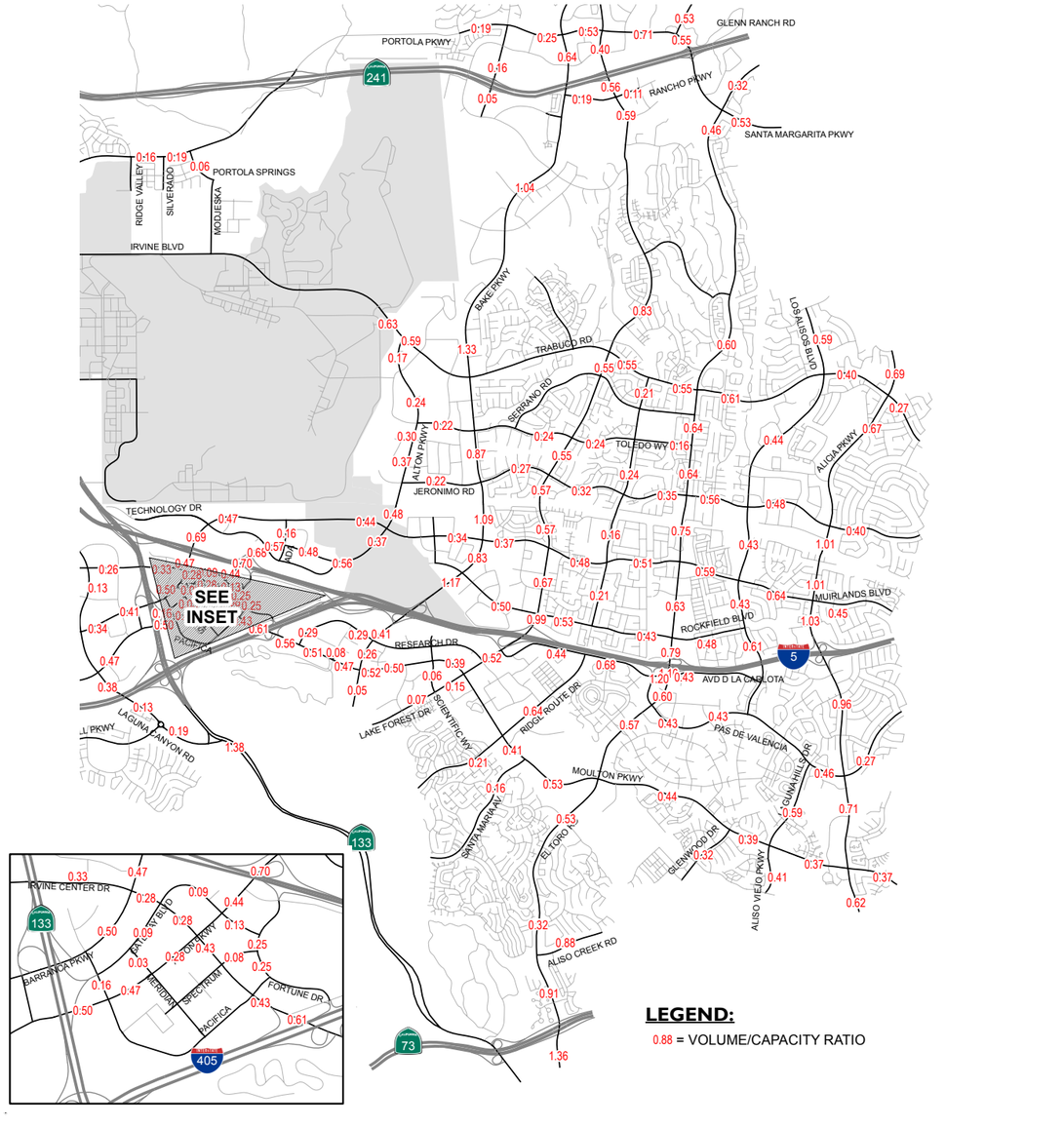


Source: Urban Crossroads 2012

Existing-Plus-2012 Modified Project Option 2 ADT V/C Ratios



West Study Area



East Study Area

0 0.5 1
Miles

Source: Urban Crossroads 2012

Existing-Plus-2012 Modified Project Peak Hour Intersection LOS

Based on the peak hour intersection performance criteria and impact thresholds discussed previously, the following intersection as shown in Table 5.12-5 exceeds adopted impact thresholds with the hypothetical existing-plus-project scenarios:

Table 5.12-5
Existing-Plus-Project Intersection ICU LOS With 2012 Modified Project
Project Impact Location – Options 1 and 2

Intersection		Peak Hour	Without Project		With Project	
			ICU	LOS	ICU	LOS
Culver and University	Option 1	PM	0.90	D	0.91	E
	Option 2	PM	0.90	D	0.92	E

Source: Urban Crossroads, 2012.

A summary of Existing-Plus-2012 Modified Project ICU LOS for all study-area intersections with the 2012 Modified Project for Options 1 and 2 is included in Table 5-2 of the Traffic Study. To address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the 2012 Modified Project, the freeway ramp intersections at Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard interchanges have been analyzed using the Highway Capacity Manual (HCM) methodology in addition to the ICU methodology. The resulting existing and existing-plus-project peak hour levels of service based on the HCM methodology are summarized in Table 5-4 of the Traffic Study. As the summary table indicates, each of the ramp intersections are forecast to operate at an acceptable LOS (i.e., LOS D or better) under existing-plus-project conditions.

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection. The analysis indicates, none of the vehicle queue lengths exceed the physical length of the off-ramps, and therefore traffic exiting at the I-5 at Sand Canyon Avenue off-ramps is not expected to back up onto the I-5 mainline under existing-plus-project conditions. The on-ramps at the Sand Canyon Avenue/I-5 interchanges are metered with queue detectors installed, and the timing of the ramp meters will continue to be coordinated by Caltrans and the City to ensure that on-ramp traffic does not back up through Caltrans ramp intersections onto City arterial roadways.

Existing-Plus-2012 Modified Project Peak Hour Freeway/Tollway Ramp LOS

Existing-Plus-2012 Modified Project (for Option 1 and Option 2) AM and PM peak hour ramp volumes and V/C ratios are shown in Table 5-6 of the Traffic Study (Appendix I). Based on the peak hour ramp performance criteria and impact thresholds previously discussed, one freeway ramp is forecast to exceed

adopted impact thresholds under the Existing-Plus-2012 Modified Project (e.g., greater than or equal to 0.02, except at CMP locations outside Irvine where it is greater than 0.03) conditions:

- SR-133 Northbound loop on ramp at Barranca Parkway

Existing Plus Project Peak Hour Freeway/Tollway Mainline LOS

Existing-Plus-2012 Modified Project (for Options 1 and 2) AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are shown in Table 5-7 of the Traffic Study (Appendix I) None of the freeway mainline segments are forecasted to exceed adopted impact thresholds under the Existing-Plus-2012 Modified Project conditions.

Existing Plus Project Intersection Impact Location (ICU Methodology)

For the Culver Drive & University Drive intersection impact, the fully funded NITM improvement of converting the northbound de-facto right-turn lane to dual right-turn lanes addresses the hypothetical existing-plus-project intersection peak hour impact (see results in Table 5.12-6 below).

Table 5.12-6
Existing-Plus-Project Intersection ICU LOS With 2012 Modified Project
Project Impact Location – Options 1 and 2

Intersection		Peak Hour	Without Project		With Project		With Project and Programmed Improvement	
			ICU	LOS	ICU	LOS	ICU	LOS
Culver and University	Option 1	PM	0.90	D	0.91	E	0.82	D
	Option 2	PM	0.90	D	0.92	E	0.82	D

Source: Urban Crossroads, 2012.

Existing-Plus-2012 Modified Project Freeway Ramp Impact Location

Conditions under the Existing-Plus-2012 Modified Project scenario exceed adopted impact thresholds at one freeway interchange:

- SR-133 northbound loop on-ramp at Barranca Parkway

This ramp improvement will be funded on a NITM methodology fair share basis. The improvement that would address this hypothetical existing-plus-project impact scenario is to convert the HOV preferential lane to a second metered mixed-flow lane. With this improvement, the SR-133 northbound loop on-ramp from Barranca Parkway would operate at LOS B with 2012 Modified Project Option 1 or Option 2 (as demonstrated in Table 5-9 of the Traffic Study, provided in Appendix I).

5.12.4.3 Interim Year 2015 Traffic Impacts with 2012 Modified Project

The following sub-sections summarize the resulting Year 2015 traffic conditions for the various components of the study area circulation system including arterial roads and intersections, freeway/tollway mainline segments and freeway/tollway ramps without and with the 2012 Modified Project Option 1 and Option 2 scenarios.

Interim Year 2015 Circulation System and Average Daily Traffic Volumes, with 2012 Modified Project Option 1

The Year 2015 with 2012 Modified Project Option 1 average daily traffic (ADT) volumes and corresponding volume/capacity (V/C) ratios are illustrated in Figures 5.12-14 and 5.12-15, respectively.

Based on the ADT and V/C performance criteria and impact thresholds, the following two (2) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 1:

- Irvine Bl (west of A-02 St)
- Irvine Bl (east of A-02 St)

Consistent with the City's traffic study guidelines, these locations are further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Year 2015 conditions 2012 Modified Project Option 1 are summarized in Table 6-1 of the Traffic Study (Appendix I). As the summary table indicates, all arterial roadway segments are forecast to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed the adopted thresholds.

Interim Year 2015 Peak Hour Intersection Levels of Service with 2012 Modified Project Option 1

For the 2012 Modified Project Option 1, Year 2015 AM and PM peak hour ICU results for the intersections illustrated in Figure 5.12-16 that are part of the study area are summarized in Table 6-2 of the Traffic Study. Actual turn volumes, lane geometrics and ICU calculation worksheets for the this scenario are included in Appendix 6.2 of the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, none of the intersections are forecast to exceed adopted impact thresholds with the 2012 Modified Project Option 1 based on Year 2015 conditions.

As previously stated, to address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard interchanges have been analyzed using the HCM methodology in addition to the ICU methodology. The resulting Year 2015 Without Project and Year 2015 2012 Modified Project peak hour levels of service based on the HCM methodology are summarized in Table 6-3 of the Traffic Study (HCM intersection LOS calculation worksheets are included in Appendix 6.3 of the Traffic Study). As the summary table indicates, each of the ramp intersections are forecast to operate at an acceptable LOS (i.e., LOS D or better) under the Year 2015 for the 2012 Modified Project Option 1 conditions.

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 freeway ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection (see Table 6-6 of the Traffic Study). Table 6-4 of the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Year 2015 peak hour conditions for the 2012 Modified Project Option 1 (HCM queuing analysis calculation worksheets are included in Appendix 6.4 of the Traffic Study). As the summary table indicates, none of the vehicle queue lengths exceed the physical length of the off-ramps, and therefore traffic exiting at the I-5 at Sand Canyon Avenue off-ramps is not expected to back up onto the I-5 mainline under this condition. The on-ramps at the Sand Canyon Avenue/I-5 interchanges are metered with queue detectors installed, and the timing of the ramp meters will continue to be coordinated by Caltrans and the City.

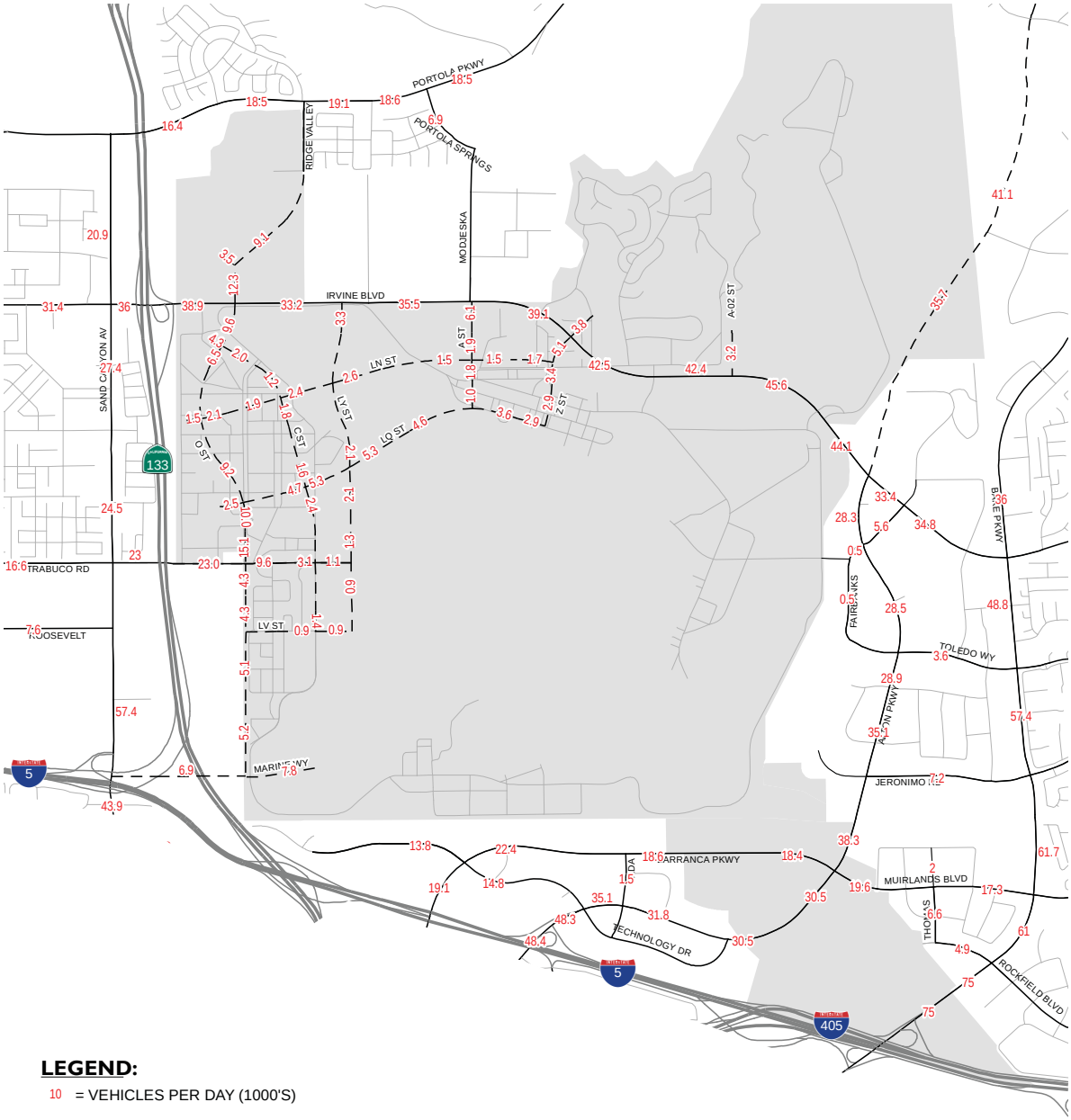
Interim Year 2015 Peak Hour Freeway/Tollway Ramp Levels of Service, with 2012 Modified Project Option 1

Figure 5.12-17 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Year 2015 conditions. Year 2015 Without Project and Year 2015 with the 2012 Modified Project Option 1 AM and PM peak hour freeway/tollway ramp volumes and V/C ratios are summarized in Table 6-5 of the Traffic Study. Based on the peak hour freeway/tollway ramp performance criteria and impact thresholds presented earlier in this section, none of the freeway ramps are forecasted to exceed the adopted impact thresholds (e.g., greater than or equal to 0.02, except at CMP locations outside Irvine where it is greater than 0.03) under Year 2015 for the 2012 Modified Project Option 1 conditions.

Interim Year 2015 Peak Hour Freeway/Tollway Mainline Levels of Service, with 2012 Modified Project Option 1

Year 2015 Without Project and 2015 with the 2012 Modified Project Option 1 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 6-6 of the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds, none of the freeway mainline segments are forecasted to exceed adopted impact thresholds (e.g., greater than 0.03) under Year 2015 with 2012 Modified Project Option 1 conditions.

Year 2015 ADT Volumes with 2012 Modified Project Option 1 (1 of 2)



LEGEND:

10 = VEHICLES PER DAY (1000'S)

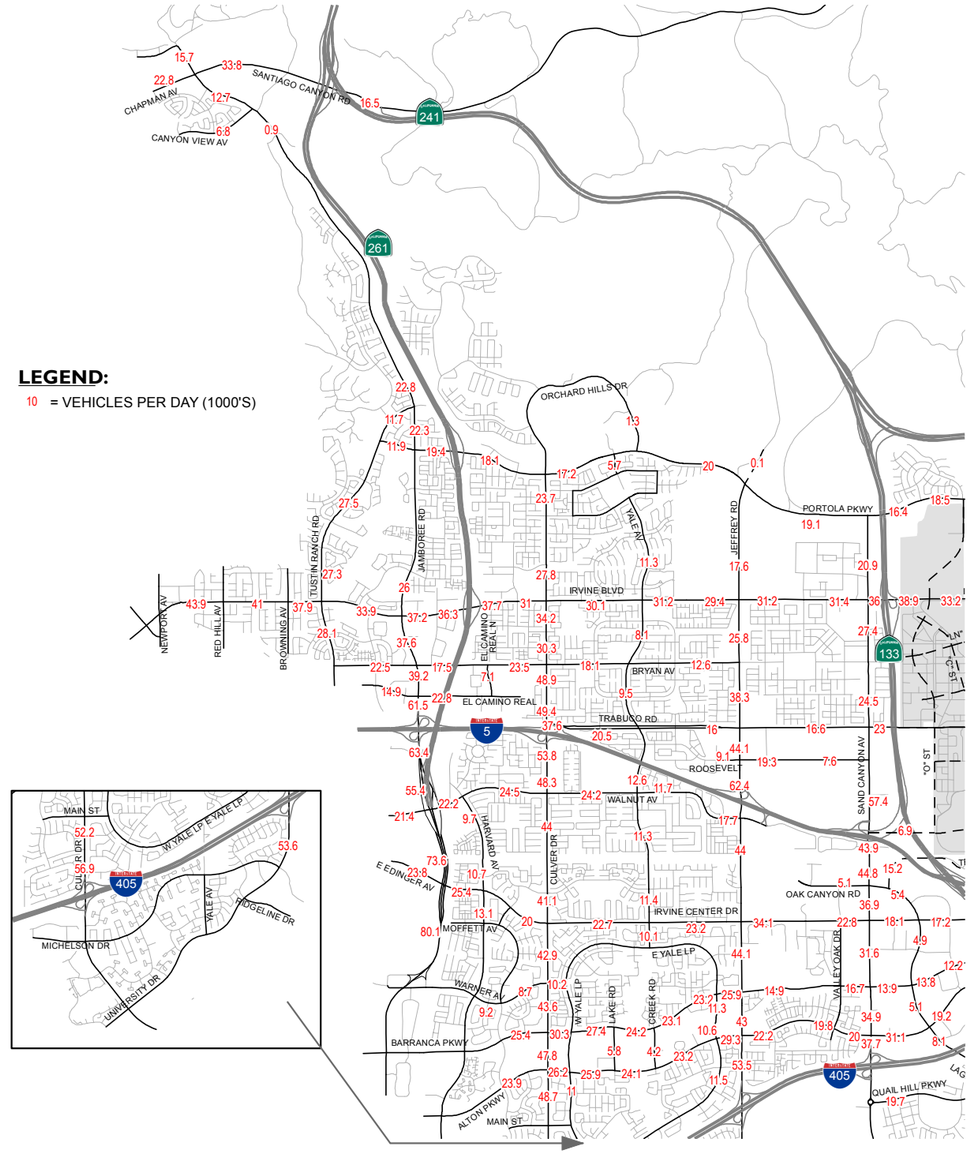
Project Area

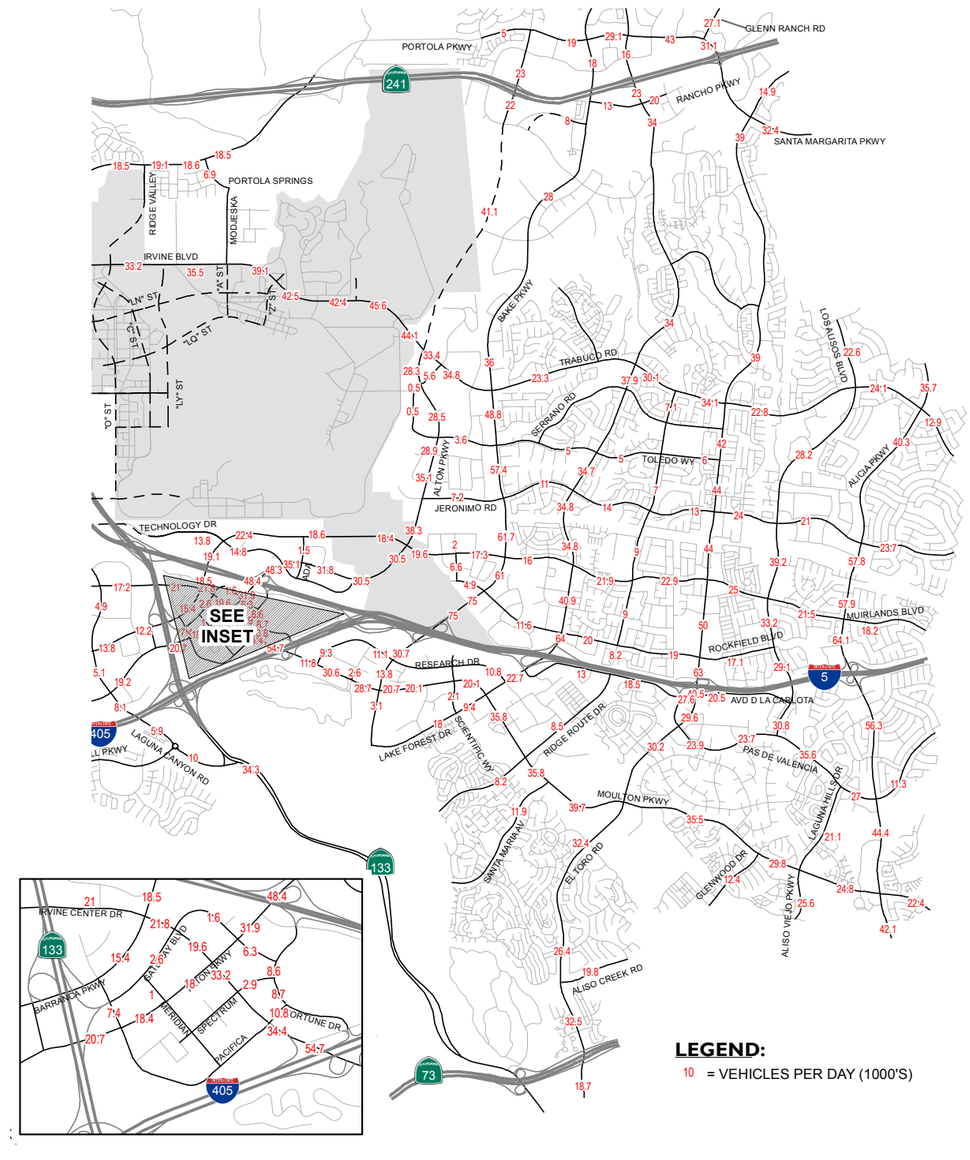
0 1,500 3,000

Scale (Feet)

Source: Urban Crossroads 2012

Year 2015 ADT Volumes with 2012 Modified Project Option 1 (2 of 2)

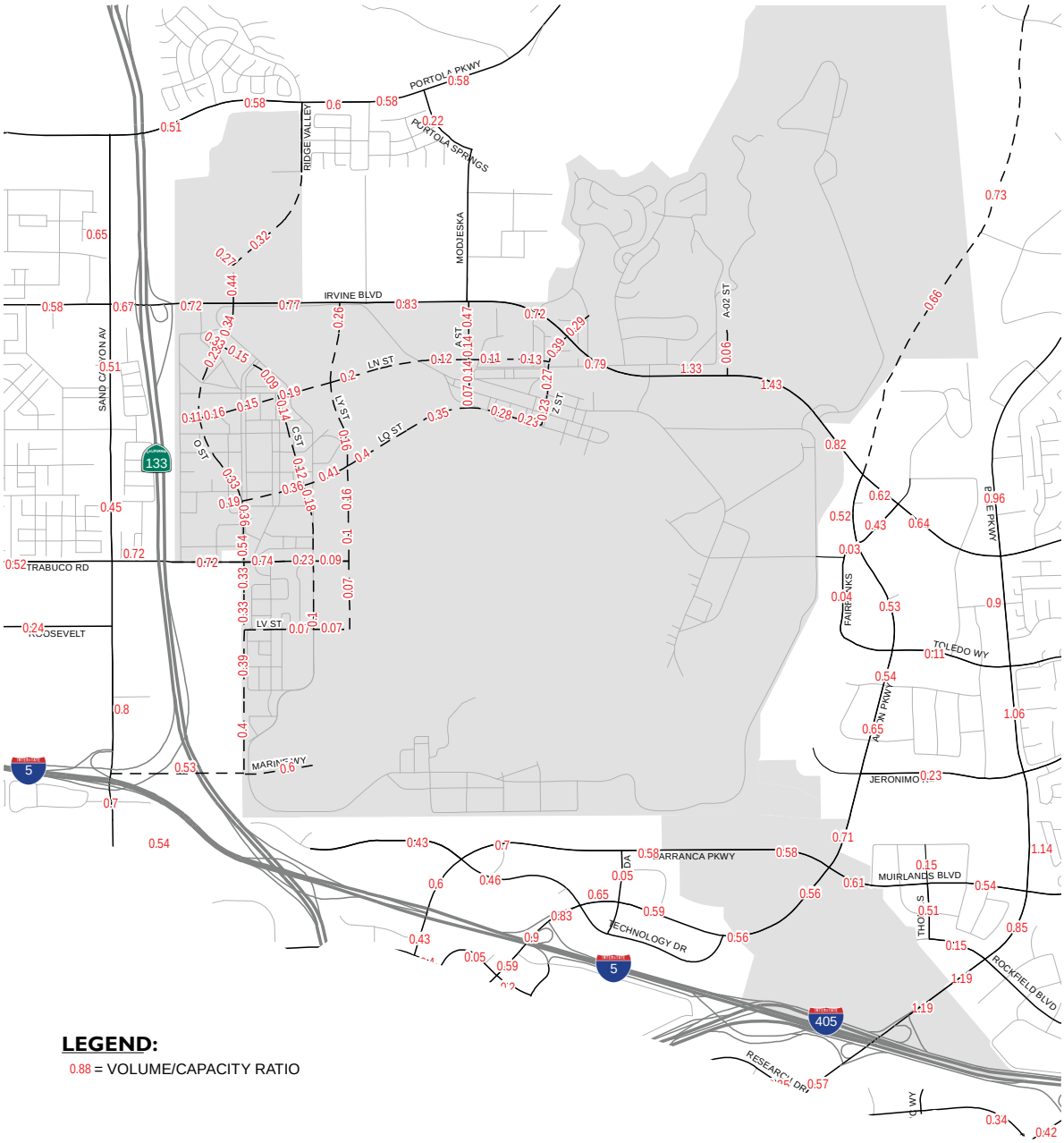




0 0.5 1 Miles

Source: Urban Crossroads 2012

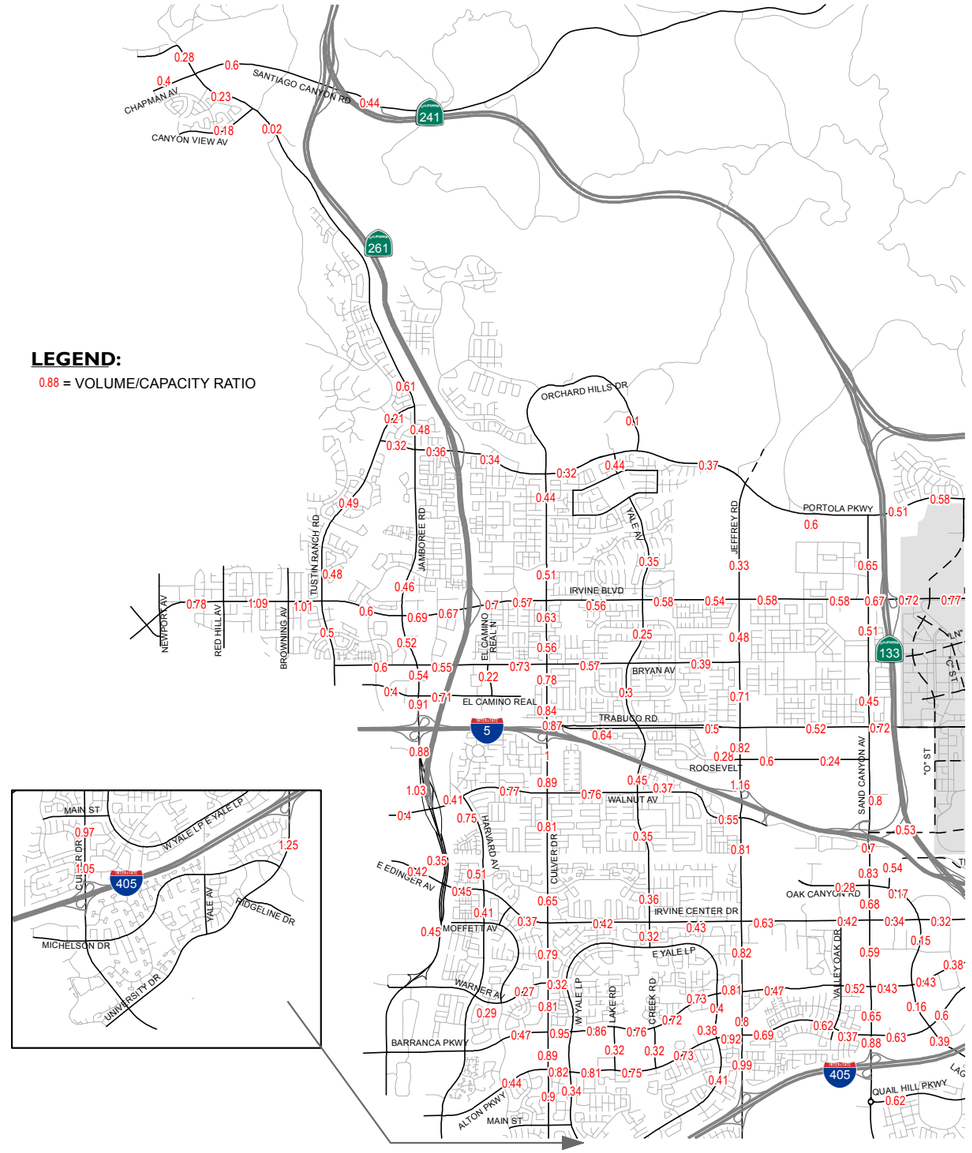
Year 2015 ADT V/C Ratios with 2012 Modified Project Option 1 (1 of 2)



