

Chapter 1 Project Description