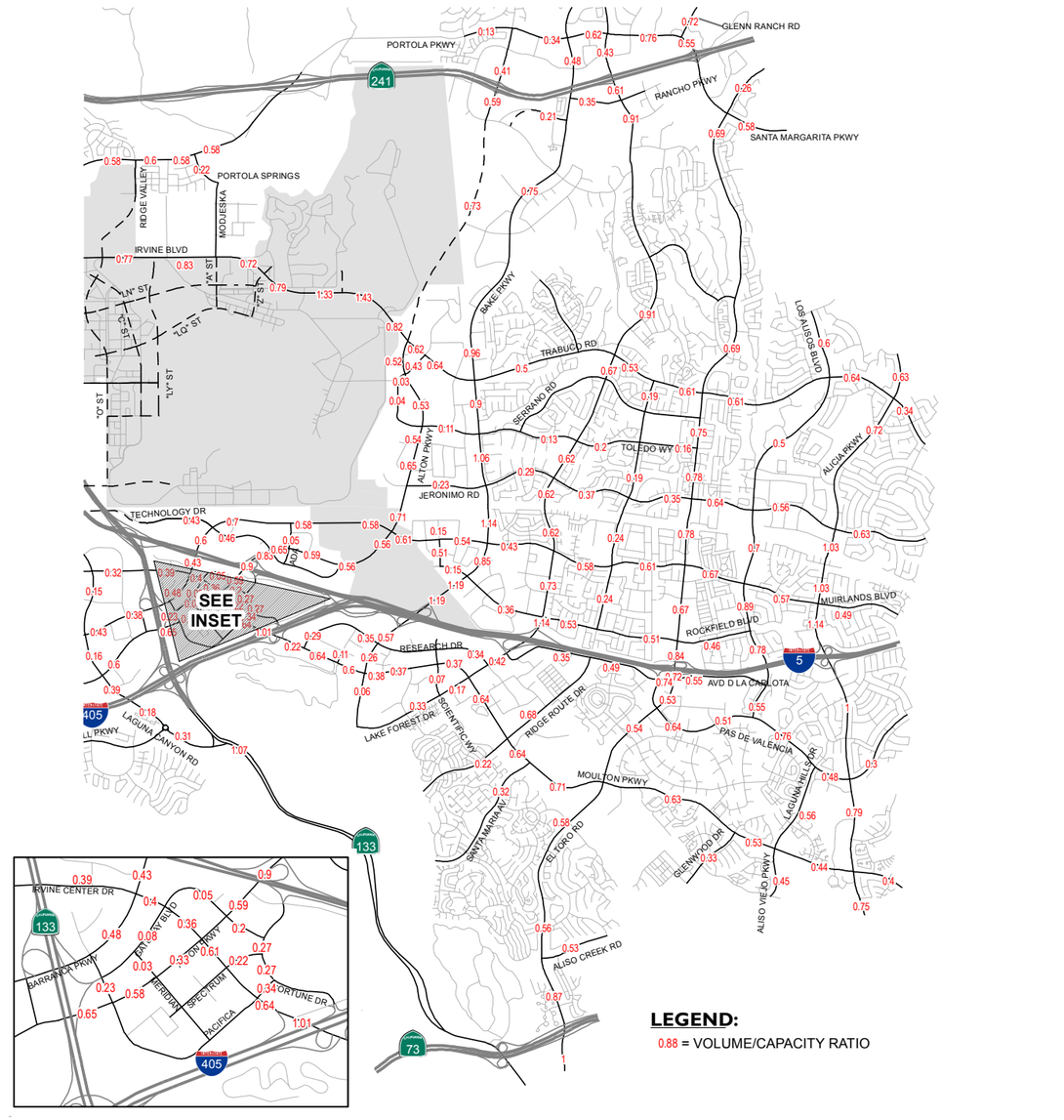
0 1,500 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2015 ADT V/C Ratios with 2012 Modified Project Option 1 (2 of 2)



West Study Area

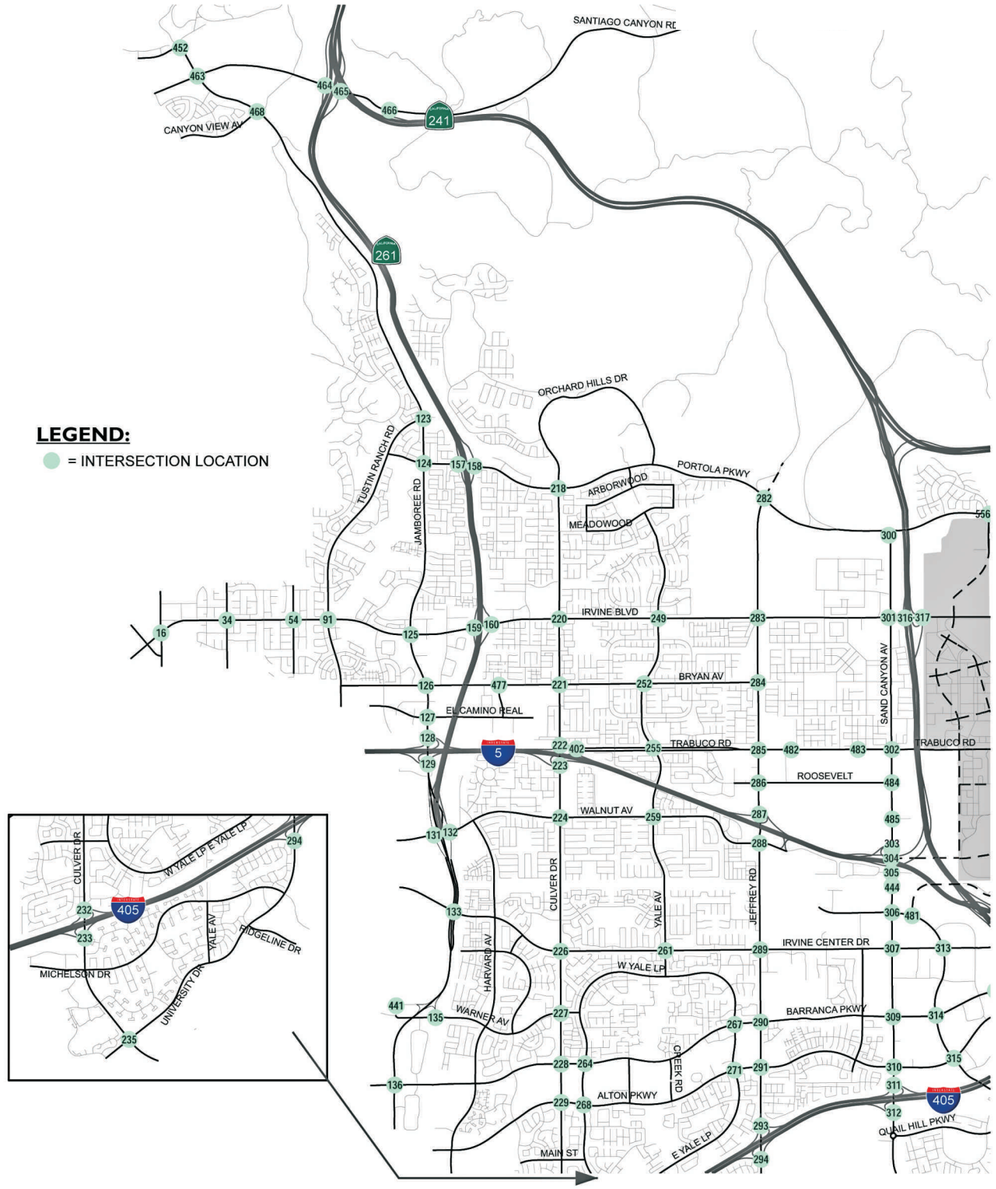


East Study Area

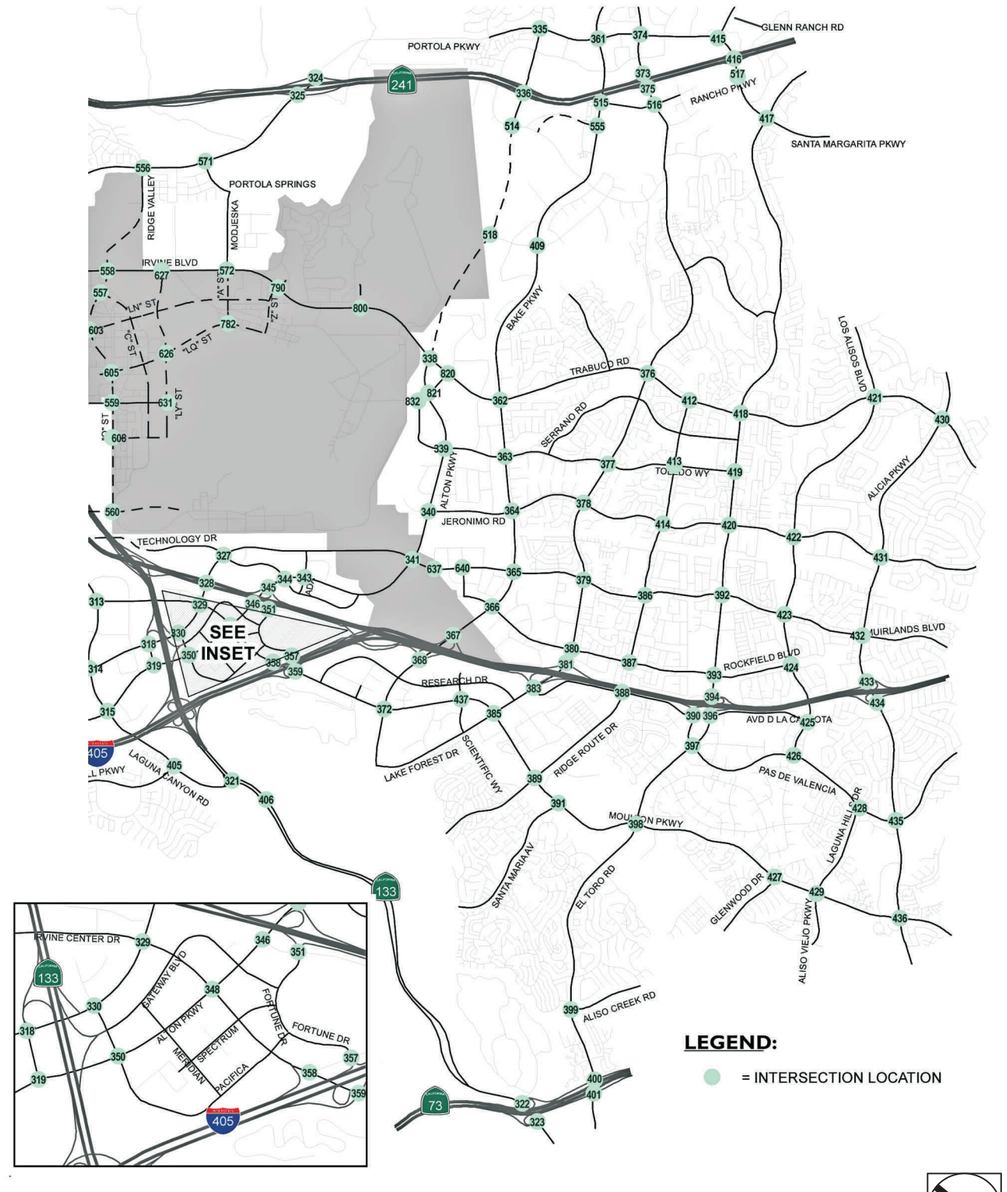
Source: Urban Crossroads 2012

0 0.5 1 Miles

Year 2015 Intersection Location Map



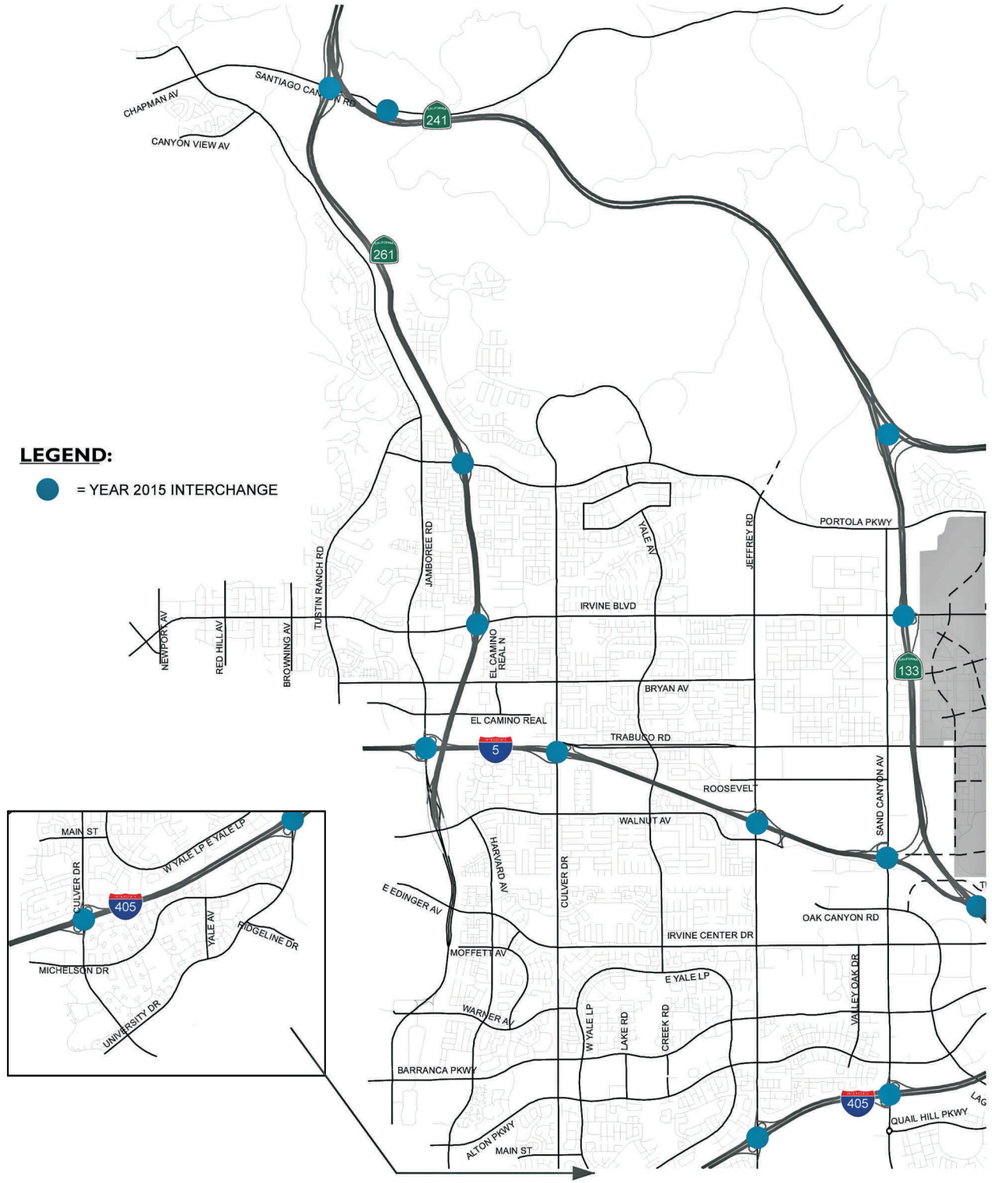
West Study Area



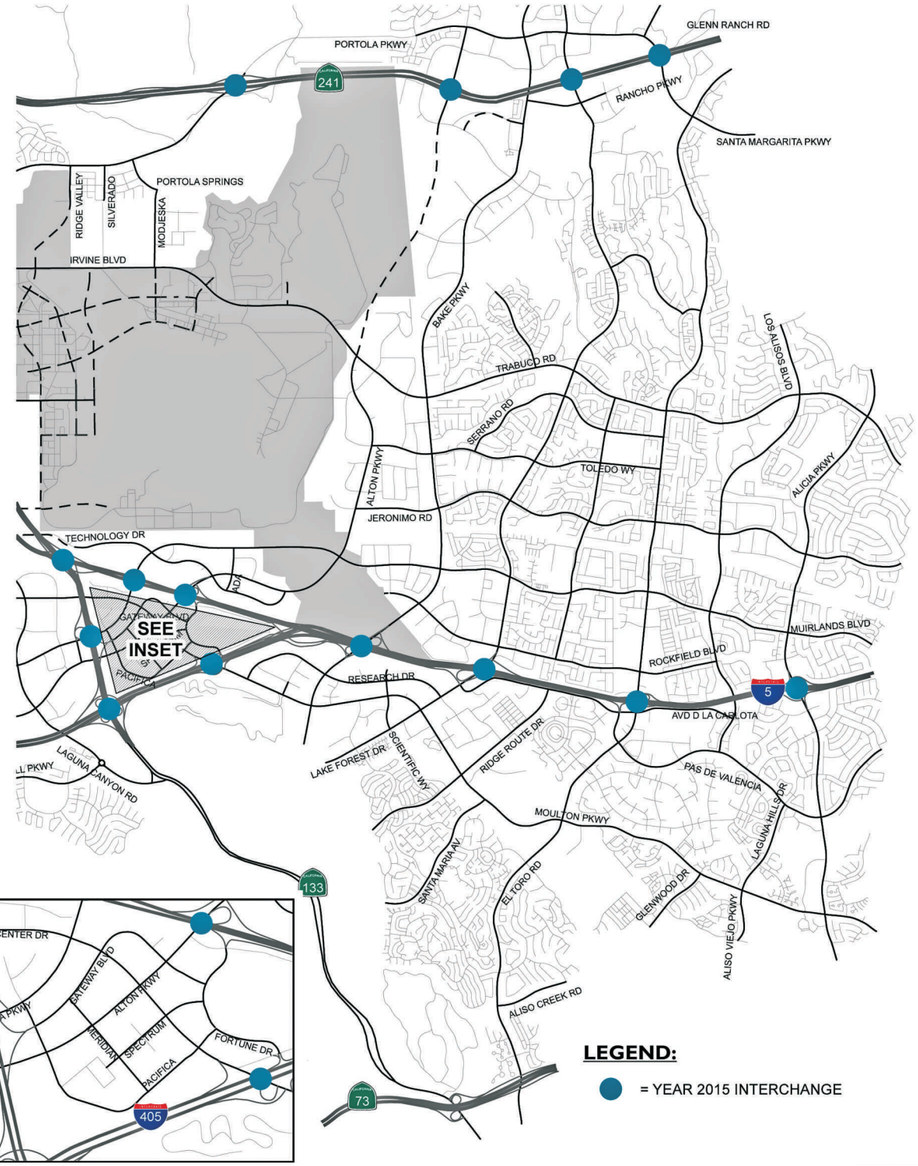
East Study Area

Source: Urban Crossroads 2012

Year 2015 Freeway Interchange Locations



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Interim Year 2015 Circulation System and Average Daily Traffic Volumes, with 2012 Modified Project Option 2

The Year 2015 ADT volumes and the corresponding V/C ratios for the 2012 Modified Project Option 2 are illustrated in Figures 5.12-18, and Figures 5.12-19, respectively.

Based on the ADT and V/C performance criteria and impact thresholds, the following two (2) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 2:

- Irvine Bl (west of A-02 St)
- Irvine Bl (east of A-02 St)

Consistent with the City's traffic study guidelines, these locations are further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Year 2015 conditions 2012 Modified Project Option 2 are summarized in Table 6-7 of the Traffic Study. As the summary table indicates, all arterial roadway segments are forecast to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed the adopted thresholds.

Interim Year 2015 Peak Hour Intersection Levels of Service, with 2012 Modified Project Option 2

For the 2012 Modified Project Option 2, Year 2015 AM and PM peak hour ICU results for the intersections illustrated in previous Figure 5.12-16 that are part of the study area are summarized in Table 6-8 in the Traffic Study. Actual turn volumes, lane geometrics and ICU calculation worksheets for the this scenario are included in Appendix 6.5 of the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, none of the intersections are forecast to exceed adopted impact thresholds with 2012 Modified Project Option 2 based on Year 2015 conditions.

As previously stated, to address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard interchanges have been analyzed using the HCM methodology in addition to the ICU methodology. The resulting Year 2015 Without Project and Year 2015 2012 Modified Project peak hour levels of service based on the HCM methodology are summarized in Table 6-9 of the Traffic Study (HCM intersection LOS calculation worksheets are included in Appendix 6.6 of the Traffic Study). As the summary table indicates, each of the ramp intersections are forecast to operate at an acceptable LOS (i.e., LOS D or better) under the Year 2015 for the 2012 Modified Project Option 2 conditions.

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 freeway ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5 and SR-133/Irvine Boulevard ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection (see Table 6-10 of the Traffic Study). Table 6-4 of the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Year 2015 peak hour conditions for the 2012 Modified Project Option 2 (HCM queuing analysis calculation worksheets are included in Appendix 6.7 of the Traffic Study). As the summary table indicates, none of the vehicle queue lengths exceed the physical length of the off-ramps, and therefore traffic exiting at the

I-5 at Sand Canyon Avenue off-ramps is not expected to back up onto the I-5 mainline under this condition. The on-ramps at the Sand Canyon Avenue/I-5 interchanges are metered with queue detectors installed, and the timing of the ramp meters will continue to be coordinated by Caltrans and the City.

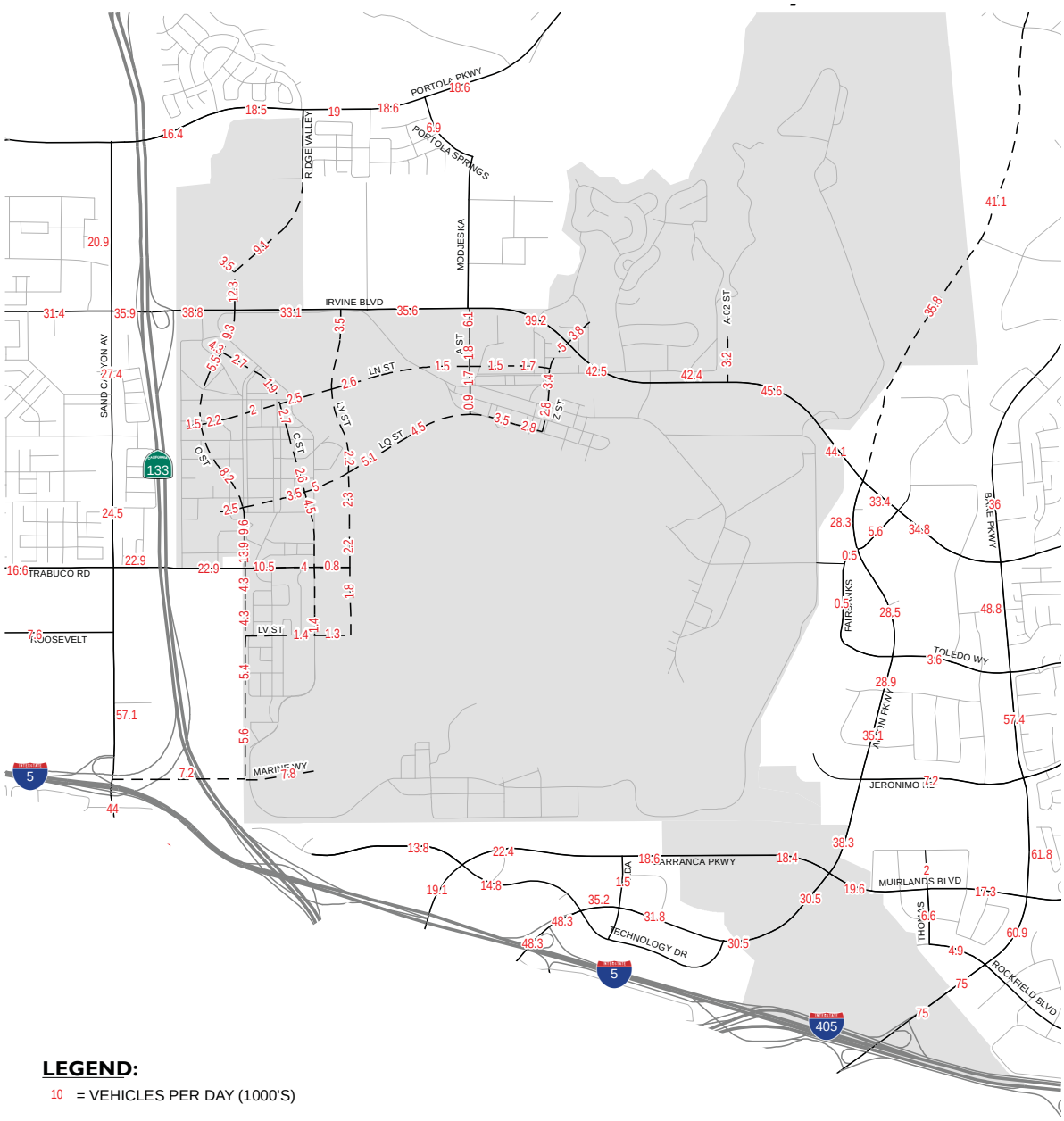
Interim Year 2015 Peak Hour Freeway/Tollway Ramp Levels of Service, with 2012 Modified Project Option 2

Figure 5.12-17 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Year 2015 conditions. Year 2015 Without Project and Year 2015 with the 2012 Modified Project Option 2 AM and PM peak hour freeway/tollway ramp volumes and V/C ratios are summarized in Table 6-11 of the Traffic Study. Based on the peak hour freeway/tollway ramp performance criteria and impact thresholds presented earlier in this section, none of the freeway ramps are forecasted to exceed the adopted impact thresholds (e.g., greater than or equal to 0.02, except at CMP locations outside Irvine where it is greater than 0.03) under Year 2015 for the 2012 Modified Project Option 2 conditions.

Interim Year 2015 Peak Hour Freeway/Tollway Mainline Levels of Service, with 2012 Modified Project Option 2

Year 2015 Without Project and 2015 with the 2012 Modified Project Option 2 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 6-12 of the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds, none of the freeway mainline segments are forecasted to exceed adopted impact thresholds (e.g., greater than 0.03) under Year 2015 for the 2012 Modified Project Option 2 conditions.

Year 2015 ADT Volumes with 2012 Modified Project Option 2 (1 of 2)

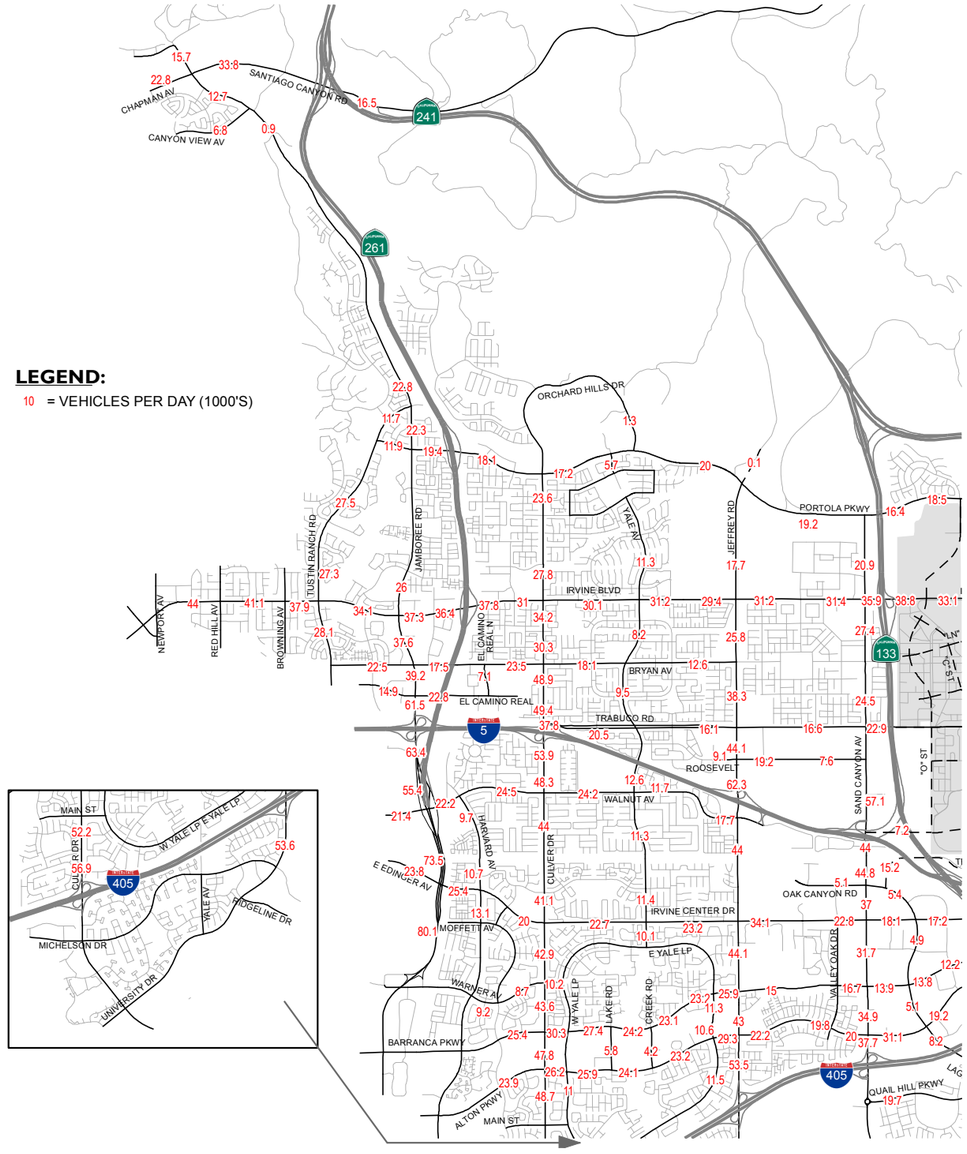


Project Area

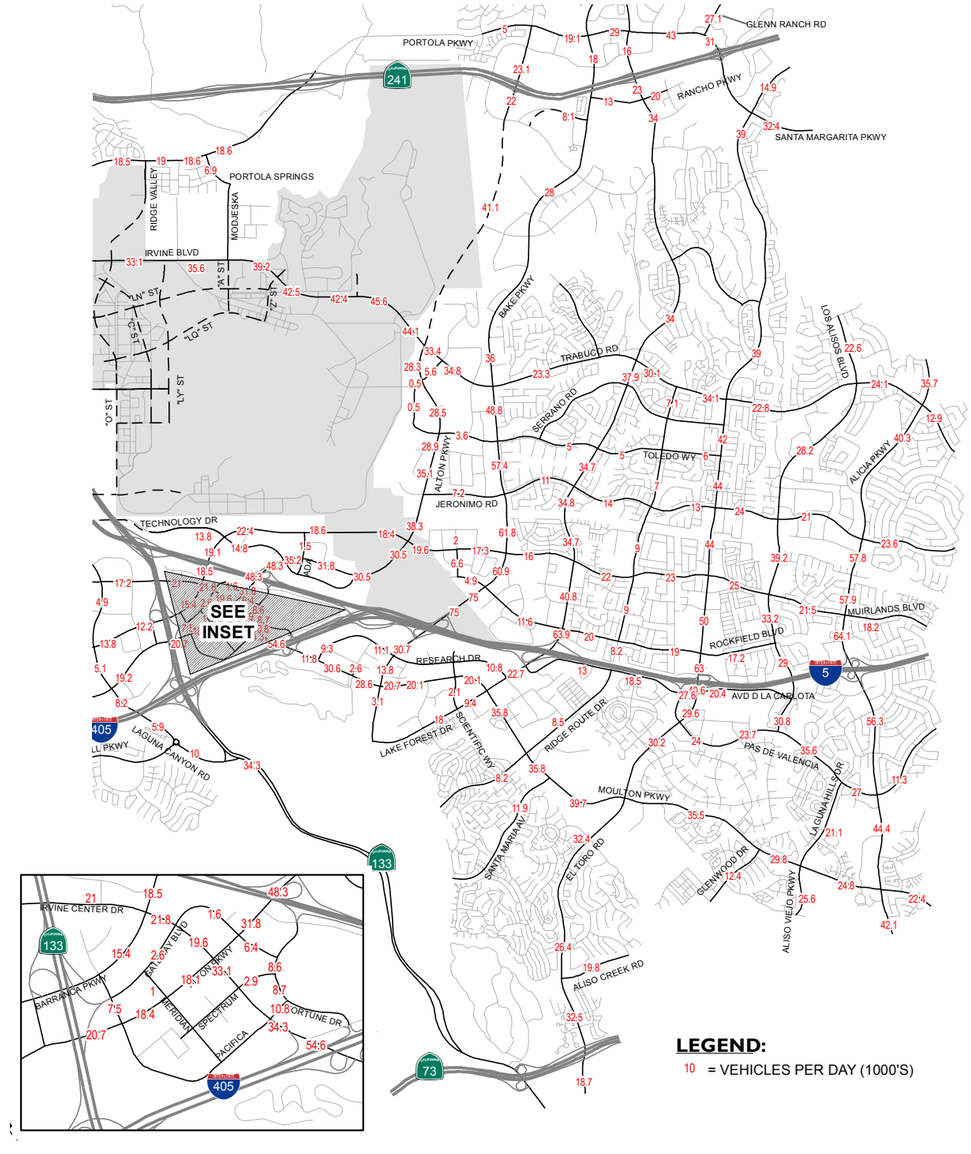
0 1,500 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2015 ADT Volumes with 2012 Modified Project Option 2 (2 of 2)



West Study Area



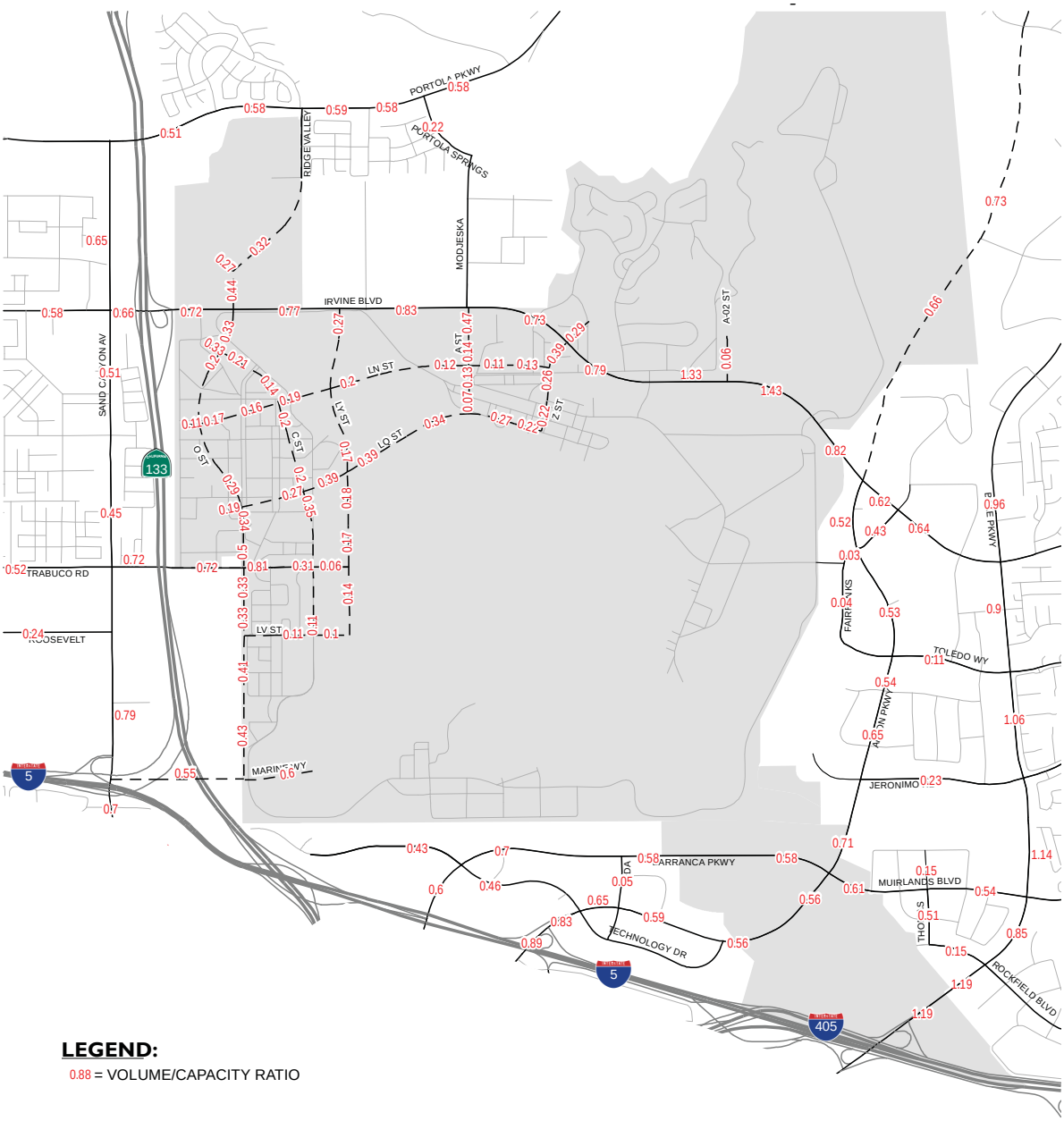
East Study Area

LEGEND:
10 = VEHICLES PER DAY (1000'S)

0 0.5 1
Miles

Source: Urban Crossroads 2012

Year 2015 ADT V/C Ratios with 2012 Modified Project Option 2 (1 of 2)

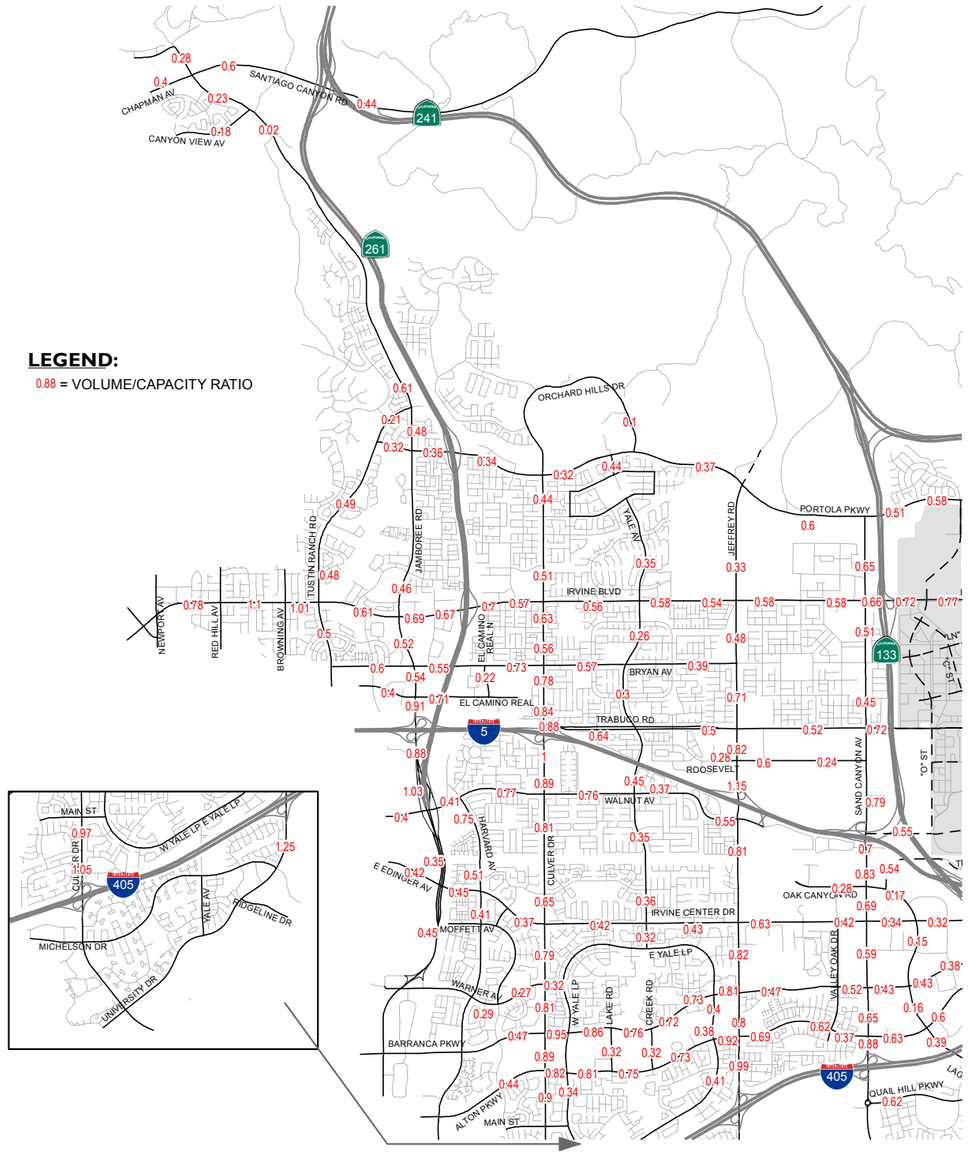


Project Area

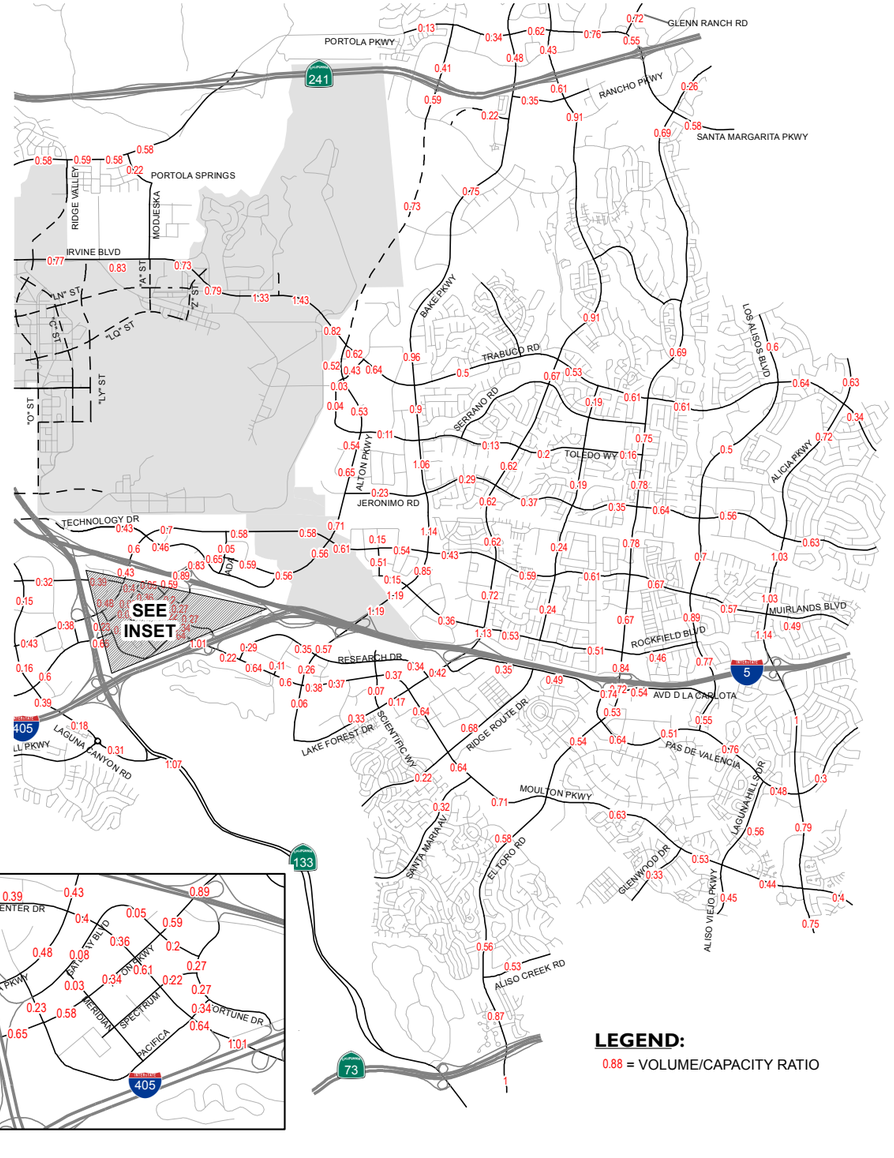
0 1,500 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2015 ADT V/C Ratios with 2012 Modified Project Option 2 (2 of 2)



West Study Area



East Study Area

LEGEND:
0.88 = VOLUME/CAPACITY RATIO

0 0.5 1
Miles

Source: Urban Crossroads 2012

5.12.4.4 Year 2030 Analysis with 2012 Modified Project

This section compares the 2030 Without Project to the 2012 Modified Project Option 1 and Option 2 in Year 2030. The baseline for this DSSEIR is the 2011 Approved Project. As discussed previously, ITAM Version 8.4-10 (ITAM 8.4-10) and the Lake Forest Traffic Analysis Model (LFTAM) were used to prepare the traffic forecasts that are applied in the analysis for 2030 conditions. The results of the Year 2030 traffic impact analysis are summarized below for 2012 Modified Project Option 1 and Option 2 scenarios.

Year 2030 Circulation System and Average Daily Traffic Volumes for 2012 Modified Project Option 1

The Year 2030 for 2012 Modified Project Option 1 ADT volumes and the corresponding V/C ratios are illustrated in Figure 5.12-20, and Figure 5.12-21, respectively.

Based on the ADT V/C performance criteria and impact thresholds discussed above, the following five (5) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 1:

- Bake Pkwy (b/w Rockfield Bl and Marine Way)
- Irvine Bl (b/w A St and Z St)
- Irvine Bl (b/w Z St and B St)
- Jeffrey Rd (b/w Roosevelt and I-5 NB Ramps)
- Alton Pkwy (e/o Culver Dr)

Consistent with the City's traffic study guidelines, these locations have been further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Year 2030 for the 2012 Modified Project Option 1 scenario are summarized in Table 7-1 in the Traffic Study. As the summary table indicates, all arterial roadway segments are forecast to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed adopted thresholds.

Year 2030 Peak Hour Intersection Levels of Service, with 2012 Modified Project Option 1

The Year 2030 for the 2012 Modified Project Option 1 AM and PM peak hour ICU results for the intersections illustrated in Figure 5.12-22 that are in the study area are summarized in Table 7-2 in the Traffic Study. Actual turn volumes, lane geometrics and ICU calculation worksheets for the Year 2030 for the 2012 Modified Project Option 1 scenario are included in Appendix 7.2 to the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, the following intersections shown in Table 5.12-7 exceed adopted impact thresholds under the Year 2030 for the 2012 Modified Project Option 1 conditions:

Table 5.12-7
Year 2030 Intersection ICU LOS With 2012 Modified Project Option 1
Project Impact Locations

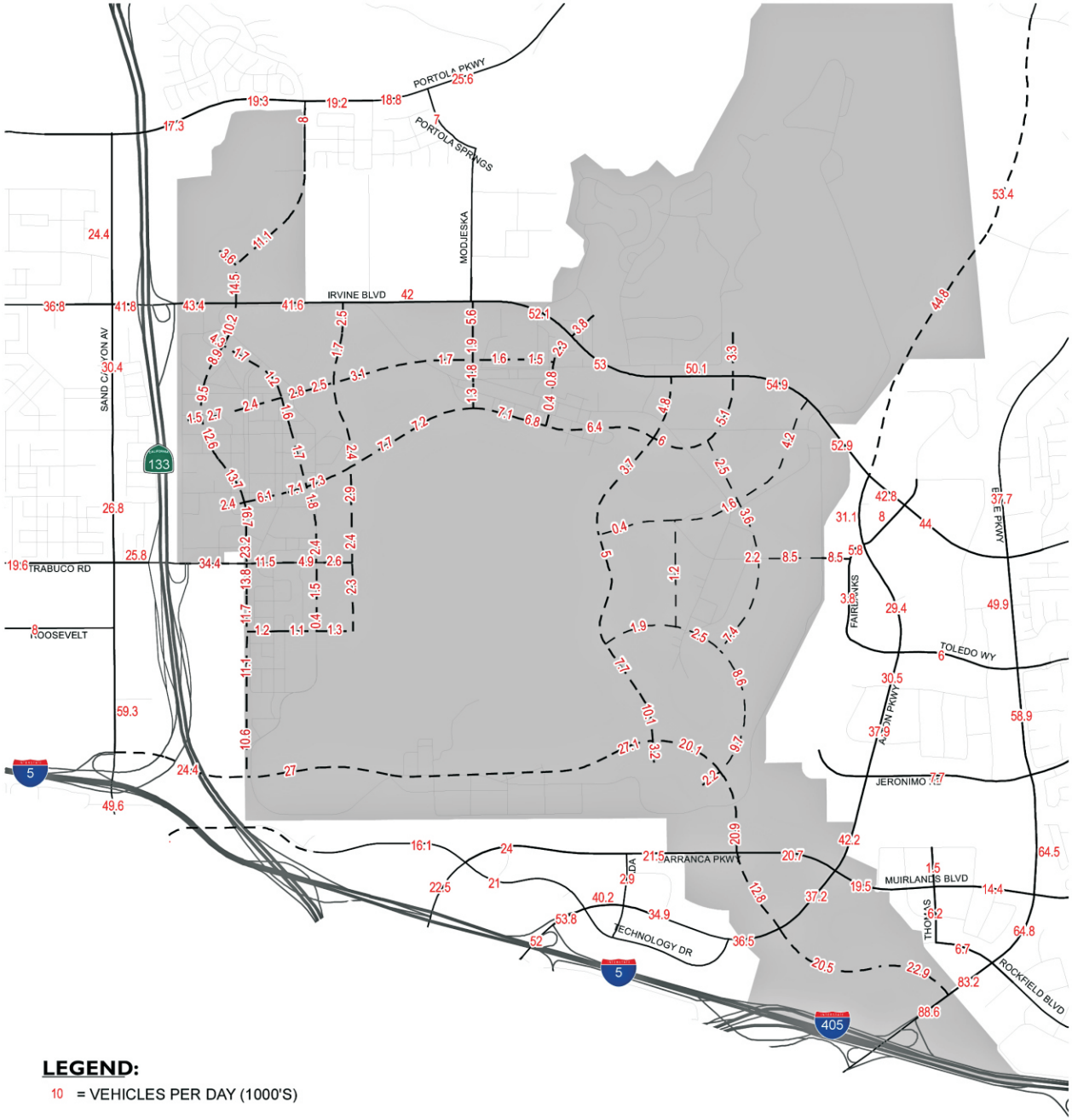
Intersection	Peak Hour	2030 Without 2012 Modified Project		2030 2012 Modified Project	
		ICU	LOS	ICU	LOS
Browning Ave. & Irvine Blvd.	AM	1.00	E	1.03	F
Culver Dr. & Barranca Pkwy.	AM	0.91	E	0.93	E
Jeffrey Rd. & Barranca Pkwy.	AM	0.90	D	0.92	E
Sand Canyon & I-5 NB Ramp/Marine	PM	0.83	D	0.94	E
Sand Canyon Ave. & Oak Canyon	PM	0.91	E	0.94	E
Bake Pkwy. & Rockfield Blvd.	PM	0.98	E	1.01	F
Los Alisos Blvd. & Rockfield Blvd.	AM	0.92	E	0.94	E

Source: Urban Crossroads, 2012.

To address concerns expressed by Caltrans regarding the performance of freeway/tollway ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road interchanges have been analyzed using both the HCM methodology and the ICU methodology. The resulting Year 2030 Without 2012 Modified Project and with 2012 Modified Project peak hour levels of service based on the HCM methodology are summarized in Table 7-4 in the Traffic Study (HCM intersection LOS calculation worksheets are included in Appendix 7.3 to the Traffic Study). As the summary table indicates, each of the ramp intersections is forecasted to operate at an acceptable LOS (i.e., LOS D or better), with the exception of the Sand Canyon/I-5 northbound ramps and the Sand Canyon/I-5 southbound ramps.

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection. Table 7-5 in the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Year 2030 with 2012 Modified Project Option 1 peak hour conditions (HCM queuing analysis calculation worksheets are included in Appendix 7.4 to the Traffic Study). As the summary table indicates, the results of the HCM analysis shows LOS "E" conditions with or without the 2012 Modified Project at the I-5 NB Ramp /Sand Canyon intersection. A modified lane configuration (restriping to accomplish dual left turn and dual right turn lanes) on the eastbound approach to the I-5 SB Ramp intersection would avoid vehicle queues backing onto the freeway mainline. The ultimate lane configuration would be subject to coordination and agreement between the City and Caltrans.

Year 2030 ADT Volumes with 2012 Modified Project Option 1 (1 of 2)

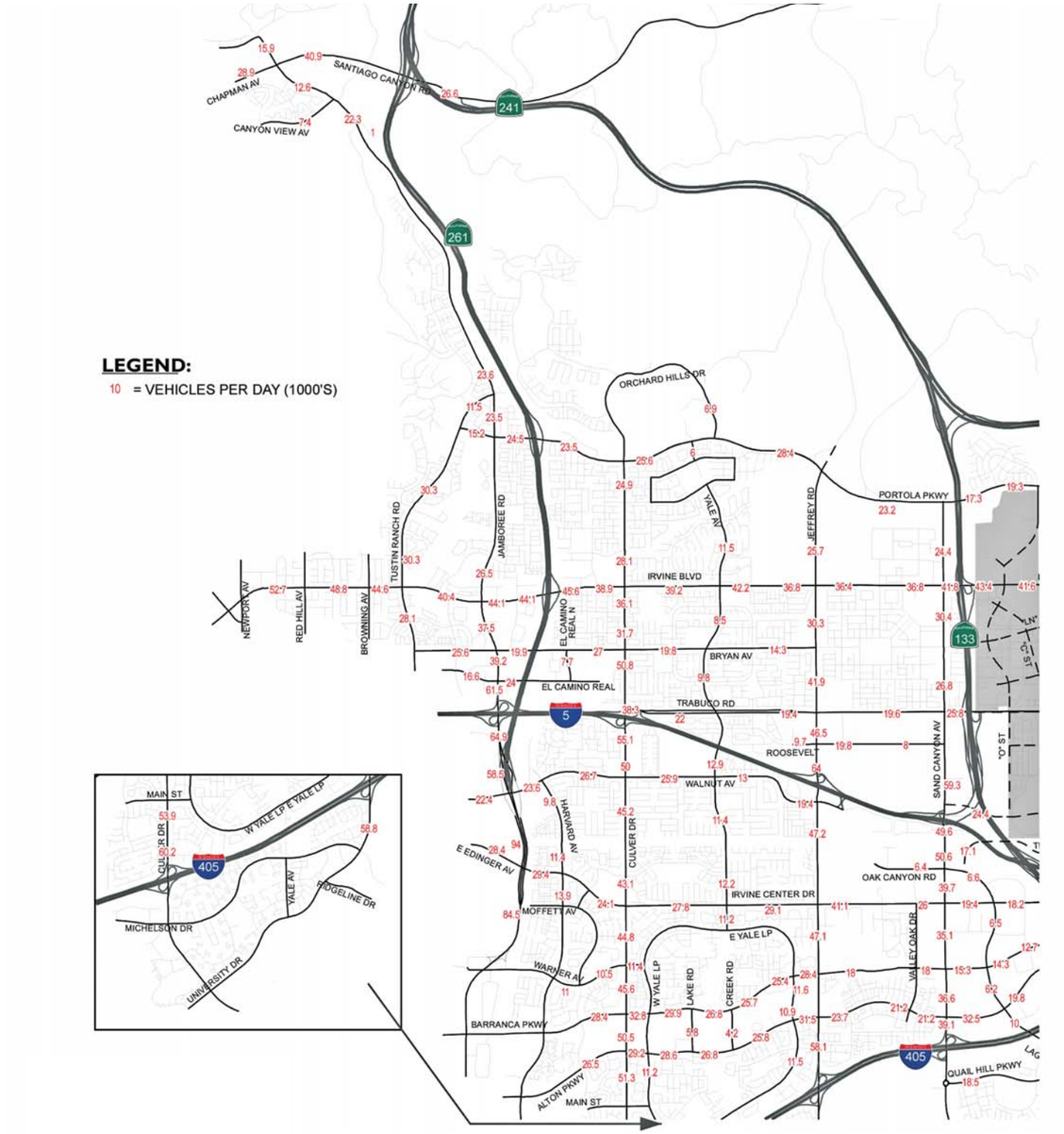


Project Area

0 3,000
Scale (Feet)

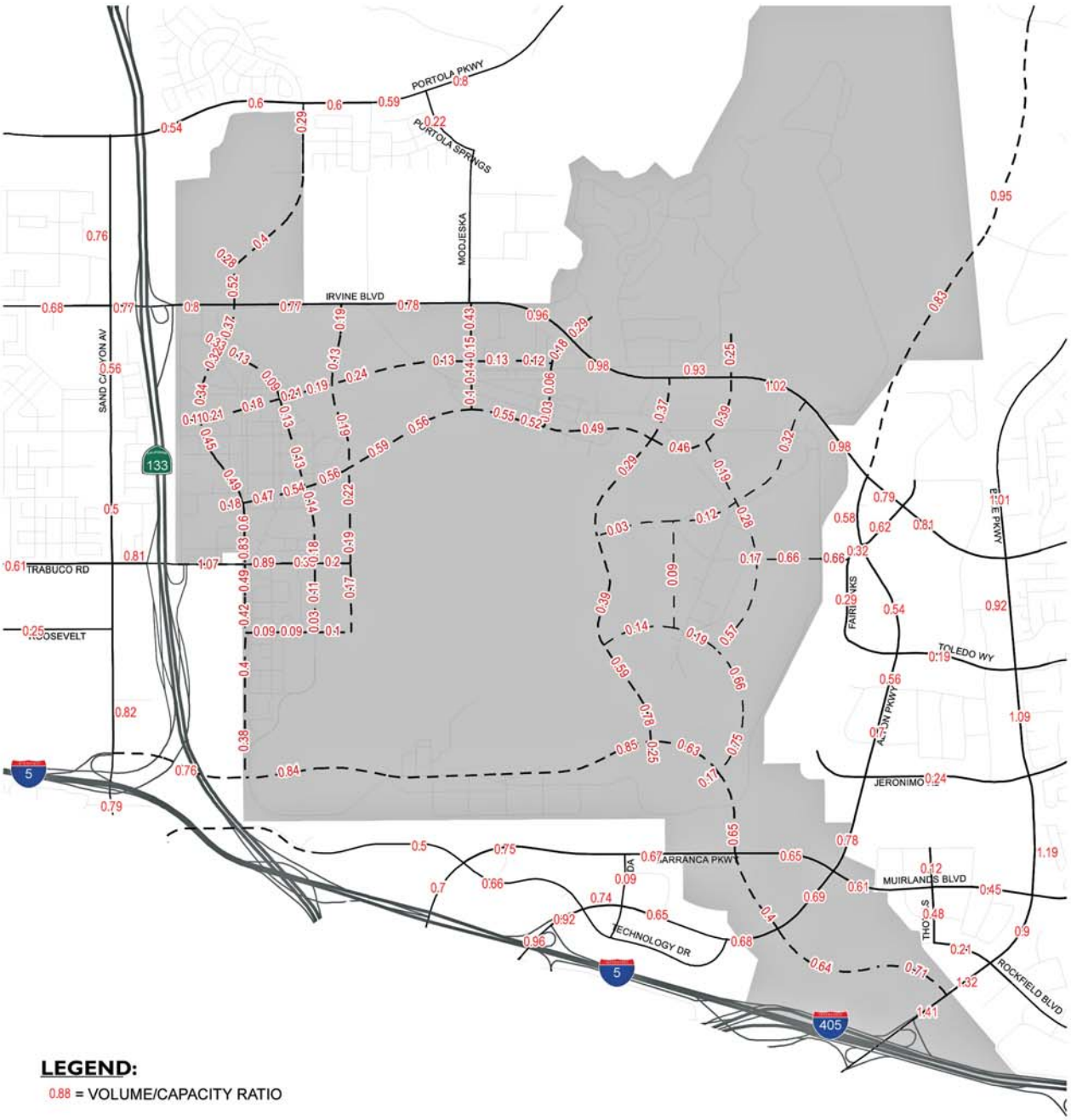
Source: Urban Crossroads 2012

Year 2030 ADT Volumes with 2012 Modified Project Option 1 (2 of 2)



Source: Urban Crossroads 2012

Year 2030 ADT V/C Ratios with 2012 Modified Project Option 1 (1 of 2)

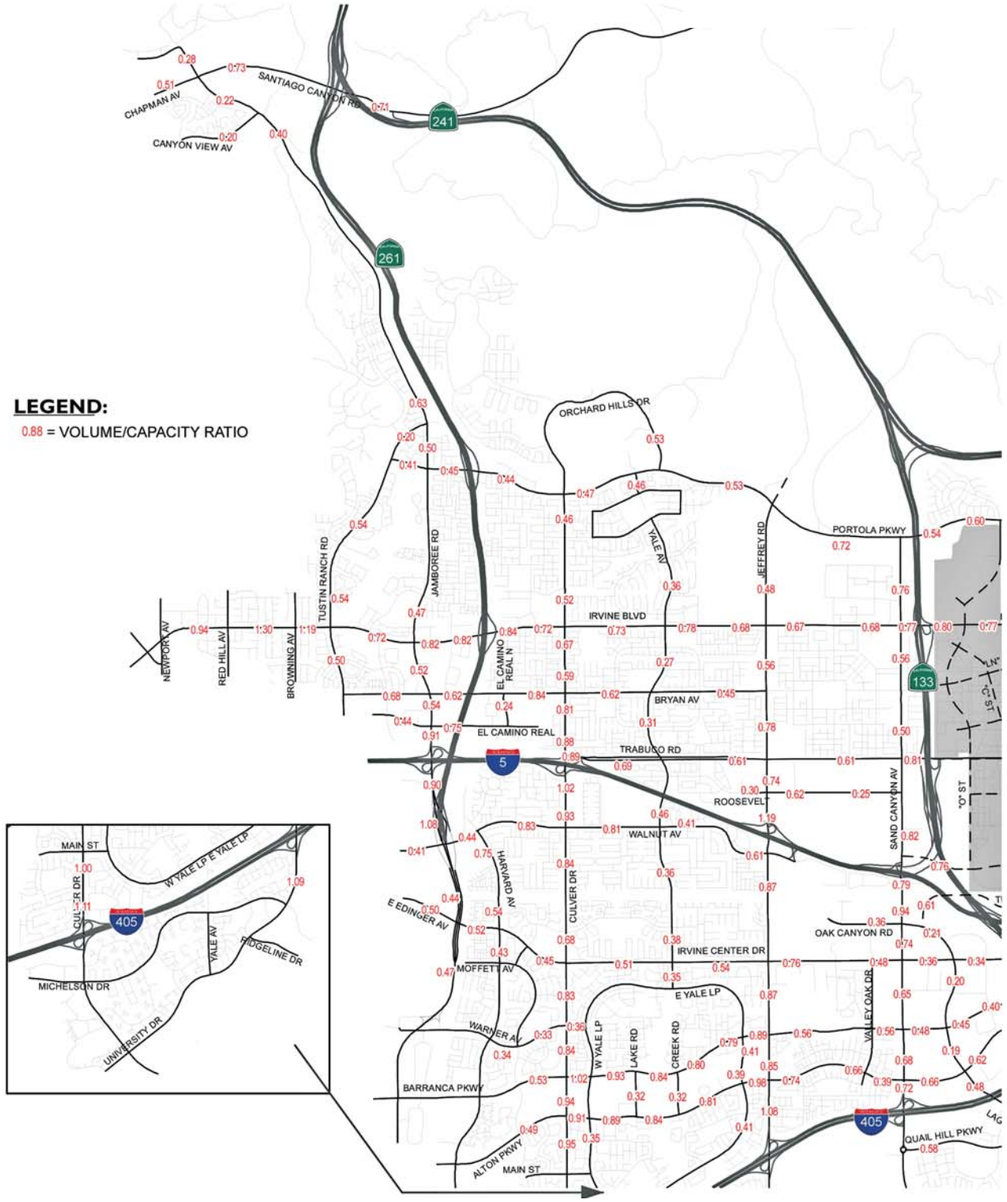


Project Area

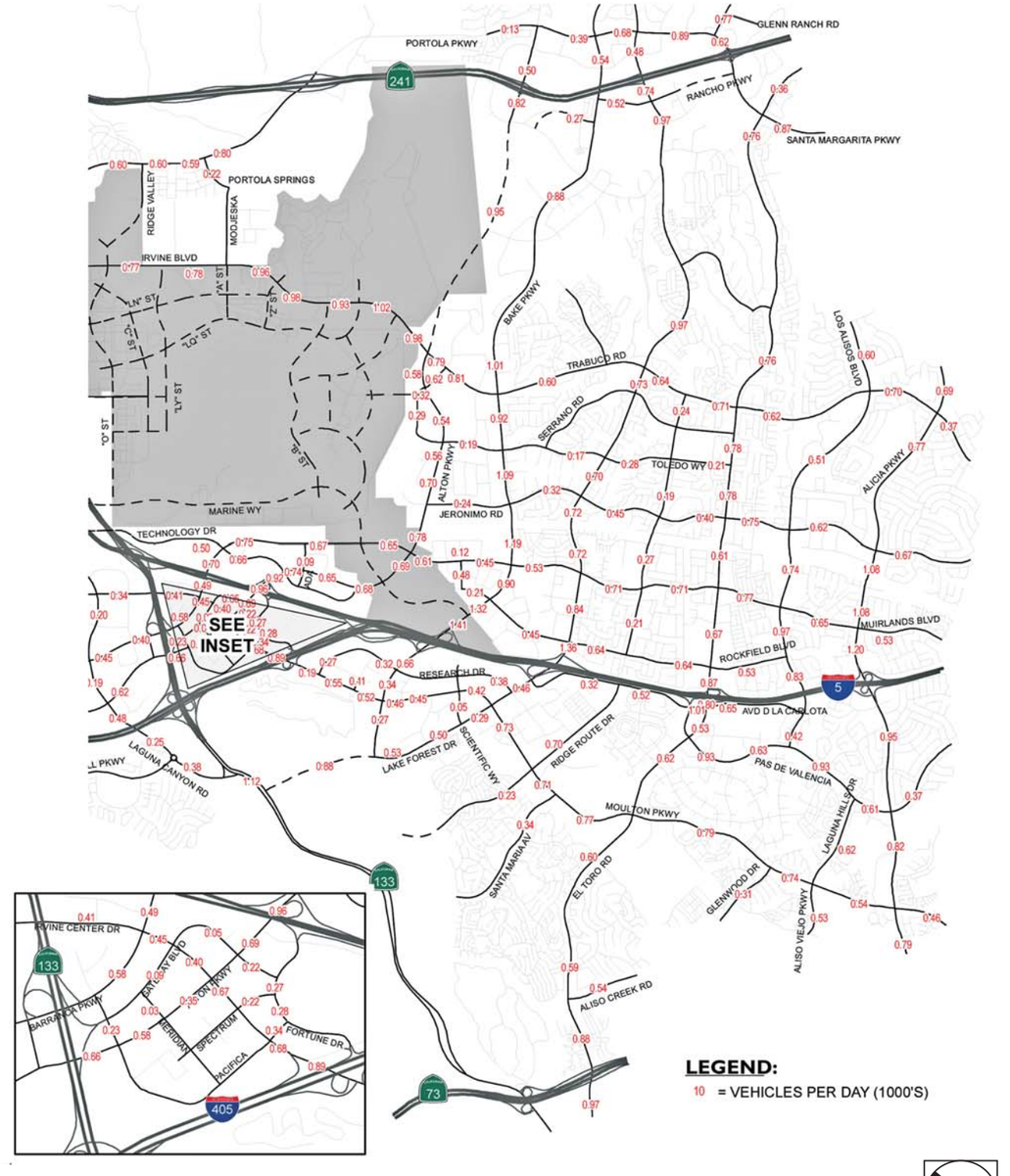
0 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2030 ADT V/C Ratios with 2012 Modified Project Option 1 (2 of 2)



West Study Area



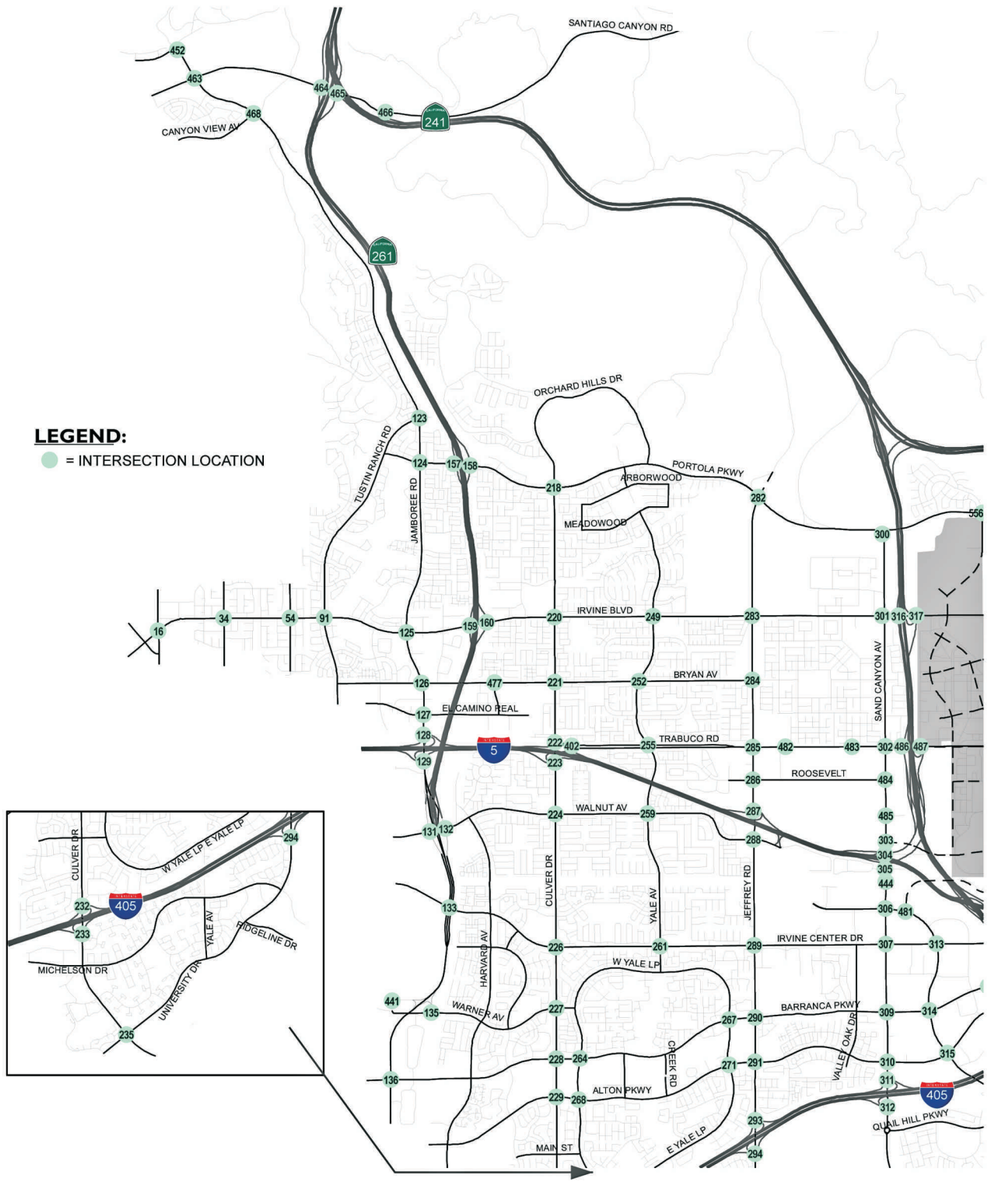
East Study Area

LEGEND:
10 = VEHICLES PER DAY (1000'S)

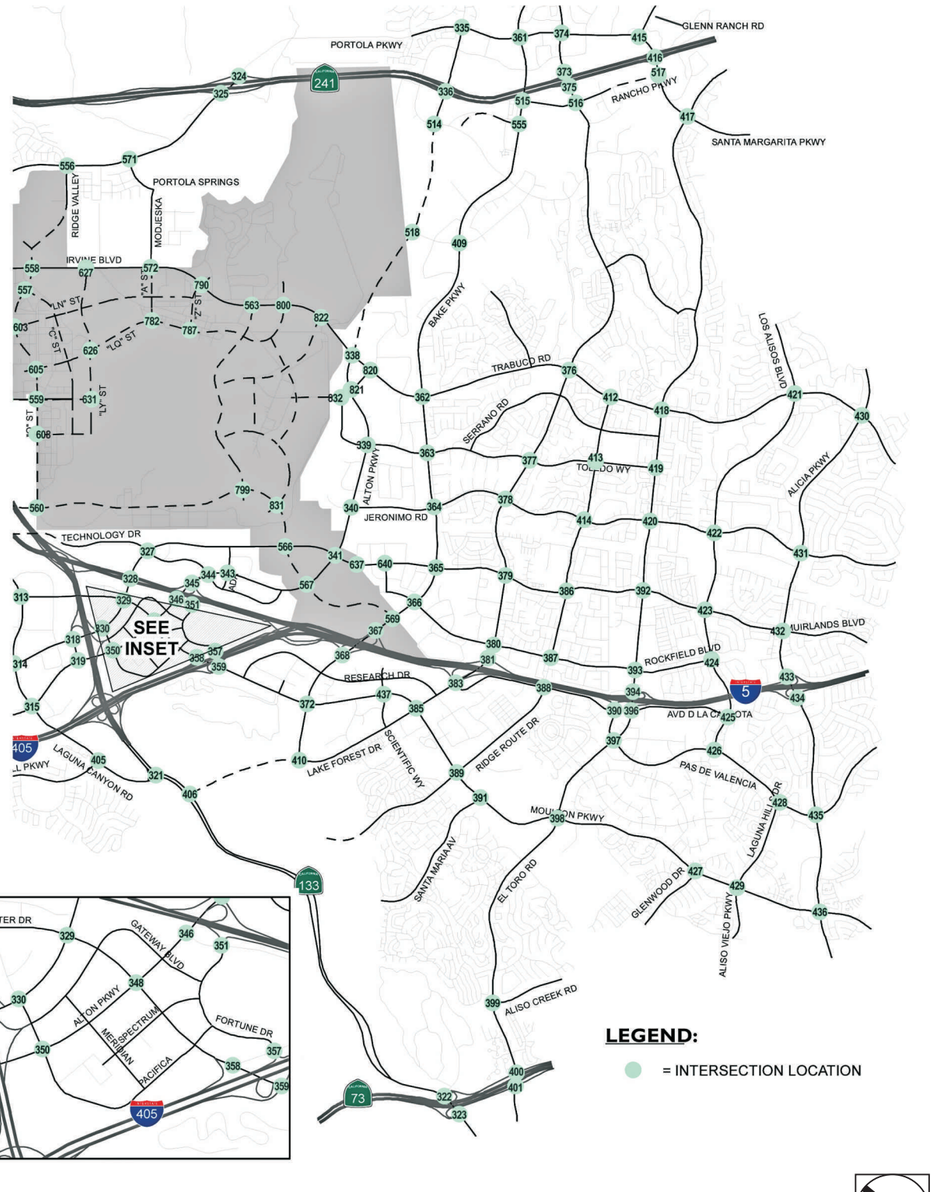
0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2030 Intersection Location Map



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2030 Peak Hour Freeway/Tollway Ramp Levels of Service, with 2012 Modified Project Option 1

Figure 5.12-23 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Year 2030 conditions. The Year 2030 Without Project and with the 2012 Modified Project Option 1 AM and PM peak hour ramp volumes and V/C ratios are summarized in Table 7-6 in the Traffic Study. Based on the peak hour ramp performance criteria and impact thresholds presented earlier, none of the freeway ramps are forecasted to exceed adopted impact thresholds (e.g., greater than or equal to 0.02, except at CMP locations outside Irvine where it is greater than 0.03) under Year 2030 with the 2012 Modified Project Option 1 conditions.

Year 2030 Peak Hour Freeway/Tollway Mainline Levels of Service, with 2012 Modified Project Option 1

The Year 2030 Without Project and 2012 Modified Project Option 1 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 7-7 in the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds discussed above, the following three (3) freeway mainline segments are forecasted to exceed adopted impact thresholds (e.g., greater than 0.03):

- I-5 Northbound, n/o Culver
- I-5 Northbound, n/o Jeffrey
- I-405 Northbound, n/o Jeffrey

Year 2030 Circulation System and Average Daily Traffic Volumes for 2012 Modified Project Option 2

The Year 2030 for 2012 Modified Project Option 2 ADT volumes and the corresponding V/C ratios are illustrated in Figure 5.12-24, and Figure 5.12-25, respectively.

Based on the ADT V/C performance criteria and impact thresholds discussed above, the following four (4) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 2:

- Bake Pkwy (b/w Rockfield Bl and Marine Way)
- Irvine Bl (b/w A St and Z St)
- Irvine Bl (b/w Z St and B St)
- Alton Pkwy (e/o Culver Dr)

Consistent with the City's traffic study guidelines, these locations have been further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Year 2030 for the 2012 Modified Project Option 2 condition are summarized in Table 7-8 in the Traffic Study. As the summary table indicates, all arterial roadway segments are forecast to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed adopted thresholds.

Year 2030 Peak Hour Intersection Levels of Service, with 2012 Modified Project Option 2

The Year 2030 for the 2012 Modified Project Option 2 AM and PM peak hour ICU results for the intersections illustrated in previous Figure 5.12-22 that are in the study area are summarized in Table 7-9 in the Traffic Study. Actual turn volumes, lane geometrics and ICU calculation worksheets for the Year 2030 for the 2012 Modified Project Option 2 scenario are included in Appendix 7.5 to the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, the following intersections shown in Table 5.12-8 exceed adopted impact thresholds under the Year 2030 for the 2012 Modified Project Option 2 conditions:

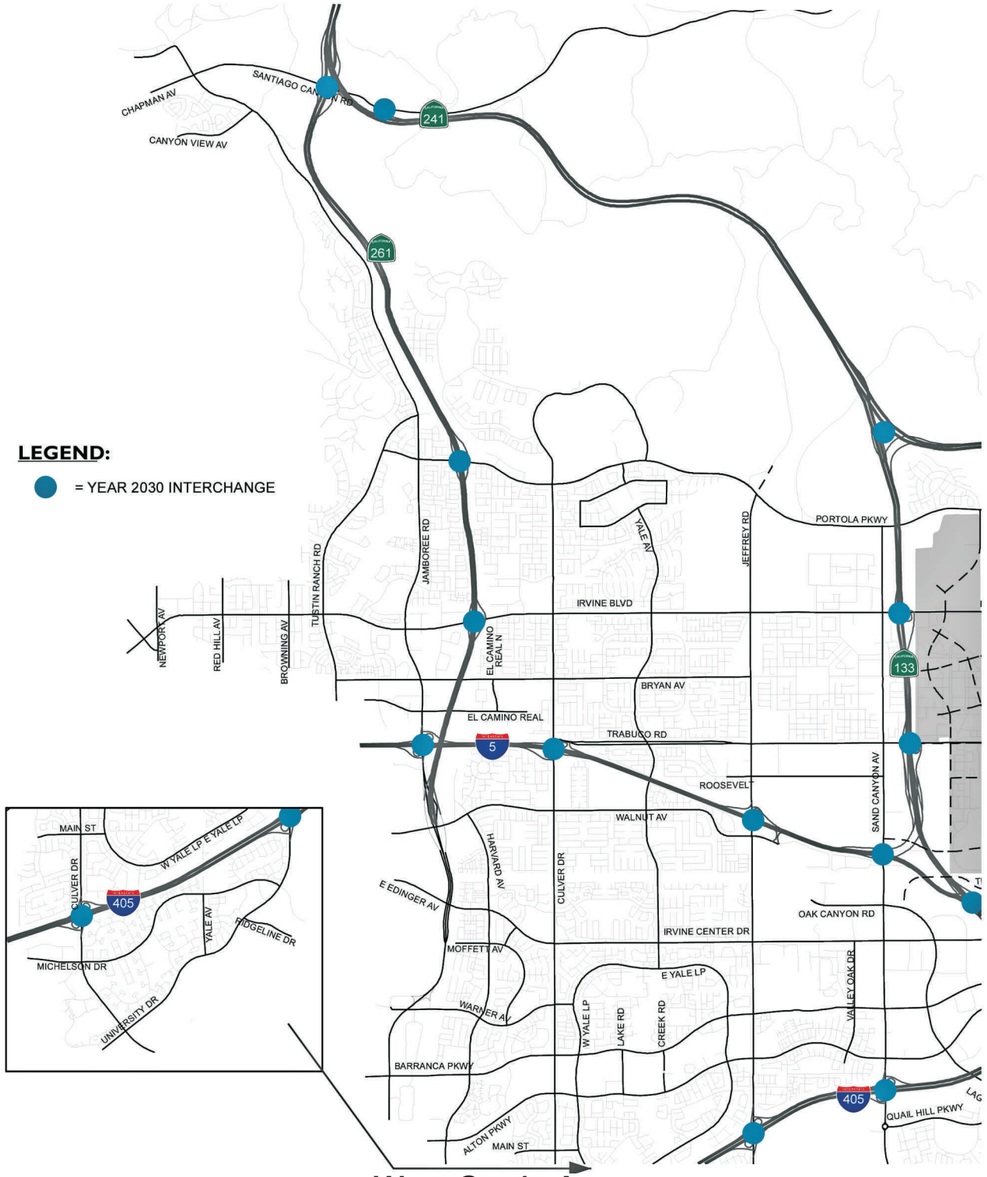
Table 5.12-8
Year 2030 Intersection ICU LOS With 2012 Modified Project Option 2
Project Impact Locations

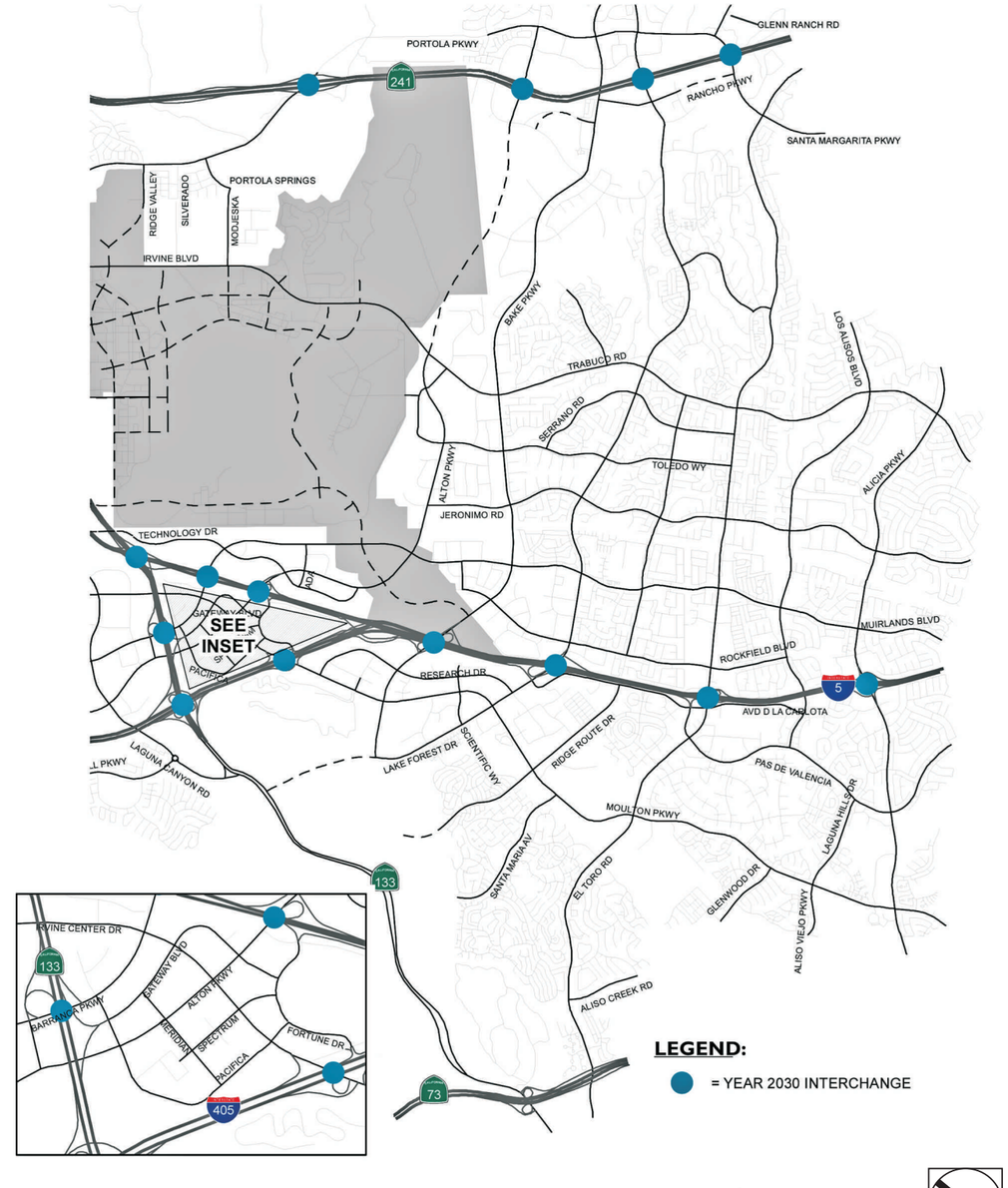
Intersection	Peak Hour	2030 Without 2012 Modified Project		2030 2012 Modified Project	
		ICU	LOS	ICU	LOS
Newport Ave. at Irvine Blvd.	PM	0.92	E	0.95	E
Browning Ave. at Irvine Blvd.	AM	1.00	E	1.02	F
Culver Dr. at Bryan Ave.	AM	0.89	D	0.91	E
Culver Dr. at Barranca Pkwy.	AM	0.91	E	0.93	E
Jeffrey Rd. at Barranca Pkwy.	AM	0.90	D	0.91	E
Sand Canyon at I-5 NB Ramp/Marine	PM	0.83	D	0.94	E
Sand Canyon Ave. at Oak Canyon	PM	0.91	E	0.93	E
Bake Pkwy. at Rockfield Blvd.	PM	0.98	E	1.01	F

Source: Urban Crossroads, 2012.

To address concerns expressed by Caltrans regarding the performance of freeway/tollway ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road interchanges have been analyzed using both the HCM methodology and the ICU methodology. The resulting Year 2030 Without 2012 Modified Project and with 2012 Modified Project peak hour levels of service based on the HCM methodology are summarized in Table 7-11 in the Traffic Study (HCM intersection LOS calculation worksheets are included in Appendix 7.6 to the Traffic Study). As the summary table indicates, each of the ramp intersections is forecasted to operate at an acceptable LOS (i.e., LOS D or better), with the exception of the Sand Canyon/I-5 northbound ramps and the Sand Canyon/I-5 southbound ramps.

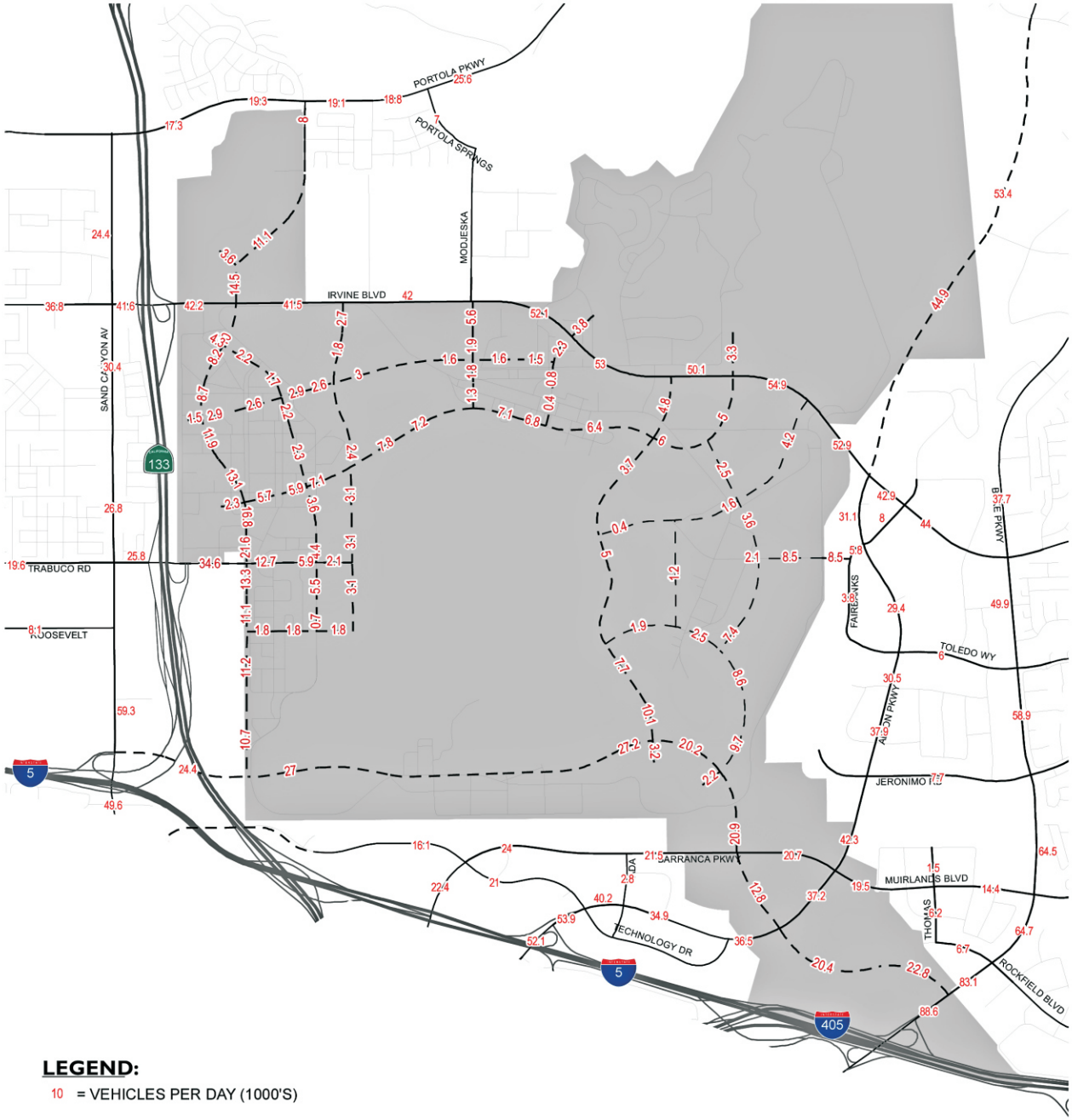
Year 2030 Freeway Interchange Locations





Source: Urban Crossroads 2012

Year 2030 ADT Volumes with 2012 Modified Project Option 2 (1 of 2)

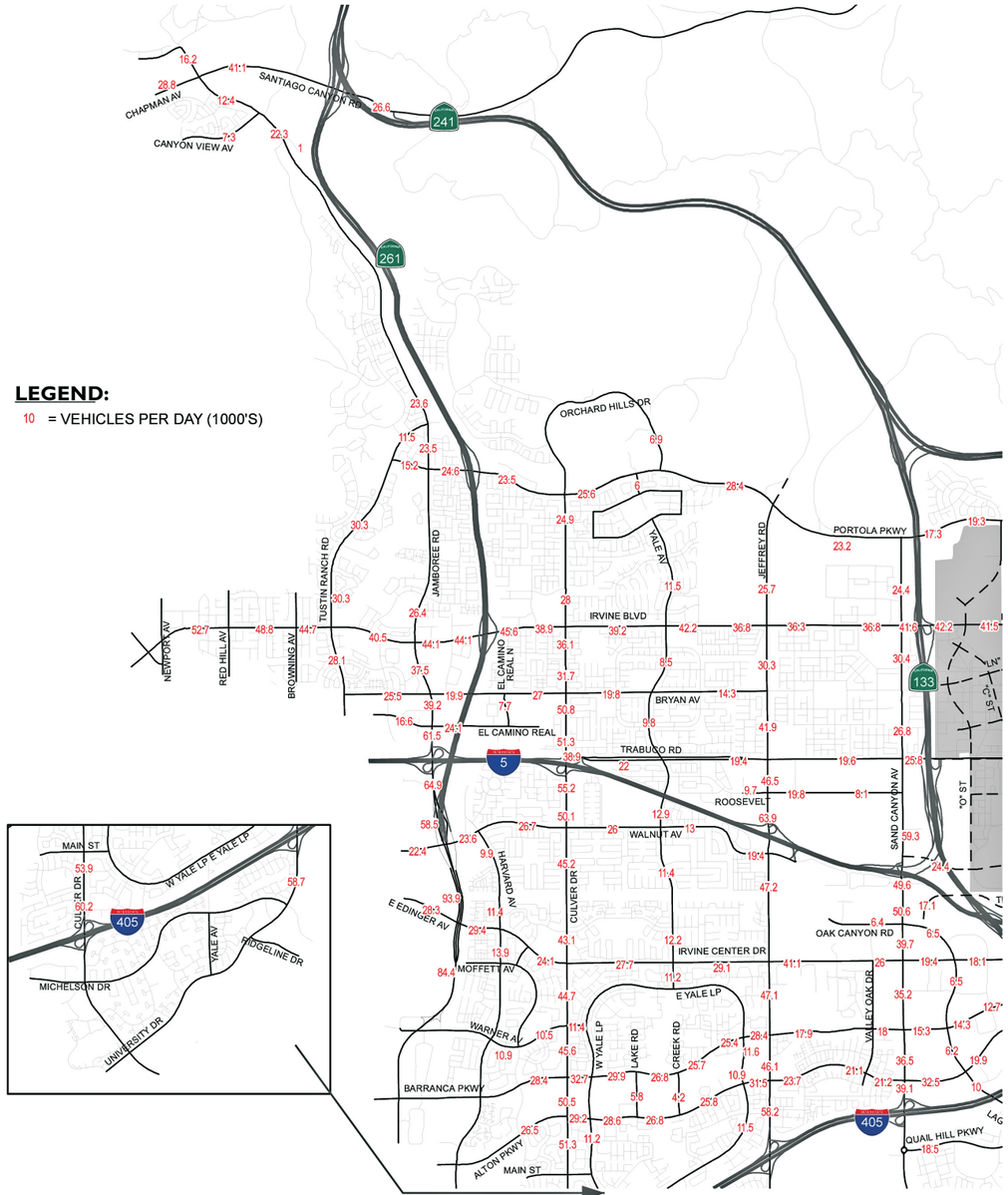


Project Area

0 3,000
Scale (Feet)

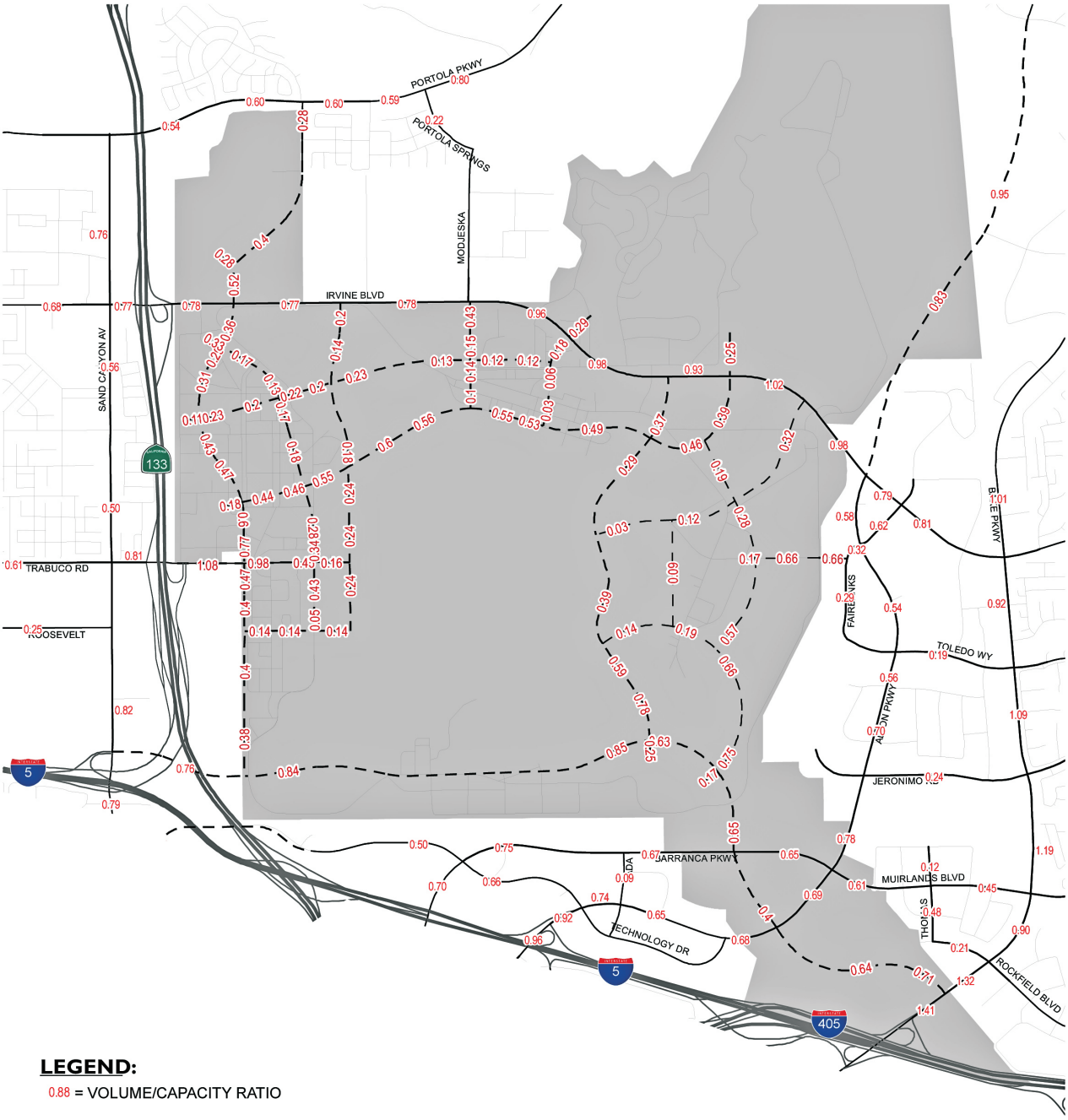
Source: Urban Crossroads 2012

Year 2030 ADT Volumes with 2012 Modified Project Option 2 (2 of 2)



Source: Urban Crossroads 2012

Year 2030 ADT V/C Ratios with 2012 Modified Project Option 2 (1 of 2)

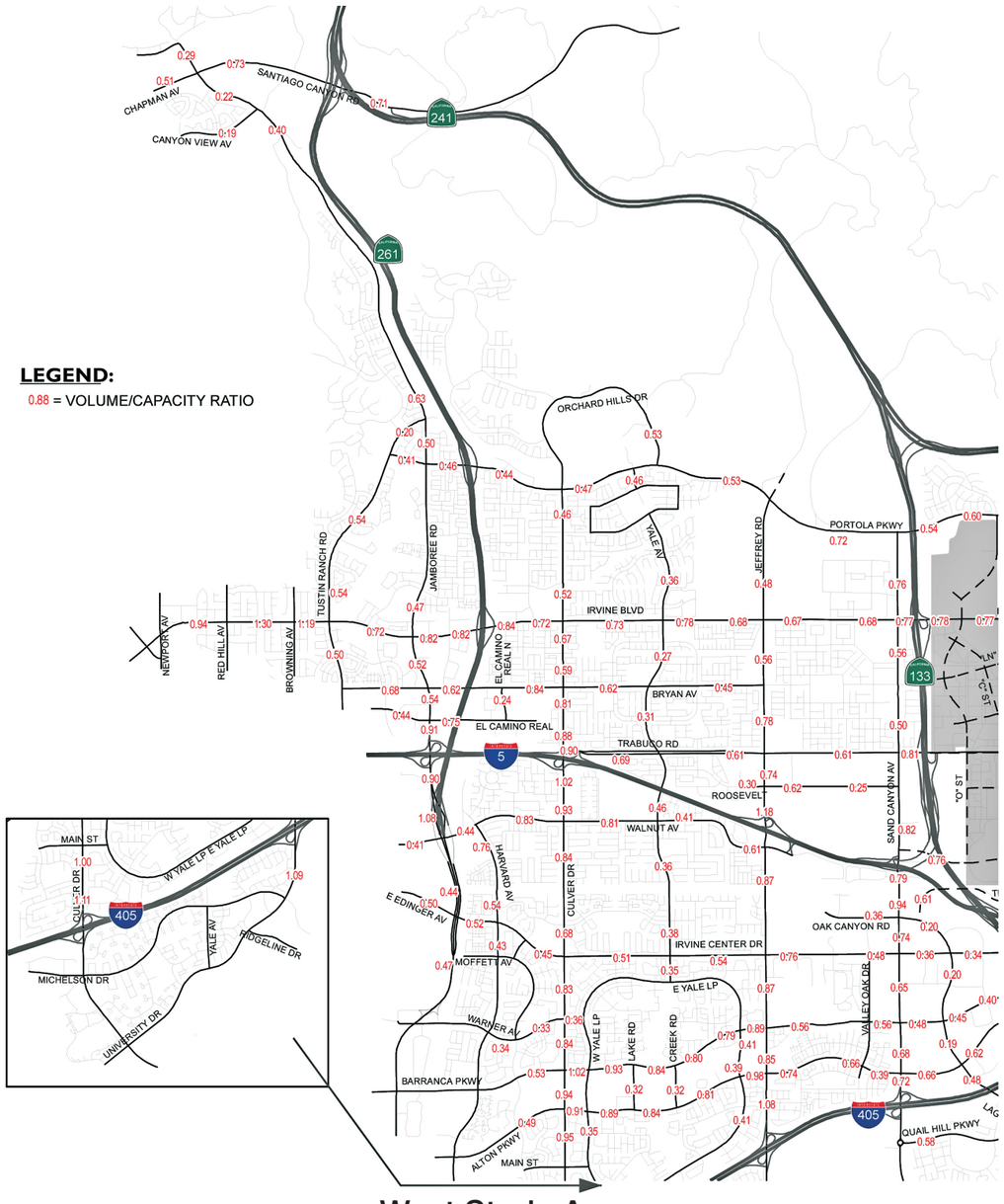


Project Area

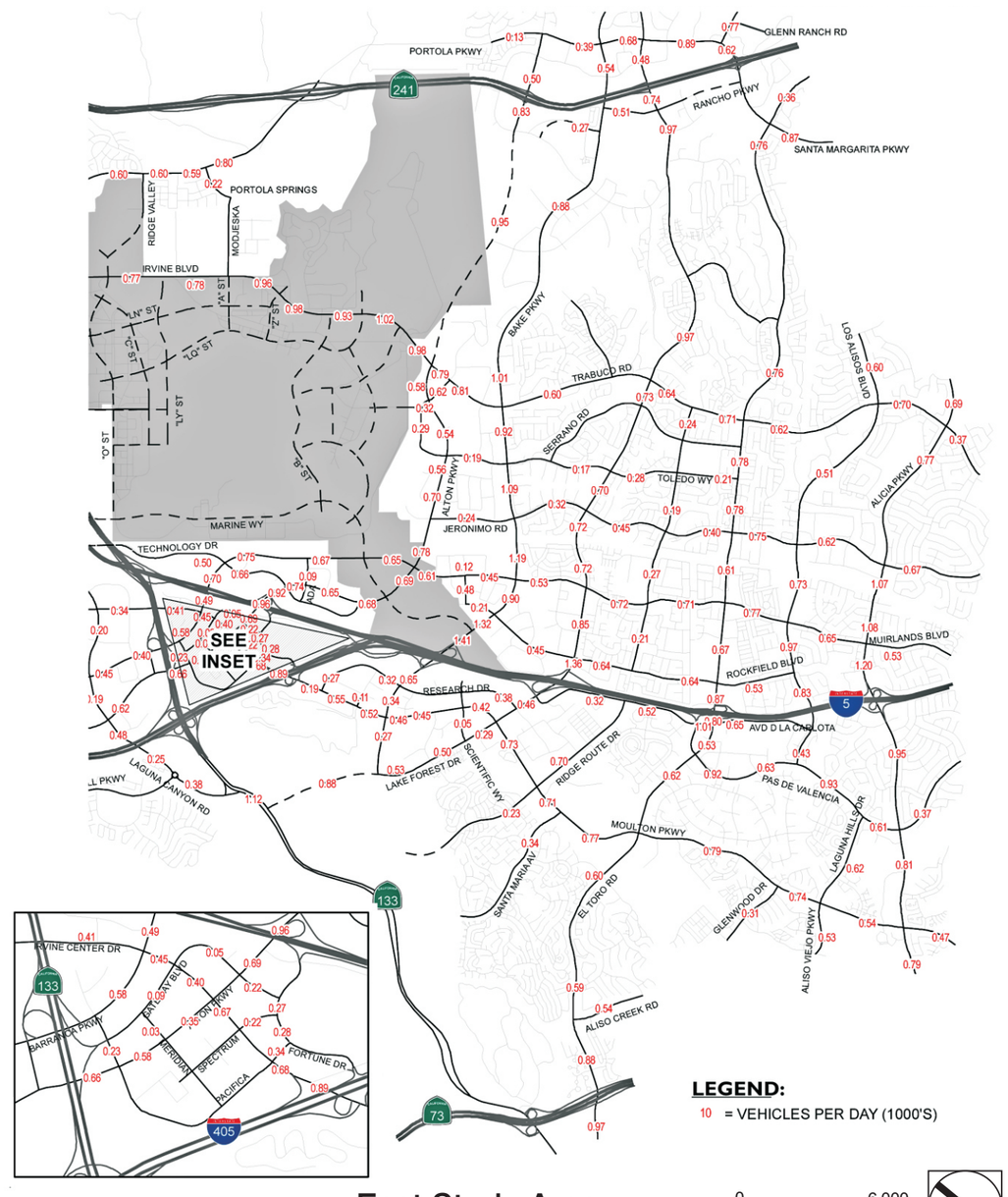
0 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Year 2030 ADT V/C Ratios with 2012 Modified Project Option 2 (2 of 2)



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection. Table 7-12 in the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Year 2030 with 2012 Modified Project Option 2 peak hour conditions (HCM queuing analysis calculation worksheets are included in Appendix 7.7 to the Traffic Study). As the summary table indicates, the results of the HCM analysis shows LOS "E" conditions with or without the 2012 Modified Project at the I-5 NB Ramp /Sand Canyon intersection. A modified lane configuration (restriping to accomplish dual left turn and dual right turn lanes) on the eastbound approach to the I-5 SB Ramp intersection would avoid vehicle queues backing onto the freeway mainline. The ultimate lane configuration would be subject to coordination and agreement between the City and Caltrans.

Year 2030 Peak Hour Freeway/Tollway Ramp Levels of Service, with 2012 Modified Project Option 2

Previous Figure 5.12-23 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Year 2030 conditions. The Year 2030 Without Project and with the 2012 Modified Project Option 2 AM and PM peak hour ramp volumes and V/C ratios are summarized in Table 7-13 in the Traffic Study. Based on the peak hour ramp performance criteria and impact thresholds presented earlier, none of the freeway ramps are forecasted to exceed adopted impact thresholds (e.g., greater than or equal to 0.02, except at CMP locations outside Irvine where it is greater than 0.03) under Year 2030 with the 2012 Modified Project Option 2 conditions.

Year 2030 Peak Hour Freeway/Tollway Mainline Levels of Service, with 2012 Modified Project Option 2

The Year 2030 Without Project and 2012 Modified Project Option 2 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 7-14 in the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds discussed above, the following three (3) freeway mainline segments are forecasted to exceed adopted impact thresholds (e.g., greater than 0.03):

- I-5 Northbound, n/o Culver
- I-5 Northbound, n/o Jeffrey
- I-405 Northbound, n/o Jeffrey

Year 2030 Mitigation Summary

The following presents the impact locations under 2030 conditions for the 2012 Modified Project Alternatives for Options 1 and 2. For additional alternatives for shared lane deployment, see Section 7-3 of the Traffic Study (Appendix I).

Option 1 Impact Locations

The following seven (7) intersections exceed adopted impact thresholds with the 2012 Modified Project with Option 1:

- Browning Ave. & Irvine Blvd.
- Culver Dr. & Barranca Pkwy.
- Jeffrey Rd. & Barranca Pkwy.
- Sand Canyon Ave. & I-5 NB Ramp/Marine Way
- Sand Canyon Ave. & Oak Canyon
- Bake Pkwy. & Rockfield Blvd.
- Los Alisos Blvd. & Rockfield Blvd.

Because existing occupied land uses along Irvine Boulevard at the Browning Avenue intersection constrain the construction of additional east-west through travel lanes which are consistent with the City of Tustin General Plan and County MPAH, the 2012 Modified Project Option 1 mitigation identifies ATMS at this location to optimize signal performance to mitigate impacts at this intersection, at the discretion of the City of Tustin.

At the intersection of Culver Drive / Barranca Parkway, the Project is responsible for NITM fair share participation towards the improvement (conversion of the westbound defacto right-turn lane to through lane) as mitigation for the Project impact. Planning Area 1/9 GPA/ZC has previously been identified as funding the balance of the fair share NITM Program improvement at this intersection.

At the intersection of Jeffrey Road / Barranca Parkway, the impact would be mitigated by advancing to 2030 the previously identified and funded ATMS mitigation scheduled for Post-2030.

The project mitigation at Sand Canyon Avenue / I-5 NB ramps/Marine Way is the conversion of the northbound defacto right turn lane to a standard right turn lane with right turn overlap signal operation. An alternative is to designate LOS "E" acceptance at this location and satisfy the requirements through TMSOS/ATMS participation. The level of TMSOS/ATMS participation shall be consistent with the methodology applied in the NITM Program.

The project mitigation at Sand Canyon Avenue / Oak Canyon is fair share responsibility for a previously identified PA40/12 mitigation improvement that would convert the westbound shared through/right lane to a single through lane and convert the westbound right-turn lane into a free-right turn lane. If pending projects are approved, this mitigation improvement will no longer be needed.

The Bake Parkway / Rockfield Boulevard intersection impact is mitigated by a fully funded modified LFTM Program improvement which involves the conversion of a westbound through lane to a 3rd left turn lane.

At the Los Alisos Boulevard/Rockfield Boulevard intersection, Project participation in the NITM improvement (addition of a southbound right turn lane) mitigates the impact.

The 2012 Modified Project Option 1 exceeds the adopted impact threshold for 2030 conditions at the I-5 Northbound off-ramp to Jamboree Road. The proposed mitigation at this location is participation in the fair share funded NITM improvements to add a second drop lane from the I-5 to the Jamboree Road off-ramp.

Table 5.12-9 contains the analysis of these seven intersections and one freeway ramp with the proposed mitigation:

Table 5.12-9
Year 2030 LOS With 2012 Modified Project Option 1
Project Impact Locations With Mitigation

Intersection	Peak Hour	2030 Without Project		2030 With Project		With Improvement	
		ICU	LOS	ICU	LOS	ICU	LOS
Browning Ave. & Irvine Blvd.	AM	1.00	E	1.03	F	0.98[2]	E
Culver Dr. & Barranca Pkwy.	AM	0.91	E	0.93	E	0.90	D
Jeffrey Rd. & Barranca Pkwy.	AM	0.90	D	0.92	E	0.87[2]	D
Sand Canyon & I-5 NB Ramp/Marine Way[1]	PM	0.83	D	0.94	E	0.89	D
Sand Canyon Ave. & Oak Canyon	PM	0.91	E	0.94	E	0.74	C
Bake Pkwy. & Rockfield Blvd.	PM	0.98	E	1.01	F	0.90	D
Los Alisos Blvd. & Rockfield Blvd.	AM	0.92	E	0.94	E	0.75	C
Ramp Location:							
I-5 NB Off-Ramp to Jamboree[3]	AM	1.05	F	1.07	F	0.71	C

Source: Urban Crossroads, 2012.
[1] Assuming LOS "E" not acceptable
[2] ATMS credit (0.05) has been applied.
[3] Improvement Capacity = 2,250, PM peak hour V/C = 0.57 (LOS A)

Project fair share participation in a directional capacity enhancement equivalent to a single general purpose lane at the following three freeway mainline segments mitigates the 2012 Modified Project Option 1 contribution to impacts at these locations:

- I-5 Northbound, n/o Culver
- I-5 Northbound, n/o Jeffrey
- I-405 Northbound, n/o Jeffrey

Option 2 Impact Locations

Six of the seven intersections impacted by the 2012 Modified Project Option 1 are also impacted with Option 2. At these six locations, the Option 1 mitigation measures (described above) also mitigate Option 2 impacts:

- Browning Ave. & Irvine Blvd.
- Culver Dr. & Barranca Pkwy.
- Jeffrey Rd. & Barranca Pkwy.
- Sand Canyon Ave. & I-5 NB Ramp/Marine Way
- Sand Canyon Ave. & Oak Canyon
- Bake Pkwy. & Rockfield Blvd.

For 2030 conditions with the 2012 Modified Project Option 2, the following two additional intersections are also impacted:

- Newport Ave. & Irvine Blvd.
- Culver Dr. & Bryan Ave

The mitigation for the 2012 Modified Project Option 2 impact at Newport Drive/Irvine Boulevard intersection is a signal modification – northbound right turn overlap phase. If pending projects are approved, this mitigation improvement will no longer be needed.

The mitigation for the 2012 Modified Project Option 2 impact at Culver Drive/Bryan Avenue intersection is the addition of a westbound defacto right-turn lane. If pending projects are approved, this mitigation improvement will no longer be needed.

Table 5.12-10 contains the analysis of the 2012 Modified Project Option 2 impacted locations with the proposed mitigation:

Table 5.12-10
Year 2030 LOS With 2012 Modified Project Option 2
Project Impact Locations With Mitigation

Intersection	Peak Hour	2030 Without Project		2030 With Project		With Improvement	
		ICU	LOS	ICU	LOS	ICU	LOS
Newport Ave. at Irvine Blvd.	PM	0.92	E	0.95	E	0.91	E
Browning Ave. at Irvine Blvd.	AM	1.00	E	1.02	F	0.97[2]	E
Culver Dr. at Bryan Ave.	AM	0.89	D	0.91	E	0.88	D
Culver Dr. at Barranca Pkwy.	AM	0.91	E	0.93	E	0.90	D
Jeffrey Rd. at Barranca Pkwy.	AM	0.90	D	0.91	E	0.86[2]	D
Sand Canyon at I-5 NB Ramp/Marine Wy.[1]	PM	0.83	D	0.94	E	0.89	D
Sand Canyon Ave. at Oak Canyon	PM	0.91	E	0.93	E	0.74	C
Bake Pkwy. at Rockfield Blvd.	PM	0.98	E	1.01	F	0.91	E

Source: Urban Crossroads, 2012.
[1] Assuming LOS "E" not acceptable.
[2] ATMS credit (0.05) has been applied.

Project fair share participation in a directional capacity enhancement equivalent to a single general purpose lane at the following three freeway mainline segments mitigates the 2012 Modified Project Option 2 contribution to impacts at these locations:

- I-5 Northbound, n/o Culver
- I-5 Northbound, n/o Jeffrey
- I-405 Northbound, n/o Jeffrey

5.12.4.5 General Plan Buildout (Post-2030) Analysis

This section compares the Post-2030 Without Project Scenario to the 2012 Modified Project Option 1 and Option 2. The baseline for this DSSEIR is the 2011 Approved Project. As discussed previously, ITAM 8.4-10 and the LFTAM were used to prepare the Post-2030 Without Project and 2012 Modified Project traffic forecasts. The results of the Post-2030 traffic impact analysis for Options 1 and 2 are summarized below.

Post-2030 Traffic Impacts with 2012 Modified Project Option 1

The following sub-sections summarize the resulting Post-2030 Without Project and with the 2012 Modified Project Option 1 traffic conditions for the various components of the study area circulation system including arterial roads and intersections, freeway/tollway mainline segments and freeway/tollway ramps.

Post-2030 Circulation System and Average Daily Traffic Volumes, Option 1

The Post-2030 2012 Modified Project Option 1 ADT volumes and corresponding V/C ratios are illustrated in Figures 5.12-26 and 5.12-27, respectively.

Based on the ADT V/C performance criteria and impact thresholds discussed above, the following three (3) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 1:

- Alton Pkwy (b/w Culver Dr and W. Yale Loop)
- Bake Pkwy (b/w Rockfield Bl and Marine Way)
- Jeffrey Rd (b/w Roosevelt and I-5 NB Ramps)

Consistent with the City's traffic study guidelines, these locations are further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Post-2030 with the 2012 Modified Project conditions are summarized in Table 8-1 in the Traffic Study. As the summary table indicates, all arterial roadway segments are forecasted to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed adopted thresholds.

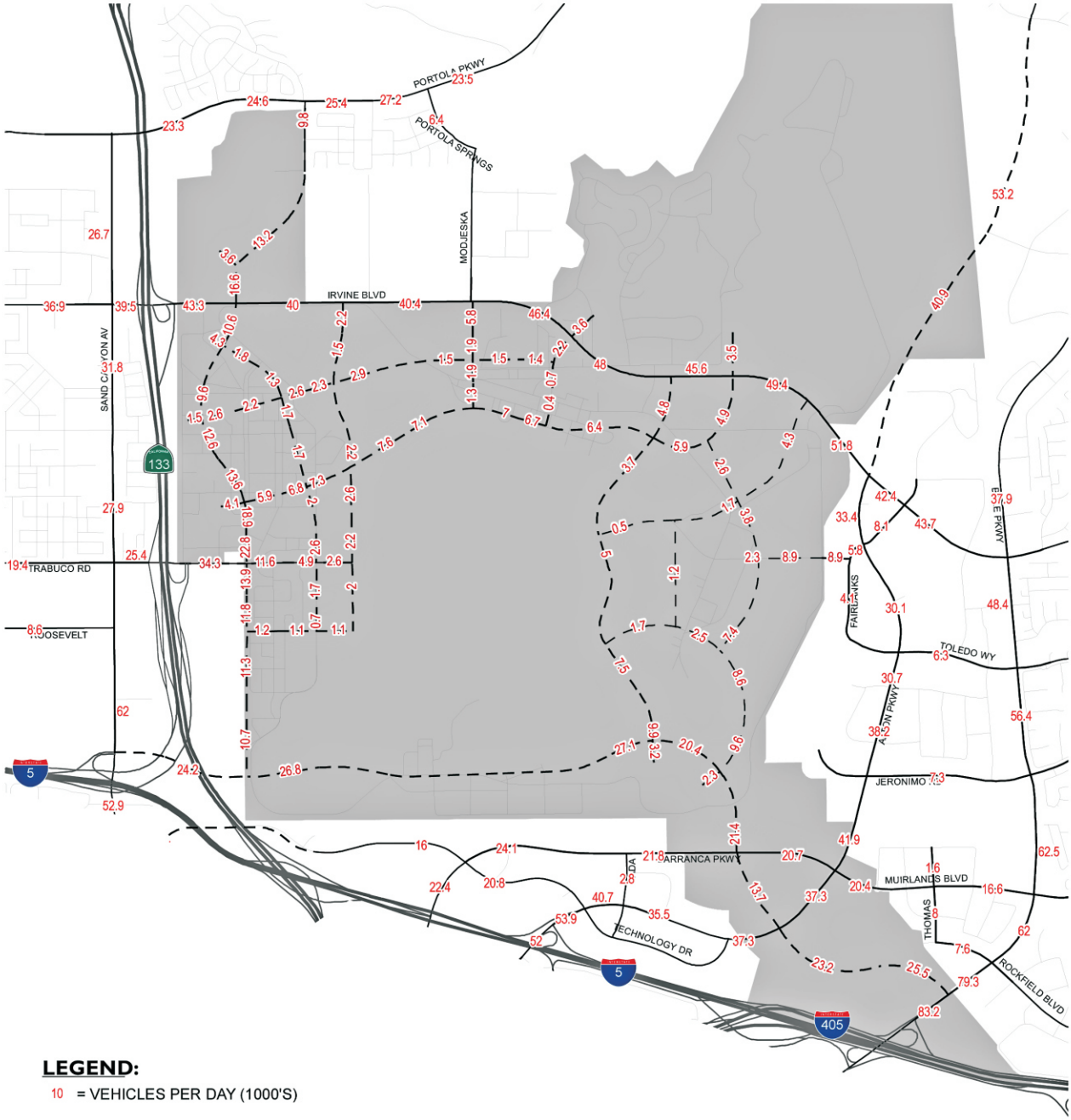
Post-2030 Peak Hour Intersection Levels of Service, Option 1

The Post-2030 with the 2012 Modified Project Option 1 AM and PM peak hour ICU results for the intersections illustrated in Figure 5.12-28 that are part of the study area are summarized in Table 8-2 in the Traffic Study. Actual turning volumes, lane geometrics and ICU calculation worksheets for the Post-2030 2012 Modified Project Option 1 scenario are included in Appendix 8.2 to the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, the intersections of Jeffrey Road & Roosevelt, Jeffrey Road & Alton Parkway, and Laguna Canyon Road & Old Laguna Canyon exceed adopted impact thresholds under the 2012 Modified Project Option 1 scenario based on Post-2030 conditions, as shown on Table 5.12-11.

Table 5.12-11
Post-2030 Intersection ICU LOS With 2012 Modified Project Option 1
Project Impact Locations

		2011 Approved Baseline		2012 Modified Project	
Intersection	Peak Hour	ICU	LOS	ICU	LOS
Jeffrey Rd. & Roosevelt	AM	0.89	D	0.91	E
Jeffrey Rd. & Alton Pkwy.	AM	0.90	D	0.91	E
Laguna Cyn. & Old Laguna Cyn.	AM	0.92	E	0.94	E

Post-2030 ADT Volumes with 2012 Modified Project Option 1 (1 of 2)

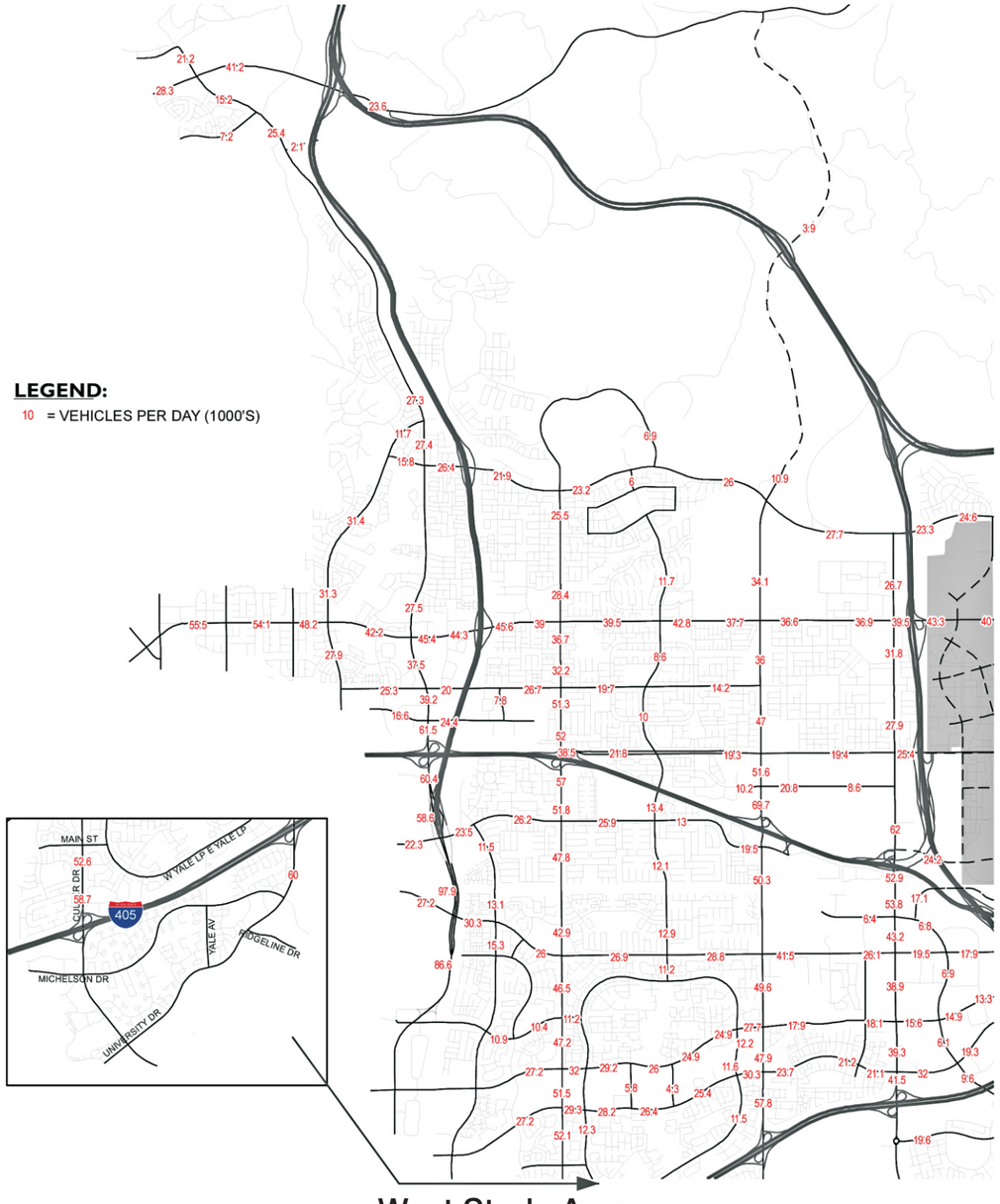


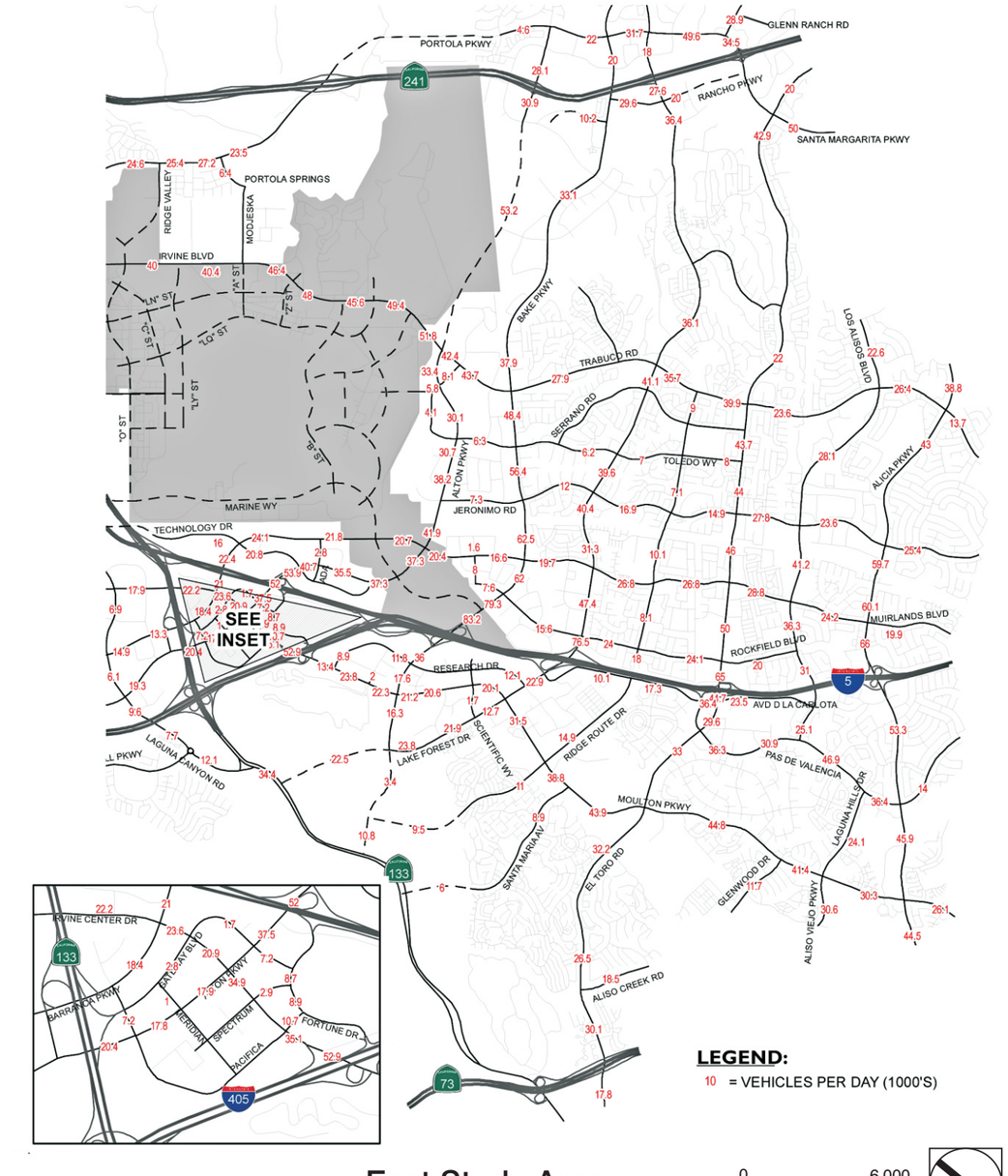
Project Area

0 3,000
Scale (Feet)

Source: Urban Crossroads 2012

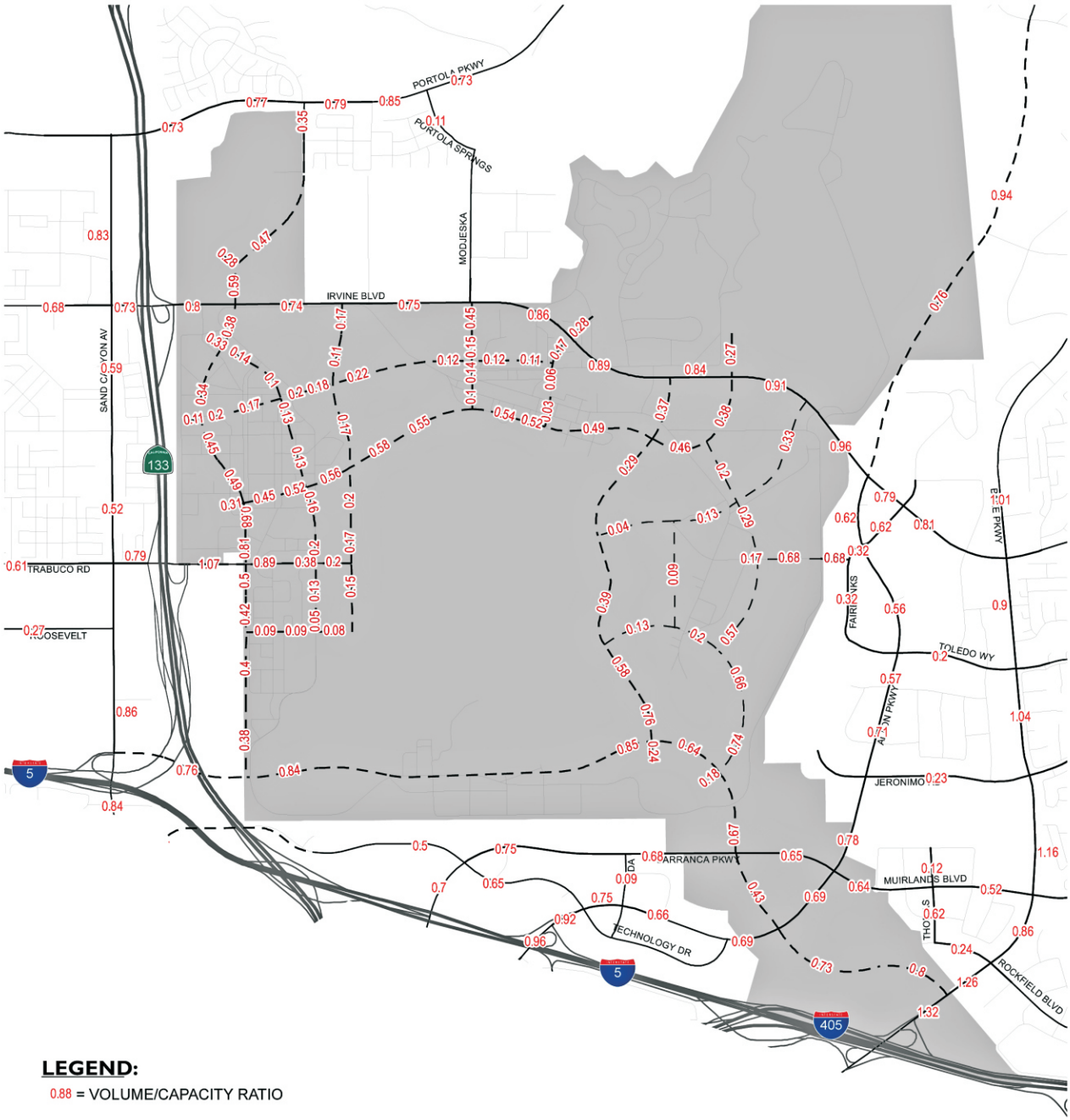
Post-2030 ADT Volumes with 2012 Modified Project Option 1 (2 of 2)





Source: Urban Crossroads 2012

Post-2030 ADT V/C Ratios with 2012 Modified Project Option 1 (1 of 2)

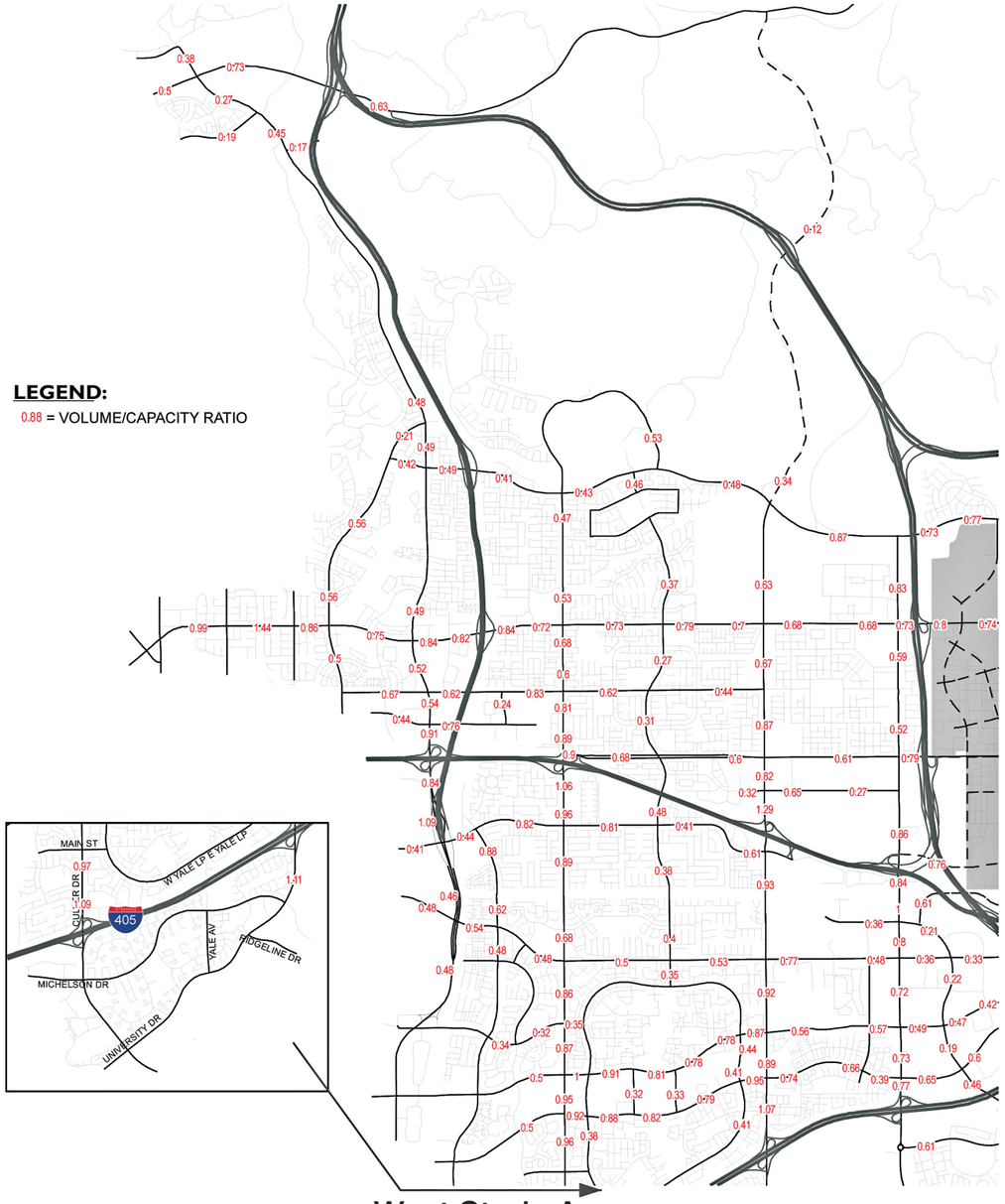


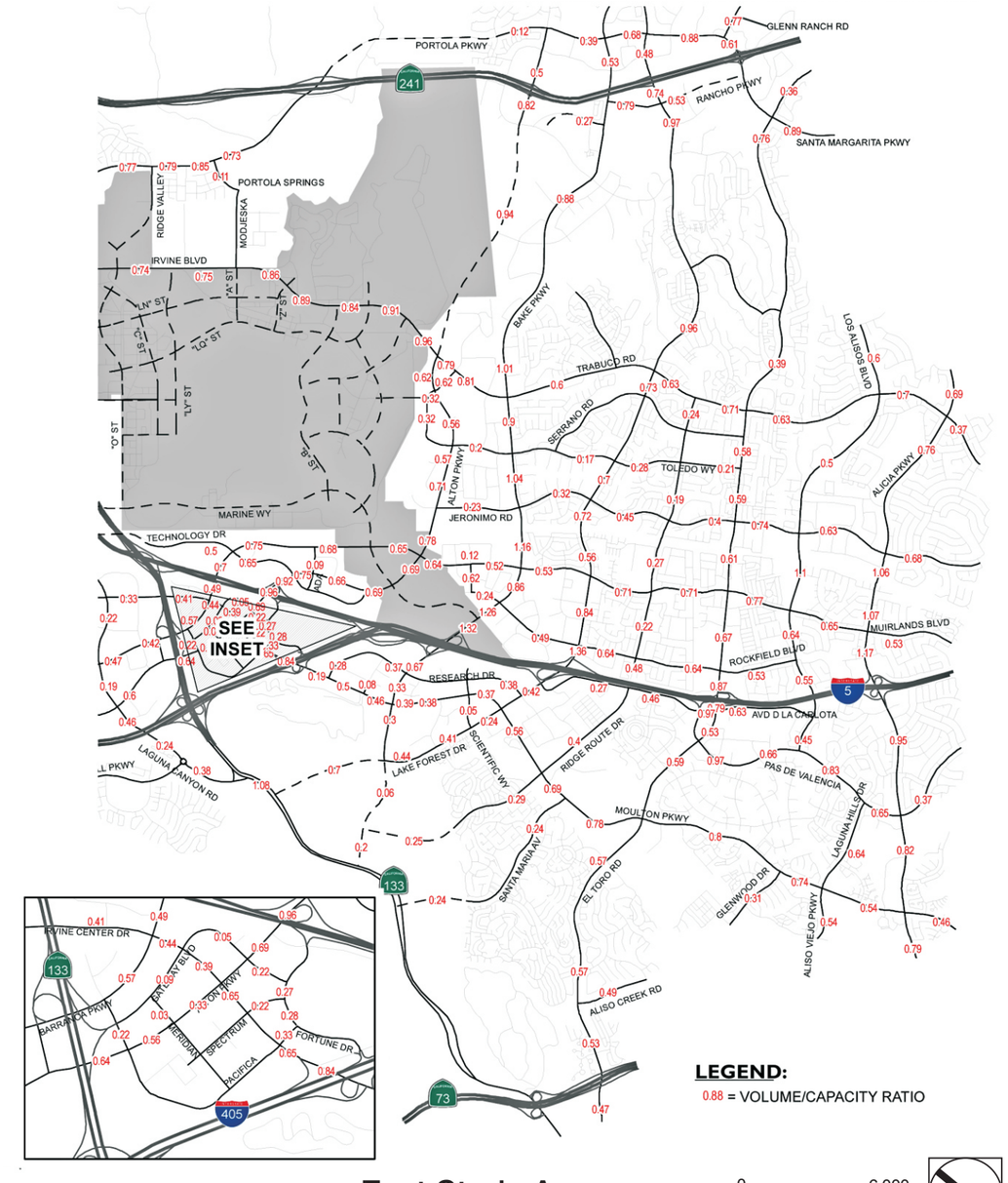
Project Area

0 3,000
Scale (Feet)

Source: Urban Crossroads 2012

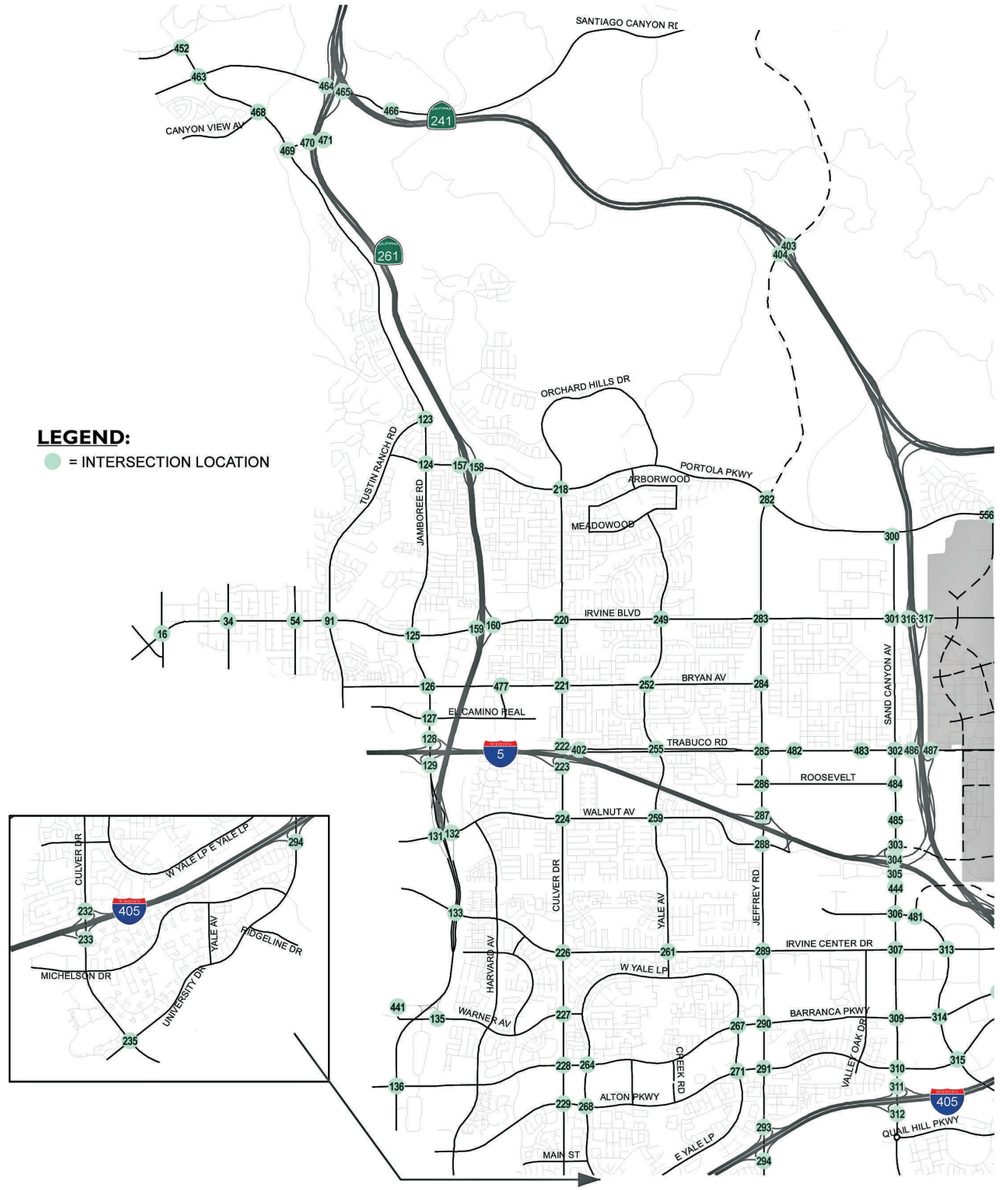
Post-2030 ADT V/C Ratios with 2012 Modified Project Option 1 (2 of 2)



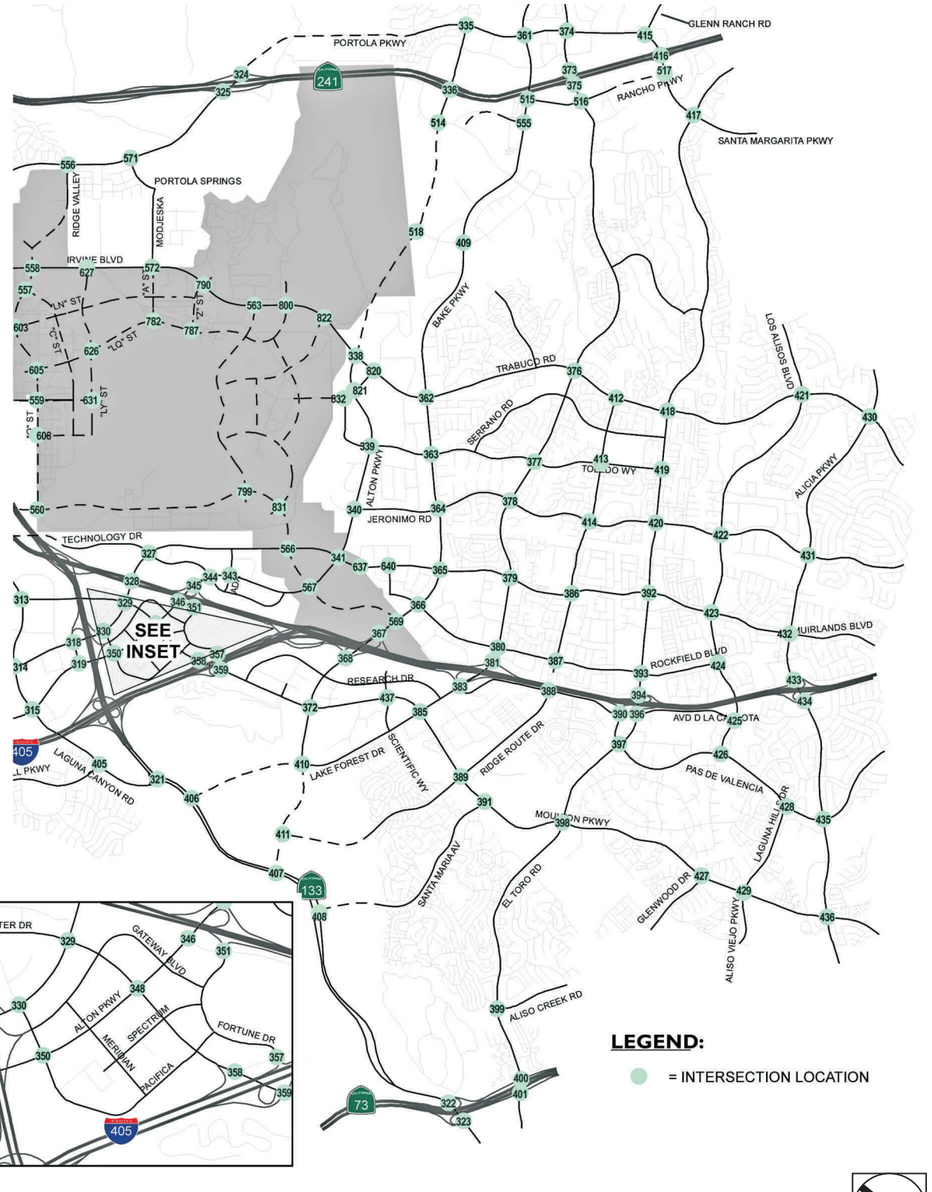


Source: Urban Crossroads 2012

Post-2030 Intersection Location Map



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

To address concerns expressed by Caltrans regarding the performance of ramp intersections in the immediate vicinity of the Project, the freeway ramp intersections at Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, SR-133/Trabuco Road interchanges have been analyzed using the Highway Capacity Manual (HCM) methodology in addition to the ICU methodology. The resulting 2011 Approved Project (baseline) and 2012 Modified Project Option 1 peak hour levels of service based on the HCM methodology are summarized in Table 8-4 (HCM intersection LOS calculation worksheets are included in Appendix 8.3). The Sand Canyon/I-5 SB Ramps intersection includes delay and LOS information for two scenarios: "Currently Proposed Lanes (EB Shared Left-Right Turn Lane)" and "Alternative Configuration (EB Dual Right Lanes)". The eastbound (EB) approach lanes for the first scenario consist of two left turn lanes, one shared left-right lane, and one right turn lane. The EB approach lanes for the second scenario consist of two left turn lanes and two right turn lanes.

In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard ramp intersections and SR-133/Trabuco Road based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection. Table 8-5 of the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Year 2030 with 2012 Modified Project Option 1 peak hour conditions (HCM queuing analysis calculation worksheets are included in Appendix 8.4 in the Traffic Study). The results of the HCM analysis shows LOS “E” conditions with or without the 2012 Modified Project Option 1 at the I-5 NB Ramp /Sand Canyon intersection. A modified lane configuration (restriping to accomplish dual left turn and dual right turn lanes) on the eastbound approach to the I-5 SB Ramp intersection would avoid vehicle queues backing onto the freeway mainline. LOS “E” conditions also occur at the I-5 SB Ramp /Sand Canyon intersection with the 2012 Modified Project Option 1. The ultimate lane configuration would be subject to coordination and agreement between the City and Caltrans.

Post-2030 Peak Hour Freeway/Tollway Ramp Levels of Service, Option 1

Figure 5.12-29 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Post-2030 conditions. 2011 Approved Project (baseline) and 2012 Modified Project Option 1 AM and PM peak hour ramp volumes and V/C ratios are summarized in Table 8-6 in the Traffic Study. Based on the peak hour ramp performance criteria and impact thresholds presented earlier, none of the freeway ramps are forecast exceed adopted impact thresholds with the 2012 Modified Project Option 1 based on Post-2030 conditions..

Post-2030 Peak Hour Freeway/Tollway Mainline Levels of Service, Option 1

The 2011 Approved Project (baseline) and 2012 Modified Project Option 1 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 8-7 in the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds, the freeway mainline segment of the I-405 northbound, north of Jeffrey is forecast to exceed adopted impact thresholds with 2012 Modified Project Option 1 based on Post-2030 conditions.

Post-2030 Traffic Impacts with 2012 Modified Project Option 2

The following sub-sections summarize the resulting 2011 Approved Project (baseline) and 2012 Modified

Project Option 2 traffic conditions for the various components of the study area circulation system including arterial roads and intersections, freeway/tollway mainline segments and freeway/tollway ramps.

Post-2030 Circulation System and Average Daily Traffic Volumes, Option 2

The Post-2030 2012 Modified Project Option 2 ADT volumes and corresponding V/C ratios are illustrated in Figure 5.12-30, and Figure 5.12-31, respectively.

Based on the ADT V/C performance criteria and impact thresholds discussed above, the following three (3) arterial roadway segments are potentially impacted by the 2012 Modified Project Option 2:

- Alton Pkwy (b/w Culver Dr and W. Yale Loop)
- Bake Pkwy (b/w Rockfield Bl and Marine Way)
- Jeffrey Rd (b/w Roosevelt and I-5 NB Ramps)

Consistent with the City's traffic study guidelines, these locations are further analyzed by examining peak hour levels of service. The resulting midblock peak hour V/C ratios for the arterial segments under Post-2030 with the 2012 Modified Project Option 2 conditions are summarized in Table 8-8 in the Traffic Study. As the summary table indicates, all arterial roadway segments are forecasted to operate at acceptable levels of service during the peak hour, therefore none of the arterial segments exceed adopted thresholds.

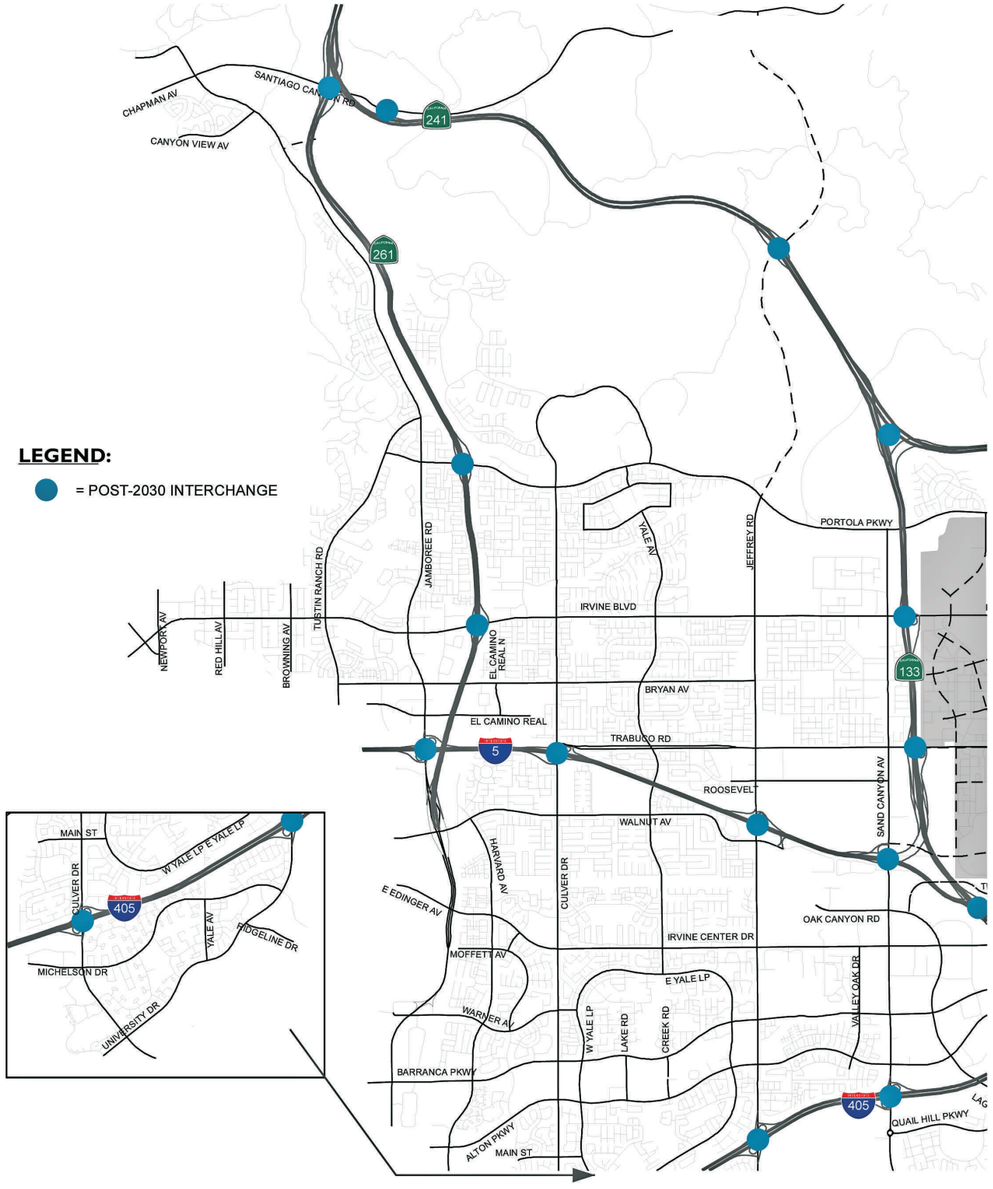
Post-2030 Peak Hour Intersection Levels of Service, Option 2

The Post-2030 with the 2012 Modified Project Option 2 AM and PM peak hour ICU results for the intersections illustrated in previous Figure 5.12-28 that are part of the study area are summarized in Table 8-9 in the Traffic Study. Actual turning volumes, lane geometrics and ICU calculation worksheets for the Post-2030 2012 Modified Project Option 2 scenario are included in Appendix 8.5 to the Traffic Study. Based on the peak hour intersection performance criteria and impact thresholds, the intersections of Jeffrey Road & Roosevelt, Jeffrey Road & Alton Parkway, and Laguna Canyon Road & Old Laguna Canyon exceed adopted impact thresholds under the 2012 Modified Project Option 2 scenario based on Post-2030 conditions, as shown on Table 5.12-12 below.

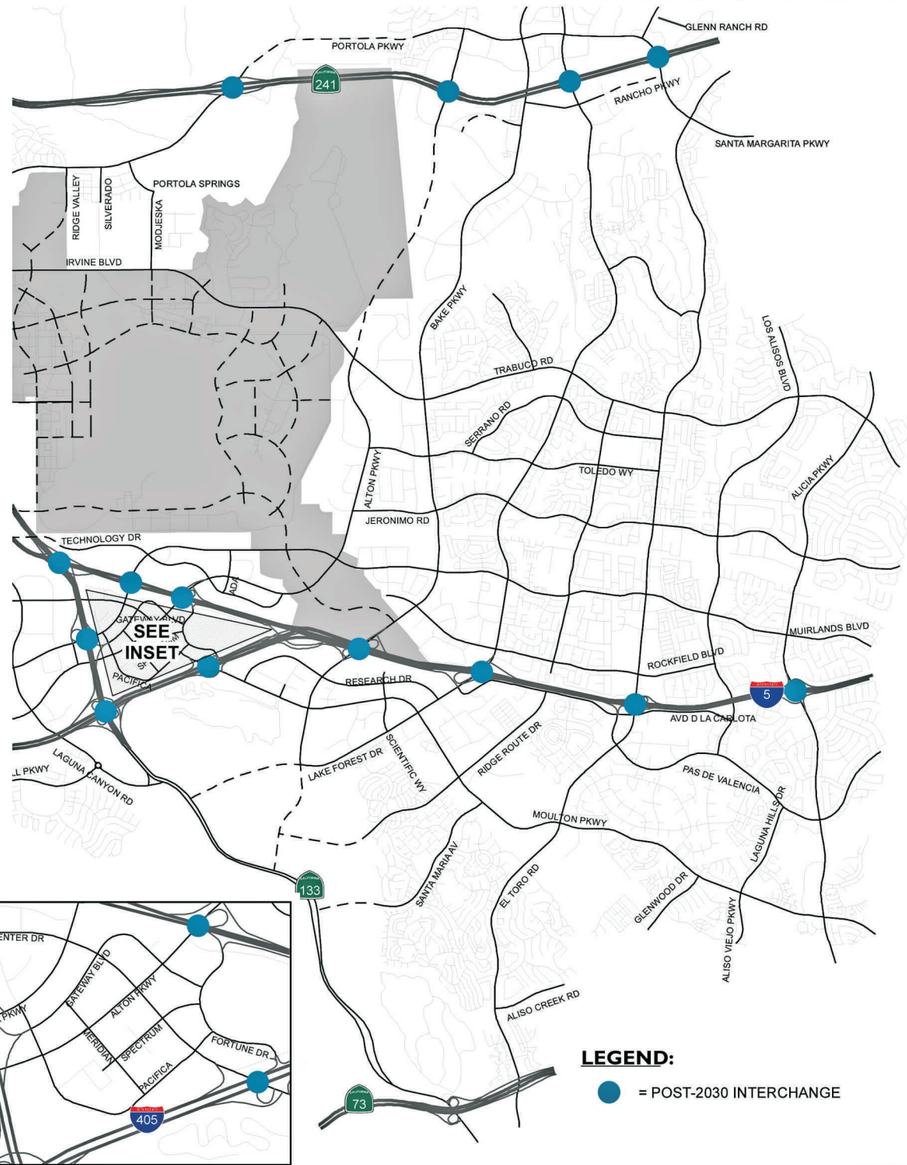
Table 5.12-12
Post-2030 Intersection ICU LOS With 2012 Modified Project Option 2
Project Impact Locations

		2011 Approved Baseline		2012 Modified Project	
Intersection	Peak Hour	ICU	LOS	ICU	LOS
Jeffrey Rd. & Roosevelt	AM	0.89	D	0.92	E
Laguna Cyn. & Old Laguna Cyn.	AM	0.92	E	0.94	E

Post-2030 Freeway Interchange Locations



West Study Area

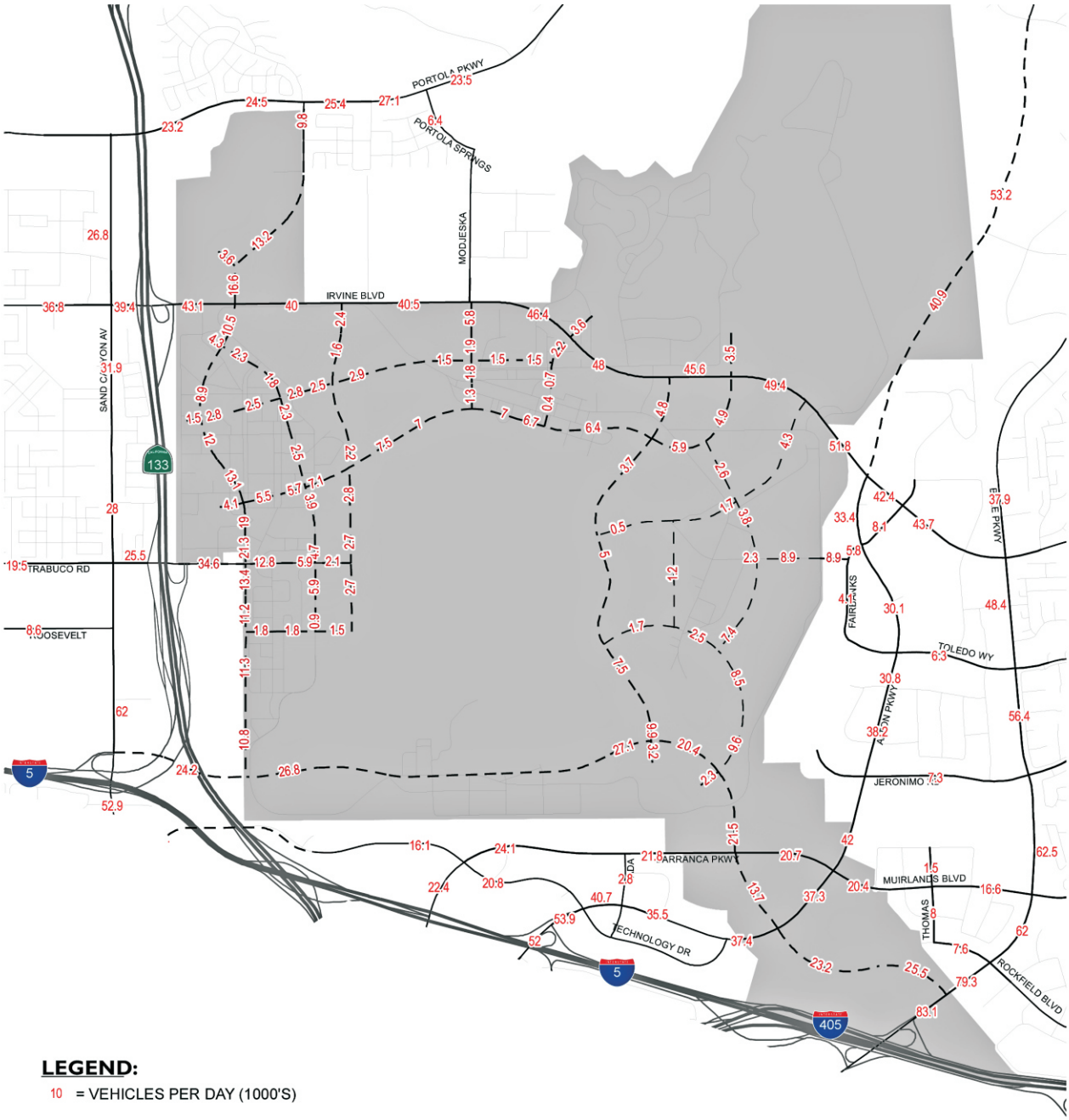


East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

Post-2030 ADT Volumes with 2012 Modified Project Option 2 (1 of 2)

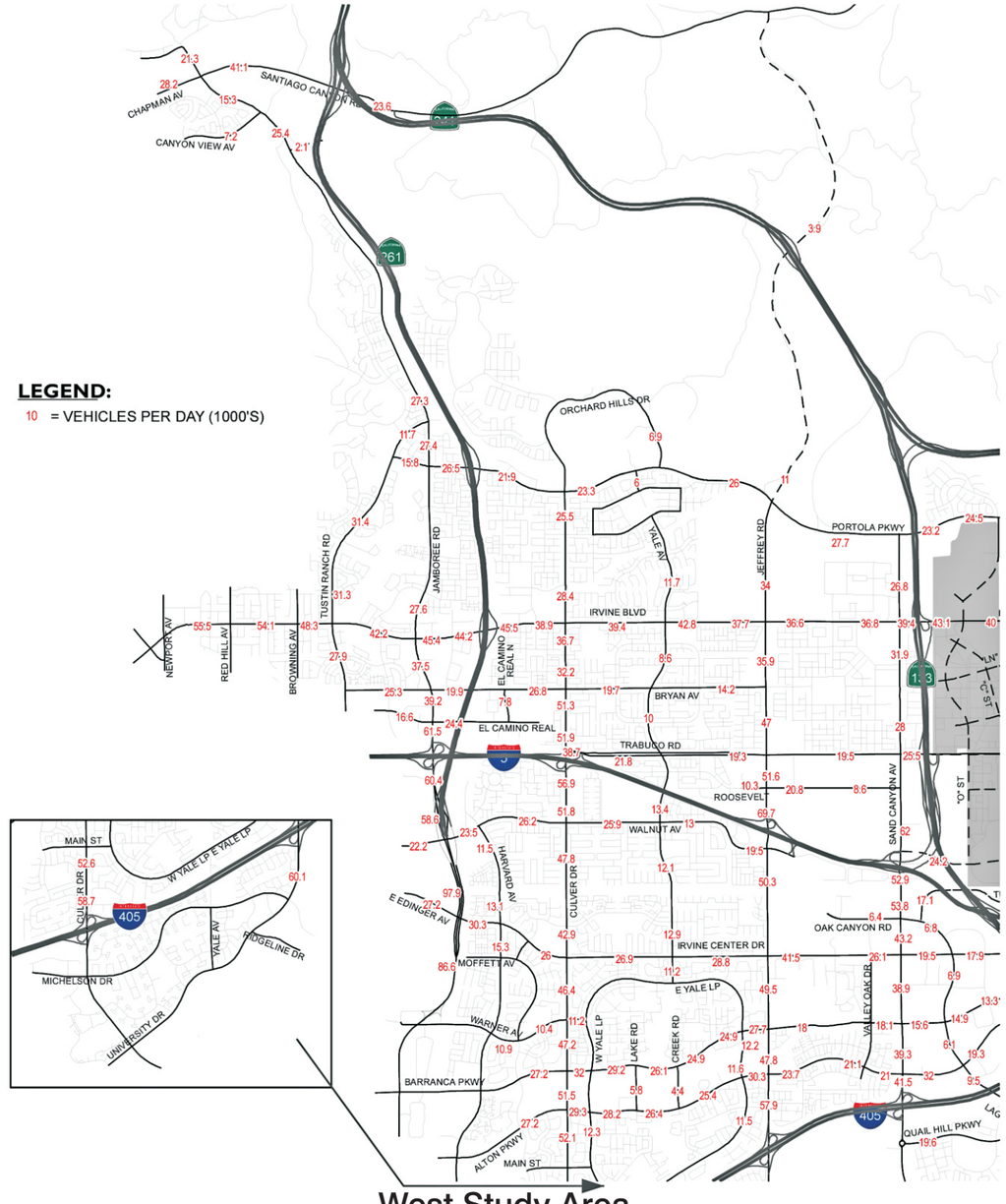


Project Area

0 3,000
Scale (Feet)

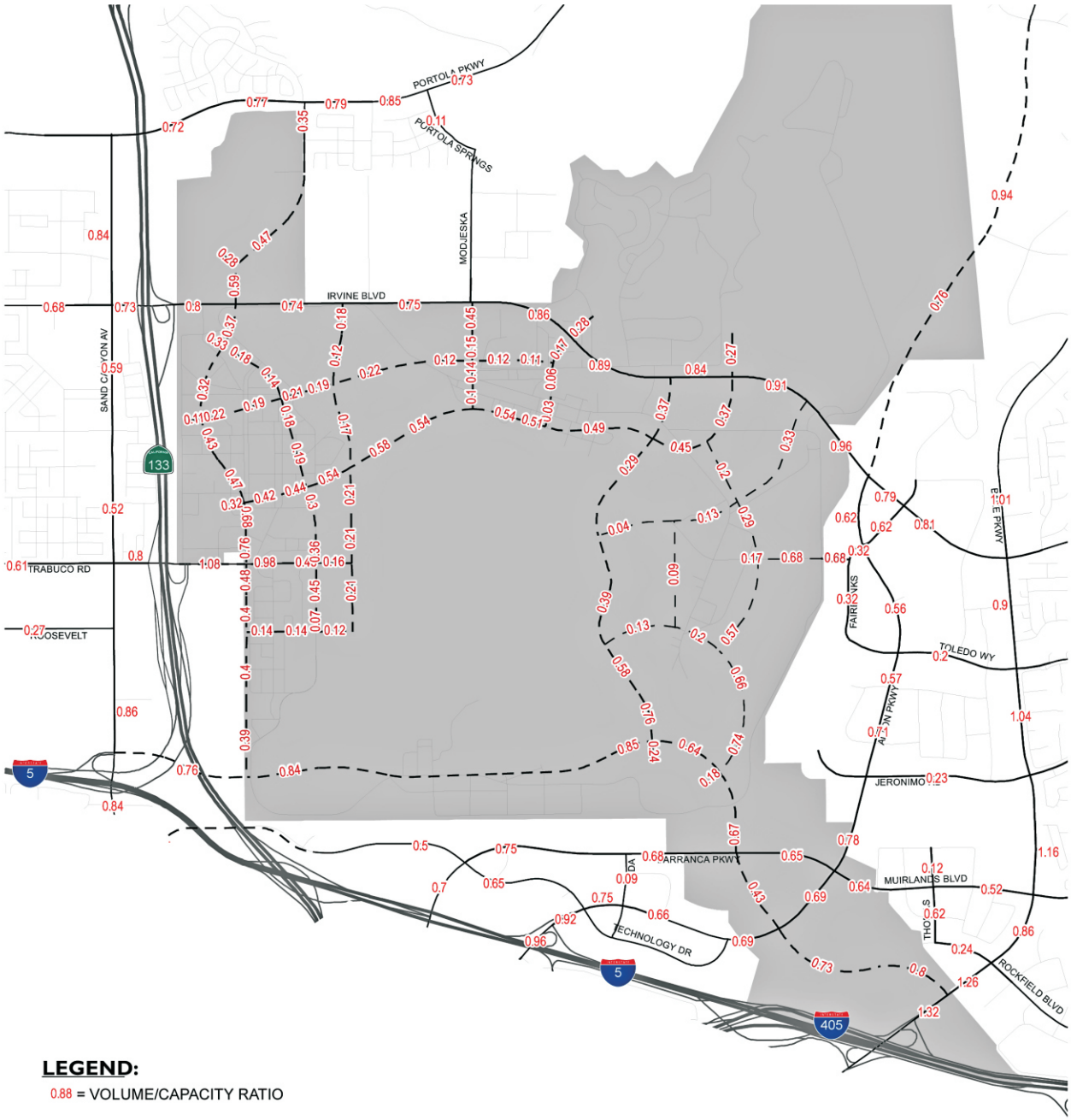
Source: Urban Crossroads 2012

Post-2030 ADT Volumes with 2012 Modified Project Option 2 (2 of 2)



Source: Urban Crossroads 2012

Post-2030 ADT V/C Ratios with 2012 Modified Project Option 2 (1 of 2)

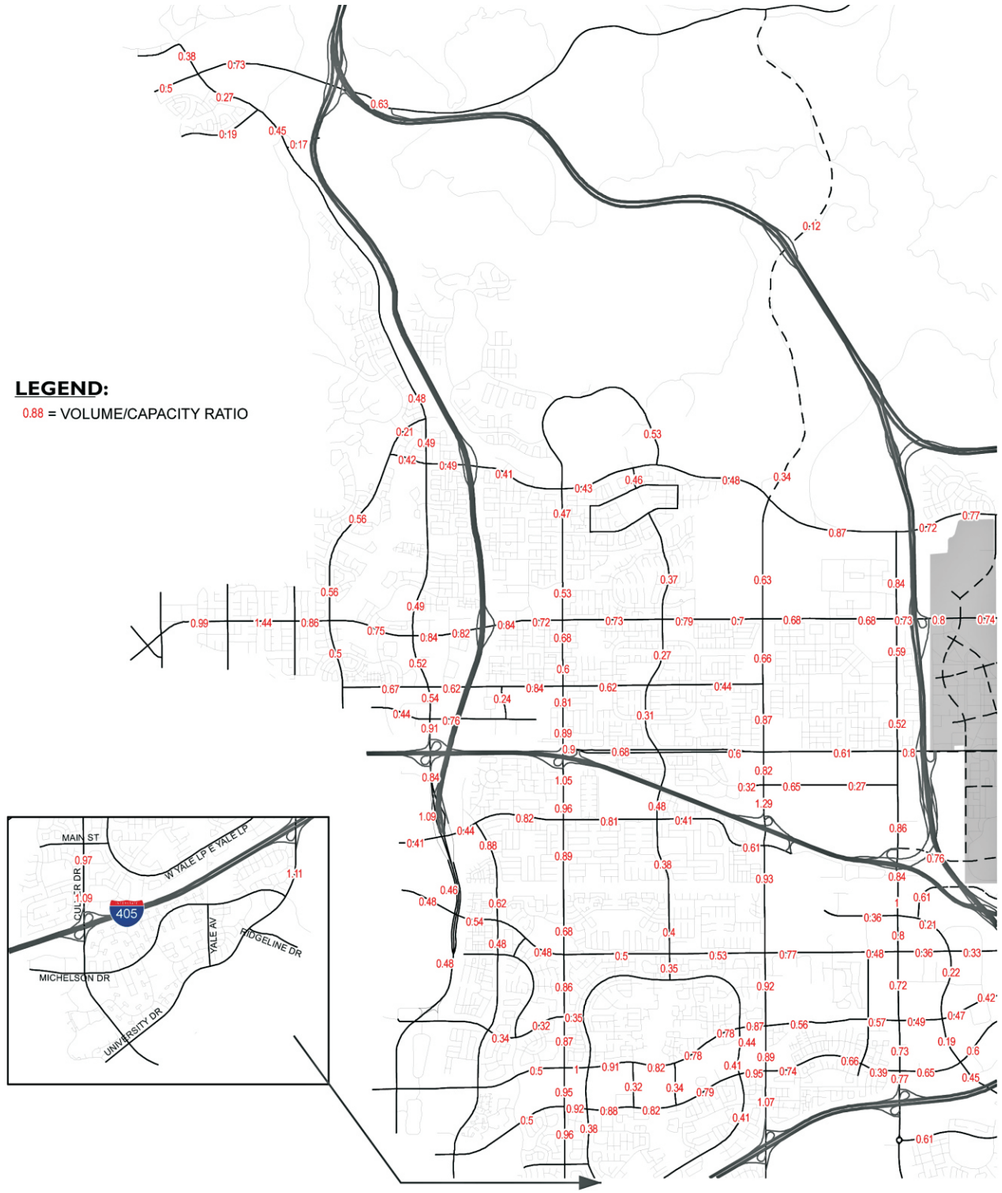


Project Area

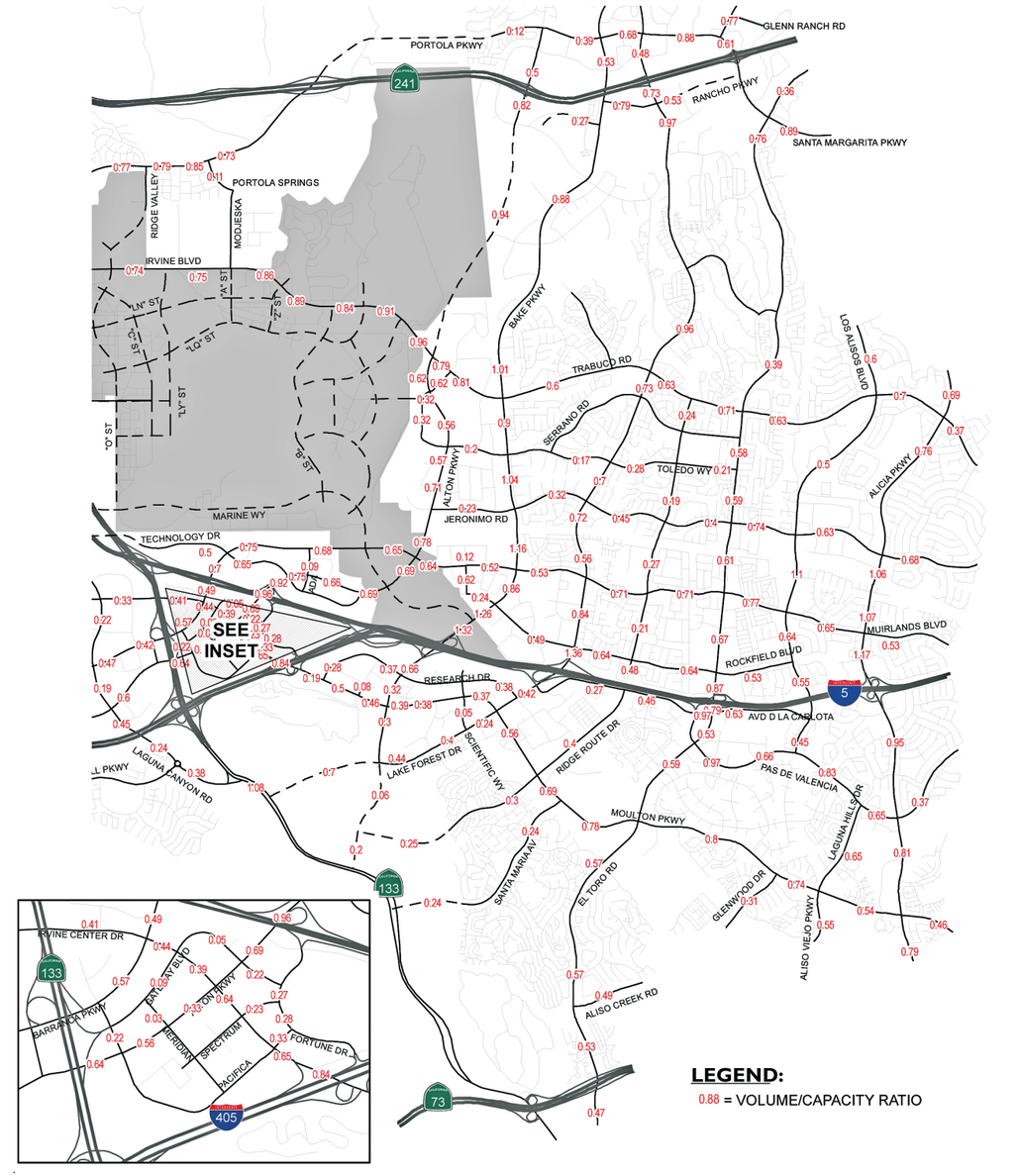
0 3,000
Scale (Feet)

Source: Urban Crossroads 2012

Post-2030 ADT V/C Ratios with 2012 Modified Project Option 2 (2 of 2)



West Study Area



East Study Area

0 6,000
Scale (Feet)

Source: Urban Crossroads 2012

To address concerns expressed by Caltrans regarding the performance of freeway/tollway ramp intersections in the immediate vicinity of the Proposed Project Site, the freeway ramp intersections at Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road interchanges have been analyzed using both the HCM methodology and the ICU methodology. The resulting Post-2030 Without Project and 2012 Modified Project Option 2 peak hour levels of service based on the HCM methodology are summarized in Table 8-11 in the Traffic Study (HCM intersection LOS calculation worksheets are included in Appendix 8.6 to the Traffic Study). In addition to the peak hour HCM ramp analysis, a queuing analysis was carried out for the Sand Canyon Avenue/I-5 ramps. For the off-ramps at the Sand Canyon/I-5 interchange, the potential for exiting traffic to back up onto the I-5 mainline was evaluated by performing a detailed queuing analysis. The HCM intersection LOS results presented earlier for the Sand Canyon Avenue/I-5, SR-133/Irvine Boulevard, and SR-133/Trabuco Road ramp intersections based on the HCM methodology provide estimates of the vehicle queue lengths on the off-ramp approaches at each intersection. Table 8-12 in the Traffic Study summarizes the longest 95th percentile queue length at each off-ramp under Post-2030 with the 2012 Modified Project Option 2 peak hour conditions (HCM queuing analysis calculation worksheets are included in Appendix 8.7 to the Traffic Study). The results of the HCM analysis show LOS "E" conditions with or without the 2012 Modified Project at the I-5 NB Ramp /Sand Canyon intersection. A modified lane configuration (restriping to accomplish dual left turn and dual right turn lanes the eastbound approach to the I-5 SB Ramp intersection would avoid vehicle queues backing onto the freeway mainline. LOS "E" conditions also occur at the I-5 SB Ramp /Sand Canyon intersection with the 2012 Modified Project. The ultimate lane configuration would be subject to coordination and agreement between the City and Caltrans.

Post-2030 Peak Hour Freeway/Tollway Ramp Levels of Service, Option 2

Figure 5.12-29 illustrates the interchange locations where freeway/tollway ramps were analyzed based on Post-2030 conditions. The Post-2030 with 2012 Modified Project Option 2 AM and PM peak hour ramp volumes and V/C ratios are summarized in Table 8-13 in the Traffic Study. None of the freeway ramps are forecast exceed adopted impact thresholds with the 2012 Modified Project Option 2 based on Post-2030 conditions.

Post-2030 Peak Hour Freeway/Tollway Mainline Levels of Service, Option 2

The Post-2030 Without Project and 2012 Modified Project Option 2 AM and PM freeway/tollway mainline peak hour volumes and V/C ratios are summarized in Table 8-14 in the Traffic Study. Based on the peak hour mainline performance criteria and impact thresholds discussed above, the freeway mainline segment of I-405 northbound, north of Jeffrey is forecast to exceed adopted impact thresholds under the 2012 Modified Project Option 2 scenario in Post-2030 conditions.

Post-2030 Mitigation Summary

In this sub-section, mitigation measures are presented for the intersections identified as being impacted by the 2012 Modified Project based on Post-2030 conditions. It should be noted that the City has established the NITM Program to implement and expedite circulation mitigation measures identified in previous certified CEQA documents. The NITM Program provides a funding mechanism for the coordinated and phased installation of required traffic and transportation improvements established in connection with land use entitlements for PAs 1, 5, 6, 8, 9, 30, 40 and 51. As established by City Ordinance No. 03-20, the 2011 Approved Project is included in this program and, as such, is required to pay its fair share toward the

List of NITM Improvements included within the established NITM Program. This NITM fee will be updated in accordance with the NITM Ordinance after approval of the 2012 Modified Project. (TRAN 3).

In addition to the PA 30 and PA 51 NITM fair share fees addressed above, the following discusses the specific mitigation measures proposed for the Post-2030 impacts of the 2012 Modified Project identified above. The mitigation measures are designed to address the 2012 Modified Project's impacts by improving the LOS at each impacted location.

Option 1 Impact Locations

Three intersections exceed adopted impact thresholds with the 2012 Modified Project with Option 1:

- Jeffrey Rd. & Roosevelt
- Jeffrey Rd. & Alton Pkwy.
- Laguna Cyn. & Old Laguna Cyn

At the Jeffrey Road / Roosevelt intersection, the project mitigation is conversion of the eastbound shared through/right lane into a through lane, and addition of a second right turn lane.

At the Jeffrey Road / Alton Parkway intersection, the project mitigation is provision of an eastbound standard right-turn lane with right-turn overlap phase resulting in an ultimate eastbound lane configuration of 2 left-turn lanes, 2 through lanes, and 1 right-turn lane.

The project mitigation at the Laguna Canyon/Old Laguna Canyon intersection identifies ATMS at this location, subject to approval by the Director of Public Works. An alternate physical improvement is the addition of a fourth northbound through lane. If it is desired to utilize one of these improvement options as a substitution to an identified NITM improvement at this location, this request would be subject to approval by the Director of Public Works in consultation with the NITM Committee. If pending projects are approved, the mitigation improvement will no longer be needed. Table 5.12-13 contains the analysis of Post-2030 Option 1 impact locations with the proposed mitigation:

Table 5.12-13
Post-2030 LOS with 2012 Modified Project
Option 1 Impact Locations with Proposed Mitigation

		2011 Approved Project (Baseline)		2012 Modified Project		With Improvement	
Intersection	Peak Hour	ICU	LOS	ICU	LOS	ICU	LOS
286. Jeffrey Rd. & Roosevelt	AM	0.89	D	0.91	E	0.88	D
291. Jeffrey Rd. & Alton Pkwy.	AM	0.90[1]	D	0.91[1]	E	0.89[1]	D
321. Laguna Cyn. & Old Laguna Cyn.	AM	0.92	E	0.94	E	0.89[1]	D
-Alternate improvements	AM					0,82	D

Source: Urban Crossroads, 2012.
[1] ATMS credit (0.05) has been applied.

Project fair share participation in a directional capacity enhancement equivalent to a single general purpose travel lane at one freeway mainline segment (I-405 northbound, north of Jeffrey) mitigates the 2012 Modified Project Option 1 contribution to a cumulative impact at that location.

Option 2 Impact Locations

Post-2030 AM and PM peak hour intersection capacity utilization (ICU) results indicate the same three intersections impacted by the 2012 Modified Project with Option 1 are also impacted with Option 2. At these three locations, the Option 1 mitigation measures (described above) also mitigate Option 2 impacts:

- Jeffrey Rd. & Roosevelt
- Jeffrey Rd. & Alton Pkwy.
- Laguna Cyn. & Old Laguna Cyn

Table 5.12-14 contains the analysis of Post-2030 Option 2 impact locations with the proposed mitigation:

Table 5.12-14
Post-2030 LOS with 2012 Modified Project
Option 2 Impact Locations with Proposed Mitigation

Intersection	Peak Hour	2011 Approved Project (Baseline)		2012 Modified Project		With Improvement	
		ICU	LOS	ICU	LOS	ICU	LOS
286. Jeffrey Rd. & Roosevelt	AM	0.89	D	0.92	E	0.88	D
291. Jeffrey Rd. & Alton Pkwy.	AM	0.90[1]	D	0.93[1]	E	0.89[1]	D
321. Laguna Cyn. & Old Laguna Cyn.	AM	0.92	E	0.94	E	0.89[1]	D
-Alternate improvements						0,82	D

Source: Urban Crossroads, 2012.
[1] ATMS credit (0.05) has been applied.

Project fair share participation in a directional capacity enhancement equivalent to a single general purpose travel lane at one freeway mainline segment (I-405 northbound, north of Jeffrey) mitigates the 2012 Modified Project Option 2 contribution to a cumulative impact at that location.

5.12.4.6 2012 Modified Project with Optional Conversion

The 2012 Modified Project also includes the option to convert up to 535,000 square feet of Multi-Use to up to 889 base units and up to 311 DB Units, granted pursuant to State law. The location, type and number of converted units are unknown at this time. This optional conversion is expressly conditioned to stay within the trip parameters of the Heritage Fields Project 2012 GPA/ZC Traffic Study and is subject to further traffic analysis.

5.12.4.7 Rockfield Boulevard MPAH Network, Sensitivity Analysis

Buildout conditions for Options 1 and 2 are analyzed to determine if any level of service deficiencies are created within the study area with the buildout of Rockfield Boulevard as currently included on the Orange County Master Plan of Arterial Highways (MPAH), when compared against the buildout of the proposed project with the deletion of Rockfield Blvd extension to Marine Way. This analysis will be used to process the proposed MPAH amendment to delete the extension of Rockfield to Marine Way. The deletion of the Rockfield extension is subject to coordination with adjacent cities and approval by the OCTA Board of Directors.

In the event that the Rockfield MPAH change does not occur and the Rockfield connection to Marine Way is ultimately constructed, no additional traffic impacts occur with the 2012 Modified Project with Option 2 on arterial roadway segments, arterial intersections, mainline freeway segments or freeway ramps for Post-2030 conditions. With Option 1, the SR-133 NB Loop On-Ramp at Barranca Parkway is impacted if the Rockfield MPAH change does not occur and the Rockfield connection to Marine Way is ultimately constructed.

The SR-133 northbound loop on-ramp at Barranca Parkway is not impacted under the 2015 pending plus project condition with the 2012 Modified Project Option 2. The proposed mitigation improvement for this ramp is not a NITM Program improvement. In the event that the MPAH change is not approved and the 2012 Modified Project Option 1 is implemented with construction of the Rockfield extension to Marine Way, the Option 1 Project will also participate on a NITM methodology fair share basis in the conversion of the HOV preferential lane at the on-ramp to a second metered mixed-flow lane.

IMPACT 5.12-2: THE MODIFIED PROJECT COMPLIES WITH ADOPTED POLICIES, PLANS, AND PROGRAMS FOR ALTERNATIVE TRANSPORTATION. [IMPACT T-6]

Impact Analysis: Various Class 1 (Off-Street) and Class 2 (On-Street) bikeways through the Proposed Project Site have been anticipated in the City of Irvine General Plan Trails Network. It is anticipated that the proposed development in the 2012 Modified Project would expand opportunities for bikeway and pedestrian facilities, with additional bikeways in Districts 5 and 6, and improved connectivity to the new high school, to be considered in conjunction with future maps/master plans and amendments to the Master Landscape and Trails Plan.

Figure 5.12-32, *Project Area Bikeways and Trails*, illustrates the potential on-site and adjacent bikeways and trails for the Project area. In addition to the extensive network of trails already approved as part of the 2011 Approved Project, interconnected networks of two-lane roadways (local streets, local collectors and commuters) could link the on-site schools, shopping centers, employment areas, and public facilities throughout the core of Combined PA 51.

The trail system would be designed to utilize crosswalks at traffic signals, stop signs and roundabouts in order to provide safe crossings of roadways at intersections. At mid-block crossings of two-lane roads, curb extensions (narrowing) and ped signs are recommended to improve safety for pedestrians.

Moreover, various transit services to the Proposed Project Site have been anticipated in the Irvine Transit Vision, a framework for bus and shuttle services that connect with OCTA local and regional bus operations and regional rail services via the Irvine Metrolink Station. The 2012 Modified Project expands opportunities for such services to occur by providing a continuous Secondary arterial connection along

"O" Street / Ridge Valley from Marine Way to Portola Parkway, and a direct north-south Commuter roadway connection along "B" Street from Irvine Boulevard to Marine Way near the Irvine Metrolink Station.

Specific details regarding the expansion of the trail network would be considered in conjunction with future maps/master plans and amendments to the Master Landscape and Trails Plan.

Figure 5.12-33, *Project Area Transit Features*, illustrates potential transit services for the Proposed Project Site which are comparable to the routes presented in the recommended Preferred Alternative and Complementary OCTA Services scenarios evaluated in the Irvine Transit Vision report. The potential service routes are conceptual; the routing, funding and operation of future City or OCTA services are yet to be determined. The purpose of this concept planning effort is to determine potential transit stop locations and ensure that physical site planning for the 2012 Modified Project districts will accommodate appropriate pedestrian connectivity to the potential stop locations.

Thus, as discussed in more detail in Section 5.7, *Land Use*, the 2012 Modified Project achieves goals of the City's General Plan for effective non-motorized transportation through enhanced local street connectivity, an extensive network of walkways and bikeways, and the arrangement of land uses for access by various modes of transportation.

5.12.5 Cumulative Impacts

The geographic scope for traffic includes cumulative growth projections for Orange County that are reflected in Orange County Projections ("OCP")-2004, as modified by more recent data as described in Section 4.5, *Cumulative Impact Assumptions*, of this DSSEIR. Past projects in Orange County cities and unincorporated areas have converted undeveloped and agricultural land to urban uses resulting in area residential and employment population increases and associated demand for expansions of roadway systems. The contribution of these past projects to area growth is also reflected in OCP-2006 and OCP-2010. As described in Section 5.9, *Population and Housing*, the Orange County Projections are prepared, and periodically updated, by the Center for Demographic Research at California State University, Fullerton, based on a Memorandum of Understanding with the Orange County Council of Governments (OCCOG). General Plan information from each jurisdiction within Orange County is used in the development of growth projections for the County. The OCP growth projections, as adopted by the OCCOG, are then incorporated into traffic models approved for use by the Orange County Transportation Authority (i.e., the Orange County Transportation Analysis Model - OCTAM), which provides the countywide traffic model basis for more localized traffic models, such as that used by the City (i.e., the Irvine Transportation Analysis Model - ITAM). As such, the traffic modeling for future conditions includes areawide growth as anticipated in adopted growth projections (e.g., OCP-2004).

Because the modeling used for the traffic analyses contained in this Section 5.12, *Transportation and Traffic*, incorporates OCGP-2004 projections, the analyses assess the traffic impacts of all cumulative development reasonably anticipated by Year 2015, Year 2030 and Post-2030. As discussed above, most intersections and roadway/freeway/tollway/ramp segments will operate at acceptable levels of service with the existing or planned improvements, although some may require additional improvements, as described in Section 5.12.6, Applicable Mitigation Mitigation Measures from the 2011 Certified EIR and Section 5.12.9, *Additional Mitigation Measures for the 2012 Modified Project*. It should be noted, however, that it has been anticipated in the traffic analysis that the cumulative impact of 2012 Modified Project traffic along with other regional growth at the identified ramp and freeway locations will be

largely mitigated through a combination of regional programs that are the responsibility of other agencies such as Lake Forest and CalTrans. The Applicant will contribute its fair share to these regional programs, as applicable. However, if these programs are not implemented by the agencies with the responsibility to do so, the cumulative freeway/tollway ramp impacts would remain significant and unavoidable. Under these circumstances, the 2012 Modified Project could result in a cumulatively significant traffic impact that may remain significant and unavoidable.

Pending Projects Sensitivity Analysis

Six future "pending" scenarios (2015, 2030, and Post 2030, each with the 2012 Modified Project Options 1 and 2) are analyzed to determine if any additional level of service deficiencies are created within the study area with pending development projects and changes to the MPAH. Pending with Project scenarios are compared against 2011 Approved Project conditions (with the pending projects) so that any deficiencies on the study area circulation system associated with the pending projects in combination with the 2012 Modified Project can be identified.

Although several arterial roadway segments exceed their theoretical daily capacity with or without the pending-plus-project scenario, they are projected to operate at acceptable levels of service during peak hours for all future conditions (2015, 2030, and Post-2030 conditions) included in the sensitivity analysis.

2015 With Pending Projects, Options 1 and 2

The 2015 AM and PM peak hour intersection capacity utilization (ICU) results indicate that none of the intersections are forecast to exceed adopted thresholds with the pending-plus-project scenario for 2012 Modified Project Option 1. Although several mainline freeway segments and freeway ramps are projected to operate at LOS F during peak hours, the pending-plus-project 2015 scenario for 2012 Modified Project Option 1 does not cause traffic to exceed adopted impact thresholds.

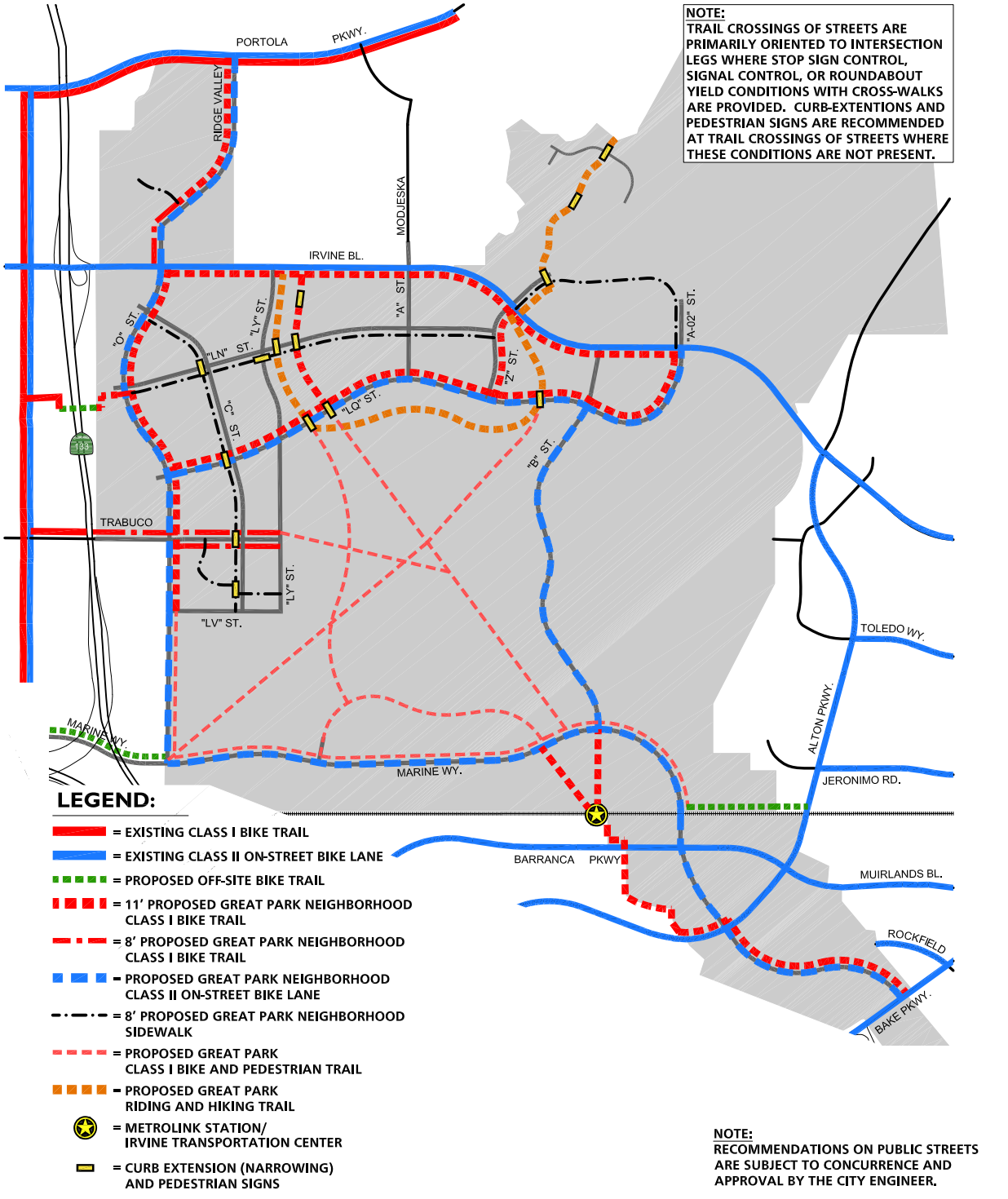
The SR-133 NB loop on-ramp from Barranca Parkway is forecast to exceed adopted impact thresholds for the Year 2015 with the pending-plus-project 2012 Modified Project Option 2 conditions. The project mitigation at this location is fair share participation (on a NITM methodology fair share basis) in converting the HOV preferential lane at the on-ramp to a second metered mixed-flow lane (capacity = 1,500). This fair share improvement results in a v/c = 0.83 (LOS "D"). No intersections are forecast to exceed adopted thresholds with the pending-plus-project scenario for 2012 Modified Project Option 2. Although several mainline freeway segments are projected to operate at LOS F during peak hours, the pending-plus-project 2015 scenario for Option 2 does not cause traffic to exceed adopted impact thresholds.

2030 With Pending Projects, Options 1 and 2

For 2030 pending-plus project conditions, there are seven intersection impacts for Option 1, six intersection impacts for Option 2 (six are previously identified locations with no additional mitigation for the pending condition), one ramp impact for Options 1 and 2 (previously identified location with no additional mitigation for the pending condition), and one directional freeway mainline fair share impact for Options 1 and 2. Refer to Table 9-25 of the Traffic Study for specific impact locations.

If the pending projects are approved, 2012 Modified Project Options 1 and 2 mitigation at the El Toro Road / Portola Parkway intersection consists of fair share participation in the addition of a southbound right turn overlap phase (a fully funded LFTM improvement).

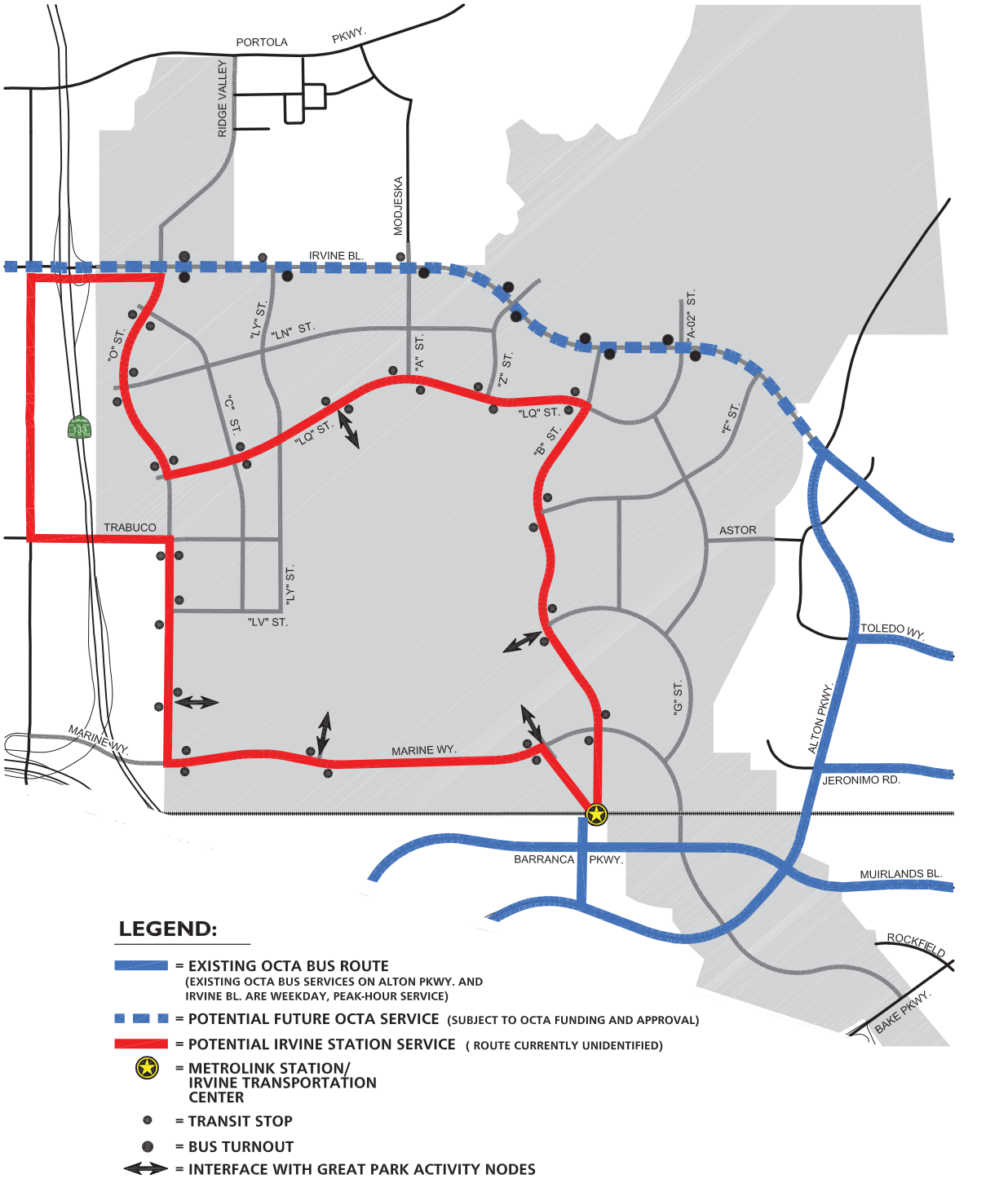
Project Area Bikeways and Trails



Source: Urban Crossroads 2012

Note: For illlustrative purposes only. Not intended to depict the approved Master Landscape and Trails Plan.

Project Area Transit Features



Source: Urban Crossroads 2012

If the pending projects are approved, the 2012 Modified Project will be required to contribute its fair share for a directional capacity enhancement (equivalent to a single general purpose lane) at the freeway mainline segment of the I-5 Northbound, n/o Culver in order to mitigate the 2012 Modified Project Options 1 and 2 cumulative impacts. Per NITM, the fair share of improvement cost is calculated based the incremental daily volume change from the 2011 Approved Project to the 2012 Modified Project, divided by all traffic at that improvement location, including existing and future traffic.

Post-2030 With Pending Projects, Options 1 and 2

For post-2030 pending project conditions, there are two intersection impacts for Options 1 and 2 (previously identified locations with no additional mitigation for the pending condition), one ramp impact for Options 1 and 2 (previously identified location with no additional mitigation for the pending condition) and no directional mainline impacts. Refer to Table 9-26 of the Traffic Study for specific impact locations.

5.12.6 Applicable Mitigation Measures from the 2011 Certified EIR

The following mitigation measures were included in the 2011 Certified EIR. These mitigation measures are also included in the 2012 Modified Project, and additional mitigation measures have been added for the purposes of this DSSEIR. This DSSEIR proposes to make certain modifications to the mitigation measures adopted by the City for the Approved Project. In addition, the language of TRAN 1 from the Certified EIR is proposed to be modified as indicated below. Modifications to the original mitigation measure are identified in ~~strikeout~~ text to indicate deletions and <u>underlined</u> to signify additions.

TRAN1 was modified by the City and approved as shown with 2nd AVTTM 17008 (PC Resolution 11-3109). References to Existing Planning Area 30 are proposed to be removed since the 2012 Modified Project's proposed GPA/ZC consolidates Existing PAs 30 and 51 into one PA to be designated Combined PA 51.

TRAN1 Prior to the approval of any final map <u>of a subsequent subdivision map</u> (other than a financing and conveyance map) ~~allocating~~ <u>for any land use, excluding single family land uses (single family land use includes single family detached and single family attached projects), parks, schools, daycare, and religious institutions, that allocates</u> building intensity ~~within Planning Areas 30 and 51, and prior to issuances of any building permits for permanent improvements~~ within Planning Area~~s 30 and~~ 51, the landowner or subsequent project applicant shall either (i) apply for annexation of any areas within the final map to the Irvine Spectrum Transportation Management Association (TMA) ("Spectrumotion") in accordance with Article X of the recorded Declaration of Covenants, Conditions and Restrictions (CC&Rs) for the Irvine Spectrum TMA, including any supplementary or amended CC&Rs, to reduce traffic, air quality and noise impacts or (ii) develop and implement a similar transportation management plan containing the elements and meeting the criteria described below as approved by the Director of Public Works. <u>The transportation management plan shall be implemented via payment of assessment dues to an organization similar to Spectrumotion for all land uses, with the exceptions noted above. While affordable housing units will be included, their assessment fees will be covered by other remaining adjacent land uses. The implementation (payment of assessment dues) for either option described above shall occur prior to issuance of building permit(s)</u>:

Transportation Management Plan (TMP)

The development and implementation of a Transportation Management Plan is an identified mitigation measure to manage transportation access for Planning Area~~s 30 and~~ 51. This document summarizes the key elements of the TMP.

A. Introduction

The purpose of this document is to provide an outline for a comprehensive TMP for the Planning Area~~s 30 and~~ 51 ("Great Park TMP"). This report is not intended to provide the specific details of the plan, but rather to highlight the key components and provide direction for subsequent detailed planning and implementation activities. When preparation of the TMP is undertaken, all of the agency and stakeholders will be invited to provide input.

The applicant may elect to annex Combined PA 51 ~~and a portion of Planning Area 30~~ into the Irvine Spectrum Transportation Management Association (Spectrumotion). Spectrumotion is a private, non-profit Transportation Management Association (TMA) formed to reduce traffic congestion in Irvine Spectrum. Spectrumotion promotes, markets, and subsidizes alternatives to solo-commuting and assists the business community in complying with trip reduction related requirements. Membership is mandatory to property owners with deed restrictions requiring participation in the TMA. Membership dues provide the funding for the Association and its programs, which offer a variety of employer and commuter services focused on reducing vehicular trip generation.

In the event that the applicant elects not to annex into Spectrumotion, a TMP similar to that provided by Spectrumotion will be developed and implemented. This document sets forth the components of the TMP should it be necessary.

B. Transportation Management Plan Framework

The key elements of the Great Park TMP are set forth below:

New Hire Orientation: Inform newly hired employees of commuting services available to them.

Public Transportation Pass Sales: Provide a central location for purchase of passes to available transit services ((i.e., OCTA buses, Metrolink, Amtrak, etc.).

Vanpool and Carpool Formation Assistance: Perform all of the administrative work necessary to establish van pools and car pools.

On-site Promotions: Hold rideshare promotions at work sites and assist in employer assistance promotions.

Telecommuting/Alternative Work Schedule Consulting: Assist employers in developing and implementing a telecommuting or alternative work schedule program.

Personalized Commute Consulting: Provide a personalized commute profile to any commuter, which includes carpool match list containing the names of other commuters in the North Irvine Sphere that live and work near each other.

Website: Maintain a website with all of their program information available.

Rideshare Promotions: Conduct high visibility rideshare promotions as a means to advertise its services.

Subsidies: To the extent financially feasible, offer subsidies to assist in the formation of vanpools, the formation of carpools, and to encourage the trying of transit services.

Public Agency Coordination: Work closely with various public and quasi-public agencies to improve bus and commuter rail service to the Spectrum and North Irvine Sphere areas.

C. Transportation Management Plan Implementation

As part of the TMP, a process will be established to monitor its effectiveness in reducing peak hour trip generation in the Combined PA ~~30 and~~ 51. Provision shall be made for the Plan to be modified as appropriate to enhance its effectiveness.

TRAN2 Following adoption of a land use plan and circulation plan for the Great Park property and before the issuance of any building permits within the base property, the City of Irvine shall request a cooperative study with OCTA and other affected jurisdictions to amend the Orange County Master Plan of Arterial Highways (MPAH). Marine Way, Trabuco Road from the SR-133 toll way to "O" Street (formerly College Road), and Ridge Valley (formerly "Y" Street) should be included on the MPAH.

TRAN3 Prior to issuance of the first building permit for dwelling units or non-residential square footage, a Fee Reallocation Study shall be completed to recalculate the NITM Fees reflecting any fair share allocation modifications. The landowner or subsequent property owner shall submit the Fee Reallocation Study under a separate cover to be approved by the Director of Public Works, in consultation with the NITM Advisory Committee.

TRAN4 Prior to approval of the last final map for the 2011 Approved Project (or any portion thereof in the event that the final map is approved in multiple phases), the landowner or subsequent property owner shall pay its fair share of the costs of the following mitigation in an amount to be mutually agreed upon between the landowner or subsequent property owner and the City and reflective of the costs of the mitigation at the time of payment:

- 286 Jeffrey Road & Roosevelt: Restripe the existing eastbound approach to provide a shared through/ right turn lane within the existing right-of-way.

- 361 Bake Parkway & Portola Parkway: Restripe the existing northbound approach to provide a shared through/left lane (which currently exists as a through lane) within the existing right-of-way and modify the existing traffic signal operation for a north/south split phase signal operation. Alternatively, restripe the existing northbound approach to provide dual left turn lanes in combination with a single through lane and single right turn lane within the existing right-of-way, and modify signal operation to include northbound right turn overlap phase.

- 374 Lake Forest & Portola Parkway (Pending Projects analysis impact): Convert the existing northbound approach from de-facto right-turn to a dedicated right-turn, and modify the existing traffic signal operation to include right turn overlap phase.

5.12.7 Level of Significance Before Additional Mitigation

The preceding analysis sets forth the locations that would have significant traffic impacts without mitigation in the 2012 Modified Project scenario for the Year 2015, Year 2030 and/or Post-2030.

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: Impact 5.12-2.

Without mitigation, like the 2011 Approved Project, the following impacts would be **significant**:

- **Impact 5.12-1** Project generated traffic would result in significant impacts at a number of intersections in the Year 2015, Year 2030 and Post-2030 conditions.

5.12.8 Additional Mitigation Measures for the 2012 Modified Project

TRAN5 **(For specific Project-related non-NITM improvements):** In conjunction with the submittal of any tentative tract maps/tentative parcel maps for the Project within Combined PA 51, the landowner or subsequent project applicant shall prepare, subject to review and approval of the City, the required tentative tract map/tentative parcel map (TTM/TPM) level traffic study per City Resolution No. 03-61. This traffic study will verify whether the intersection locations listed below, which have been identified as impacted in this SSEIR, are projected to be impacted by the subject project of the Interim Year Analysis. For those intersections impacted by subject project of the TTM/TPM traffic study, the tentative tract map/tentative parcel map will be conditioned to construct the necessary improvements that have been identified in the TTM/TPM traffic study. For those intersections listed below, which are not projected to be impacted by the subject project of the TTM/TPM traffic study, and prior to approval of the last final map for the 2012 Modified Project (or any portion thereof in the event that the final map is approved in multiple phases), the land owner or subsequent property owner shall construct, pay fair share of the costs or enter into an agreement with the City to establish the mechanism in which the funds generated by the mitigations shall be provided and utilized by Caltrans, City of Lake Forest, City of Tustin and/or City of Irvine toward implementing the improvements.

- 16. Newport & Irvine – Modification of signal to provide a northbound right turn overlap phase. (2030, Option 2) Improvement no longer needed if Pending projects are approved.

- 54. Browning & Irvine – Application of ATMS, subject to approval by City of Tustin. (2030, Options 1 & 2)

- 221. Culver & Bryan – Addition of a westbound defacto right turn lane. (2030, Option 2) Improvement no longer needed if Pending projects are approved.

- 286. Jeffrey & Roosevelt – Conversion of the eastbound shared through/right lane into a through lane and addition of a second right turn lane. (Post-2030, Options 1 & 2)

- 290. Jeffrey & Barranca – Application of PA9C-identified ATMS. (2030. Options 1 & 2)

- 291. Jeffrey & Alton – Provision of an eastbound standard right-turn lane with right-turn overlap resulting in an ultimate eastbound lane configuration of 2 left-turn lanes, 2 through lanes, and 1 right-turn lane. (Post-2030, Options 1 & 2)

- 303. Sand Canyon & I-5 NB ramp/Marine Way – Conversion of the northbound defacto right turn lane to a standard right turn lane with right turn overlap signal operation. (2030, Options 1 & 2)

- 306. Sand Canyon & Oak Canyon - Fair Share contribution towards – conversion of the westbound shared through/right lane to a single through lane and conversion of the westbound right-turn lane into a free-right turn lane, as identified in the PA40/12 GPA/ZC. (2030, Options 1 & 2) Improvement no longer needed if Pending projects are approved.

- 321. Laguna Canyon & Old Laguna Canyon – Application of ATMS, subject to approval by the Director of Public Works. Alternate improvement is the addition of a fourth northbound through lane. (Post-2030, Options 1 & 2) Improvement no longer needed if Pending projects are approved.

- 366. Bake & Rockfield – Fully funded LFTM improvement: Conversion of a westbound through lane to a third left turn lane. (2030, Options 1 & 2)

TRAN6 **(For specific Project-related NITM improvements):** The NITM Program provides a funding mechanism for the coordinated and phased installation of required traffic and transportation improvements established in connection with land use entitlements for City of Irvine Planning Areas 1, 5, 6, 8, 9, 40 and 51. As established by City Ordinance No. 03-20, Combined PA 51 is included in this program and, as such, is required to pay its fair share towards the List of NITM Improvements included within the established NITM Program. The following Project impacted locations are included in the NITM List of Improvements and thus, payment of NITM fees will mitigate the Combined PA 51 project's fair share responsibility towards these improvements:

- 228. Culver & Barranca – Conversion of the westbound defacto right-turn lane to a through lane. (2030, Options 1 & 2)

- 424. Los Alisos & Rockfield – Addition of a southbound right turn lane. (2030, Option 1) Improvement no longer needed if Pending projects are approved.

- I-5 Northbound Off-ramp to Jamboree – Addition of a second drop lane from the I-5 to the Jamboree off-ramp. (2030, Option 1)

TRAN7 **(If pending projects are approved, Project-related non-NITM improvements):** In the event that all of the pending (not approved) projects analyzed are approved and in conjunction with the submittal of any tentative tract maps/tentative parcel maps for the Project within Combined PA 51, the landowner or subsequent project applicant shall prepare, subject to review and approval of the City, the required tentative tract map/tentative parcel

map (TTM/TPM) level traffic study per City Resolution No. 03-61. This traffic study will verify whether the intersection locations listed below, which have been identified as impacted in this SSEIR, are projected to be impacted by the subject project of the Interim Year Analysis. For those intersections impacted by subject project of the TTM/TPM traffic study, the tentative tract map/tentative parcel map will be conditioned to construct the necessary improvements that have been identified in the TTM/TPM traffic study. For those intersections listed below, which are not projected to be impacted by the subject project of the TTM/TPM traffic study, and prior to approval of the last final map for the 2012 Modified Project (or any portion thereof in the event that the final map is approved in multiple phases), the land owner or subsequent property owner shall construct, pay fair share of the costs or enter into an agreement with the City to establish the mechanism in which the funds generated by the mitigations shall be provided and utilized by Caltrans, City of Lake Forest, City of Tustin and/or City of Irvine toward implementing the improvements.

- 54. Browning & Irvine – Application of ATMS, subject to approval by City of Tustin. (2030, Options 1 & 2)

- 286. Jeffrey & Roosevelt – Conversion of the eastbound shared through/right lane into a through lane and addition of a second right turn lane. (Post-2030, Options 1 & 2)

- 290. Jeffrey & Barranca – Application of PA9C-identified ATMS.

- 291. Jeffrey & Alton – Provision of an eastbound standard right-turn lane with right-turn overlap resulting in an ultimate eastbound lane configuration of 2 left-turn lanes, 2 through lanes, and 1 right-turn lane. (2030 & Post-2030, Options 1, Post-2030, Option 2)

- 303. Sand Canyon & I-5 NB ramp/Marine Way – Conversion of the northbound defacto right turn lane to a standard right turn lane with right turn overlap signal operation. (2030, Options 1 & 2)

- 366. Bake & Rockfield – Fully funded LFTM improvement: Conversion of a westbound through lane to a third left turn lane. (2030, Options 1 & 2)

- 417. El Toro & Portola – Fully funded LFTM improvement: Addition of a southbound right turn overlap phase. (2030, Options 1 & 2)

TRAN8 **(If pending projects are approved, For specific Project-related NITM improvements):** The NITM Program provides a funding mechanism for the coordinated and phased installation of required traffic and transportation improvements established in connection with land use entitlements for City of Irvine Planning Areas 1, 5, 6, 8, 9, 40 and 51. As established by City Ordinance No. 03-20, Combined PA 51 is included in this program and, as such, is required to pay its fair share towards the List of NITM Improvements included within the established NITM Program. In the event that all of the pending (not approved) projects analyzed are approved, the following Project impacted locations are included in the NITM List of Improvements and thus, payment of NITM fees will mitigate the Combined PA 51 project's fair share responsibility towards these improvements:

- 228. Culver & Barranca – Conversion of the westbound defacto right-turn lane to a through lane. (2030, Options 1 & 2)

- I-5 NB Off-ramp to Jamboree – Addition of a second drop lane from the I-5 to the Jamboree off-ramp. (2030 & Post-2030, Option 1 & 2)

TRAN9 **(Caltrans Fair Share):** Prior to approval of the last final map for the 2012 Modified Project (or any portion thereof in the event that the final map is approved in multiple phases), the land owner or subsequent property owner shall make a good-faith effort to enter into a fair share agreement with Caltrans and the City of Irvine to establish its fair share allocation towards the future implementation of the following freeway facility improvements. It may not be possible to successfully negotiate the agreement with Caltrans. Fair share contribution shall be calculated using the same methodology for determining fair share contributions as included in the North Irvine Transportation Mitigation Program. The Agreement shall establish the mechanism in which the funds generated by the Project's fair share mitigations shall be provided and utilized by Caltrans and/or City of Irvine toward implementing the following improvements:

- I-5 Northbound, north of Culver – Directional capacity enhancement equivalent to a single general purpose lane. (2030, Options 1 & 2)

- I-5 Northbound, north of Jeffrey – Directional capacity enhancement equivalent to a single general purpose lane. (2030, Options 1 & 2) Improvement no longer needed if Pending projects are approved.

- I-405 Northbound, north of Jeffrey – Directional capacity enhancement equivalent to a single general purpose lane. (2030 and Post-2030, Options 1 & 2) Improvement no longer needed if Pending projects are approved.

TRAN10 **(If pending projects are approved, Caltrans Fair Share):** In the event that all of the pending (not approved) projects analyzed are approved, and prior to approval of the last final map for the 2012 Modified Project (or any portion thereof in the event that the final map is approved in multiple phases), the land owner or subsequent property owner shall make a good-faith effort to enter into a fair share agreement with Caltrans and the City of Irvine to establish its fair share allocation towards the future implementation of the following freeway facility improvements. It may not be possible to successfully negotiate the agreement with Caltrans. Fair share contribution shall be calculated using the same methodology for determining fair share contributions as included in the North Irvine Transportation Mitigation Program. The Agreement shall establish the mechanism in which the funds generated by the Project's fair share mitigations shall be provided and utilized by Caltrans and/or City of Irvine toward implementing the following improvements:

- SR-133 northbound loop on-ramp at Barranca Parkway – Conversion of the HOV preferential lane to a second metered mixed-flow lane (2015, Option 2)

- I-5 Northbound, north of Culver – Directional capacity enhancement equivalent to a single general purpose lane. (2030, Options 1 & 2)

TRAN11 **(Rockfield MPAH Amendment)** The City of Irvine shall submit a request to OCTA and other affected jurisdictions to amend the Orange County Master Plan of Arterial Highways (MPAH) to eliminate the extension of Rockfield Boulevard from the eastern project boundary to Marine Way.

TRAN12 **(If Rockfield MPAH Amendment not approved by OCTA)** In the event that the Rockfield MPAH change does not occur and the Rockfield connection to Marine Way is ultimately constructed, and in addition to previously identified Post-2030 Option 1 improvements, the land owner or subsequent property owner shall enter into a fair share agreement with the City of Irvine and shall make a good-faith effort to enter into a fair share agreement with Caltrans to establish its fair share allocation towards the future implementation of the conversion of the HOV preferential lane at the SR-133 northbound loop on-ramp at Barranca Parkway to a second metered mixed-flow lane. It may not be possible to successfully negotiate the agreement with Caltrans. The fair share contribution shall be calculated using the same methodology for determining fair share contributions as included in the North Irvine Transportation Mitigation Program. The Agreement shall establish the mechanism in which the funds generated by the Project's fair share mitigations shall be provided and utilized by Caltrans and/or City of Irvine. For Option 2, the mitigations as indicated in TRAN5 through TRAN10 remain unchanged in the event that the Rockfield MPAH change does not occur and the Rockfield connection to Marine Way is ultimately constructed.

5.12.9 Level of Significance After Mitigation

The 2011 Certified EIR concluded that with the 2011 Approved Project all intersections and roadway/freeway/tollway/ramp segments would operate at acceptable levels of service with the existing or planned improvements. However, the traffic analysis assumed that the cumulative impact of project traffic along with other regional growth at the identified ramp and freeway locations will be mitigated through a combination of regional programs that are the responsibility of other agencies. Therefore, the 2011 Certified EIR concluded that cumulative freeway/tollway ramp impacts would remain significant and unavoidable if these programs are not implemented by the agencies with the responsibility to do so.

Traffic impacts of the 2012 Modified Project have been identified by analyzing the study area circulation system based on existing traffic conditions and 2015, 2030 and Post-2030 future traffic conditions. In some cases, new project impacts that were not mitigated by improvements identified in the North Irvine Transportation Mitigation (NITM) Program have been identified for project development scenarios. Recommended mitigation measures for each impacted location are presented above. If there are intersections where identified improvements may not be feasible due to cost, right-of-way concerns, or community opposition, traffic impacts could remain significant and unavoidable.

Cities of Lake Forest, Laguna Woods, Mission Viejo and County of Orange Intersections and Arterial Segments

Inasmuch as the primary responsibility for approving and/or completing certain improvements located outside of Irvine lies with agencies other than the City (i.e., City of Lake Forest, Laguna Woods, Mission Viejo, Orange County, and Caltrans), there is the potential that significant impacts may not be fully mitigated if such improvements are not completed for reasons beyond the City's control (i.e., the City cannot undertake or require improvements outside of Irvine's jurisdiction). Should that occur, impacts relating to traffic generated by the project would remain significant.

The City adopted the NITM Program to establish a funding mechanism for the transportation improvement mitigation measures identified in the EIRs for three future development projects in north Irvine; 1) Spectrum 8/PA40, 2) Irvine Northern Sphere Area (PAs 5B, 6, 8A and 9), and 3) the Orange County Great Park. This program will contribute to the improvement of facilities within Irvine and a fair-share to improvements outside Irvine. The City acknowledges the fair-share cost of improvements to those facilities; however, the adjacent Cities have full control over implementing the identified improvements under their jurisdiction. If improvements are not completed for reasons beyond the City's control, the 2012 Modified Project's traffic impacts would remain significant.

Caltrans Main-Line Segments and Ramps

State highway facilities within the study area are not within the jurisdiction of the City. Rather, those improvements are planned, funded, and constructed by the State of California. OCTA's Renewed Measure M provides a potential funding source and identifies general improvements on the I-5 Freeway within the study area and were analyzed at their recommended buildout in the traffic study for the 2012 Modified Project.

The City adopted the NITM Program to establish a funding mechanism for the transportation improvement mitigation measures identified in the Environmental Impact Reports (EIRs) for three future development projects in north Irvine; 1) Spectrum 8/PA40, 2) Irvine Northern Sphere Area (PAs 5B, 6, 8A and 9), and 3) the Orange County Great Park. This program is specifically in place to contribute to the improvement of facilities within Irvine and a fair-share to improvements outside Irvine. The City acknowledges the fair-share cost of improvements to Caltrans facilities; however, Caltrans has full jurisdiction toward implementing the identified improvements under its jurisdiction.

While potential impacts to the freeway mainline segments and ramps have been evaluated, implementation of the transportation improvements to Caltrans facilities listed above is the primary responsibility of Caltrans. While Caltrans has recognized that private development has a role to play in funding fair share improvements to impacts on the I-5, I-405, SR-133, and SR-241, Caltrans has not adopted a program that can ensure that locally-contributed impact fees will be tied to improvements to freeway mainlines and only Caltrans has jurisdiction over mainline improvements. Because Caltrans has exclusive control over state highway improvements, ensuring that developer fair share contributions to mainline improvements are actually part of a program tied to implementation of mitigation is within the jurisdiction of Caltrans. However, a number of funding programs are in place in Orange County to assist in improving and upgrading the regional transportation system. If these programs are not implemented by the agencies with the responsibility to do so, the project's freeway/tollway ramp and mainline impacts would remain significant and unmitigated.

Consequently, like the 2011 Approved Project, Impact 5.12-1 are considered **significant and unavoidable**.

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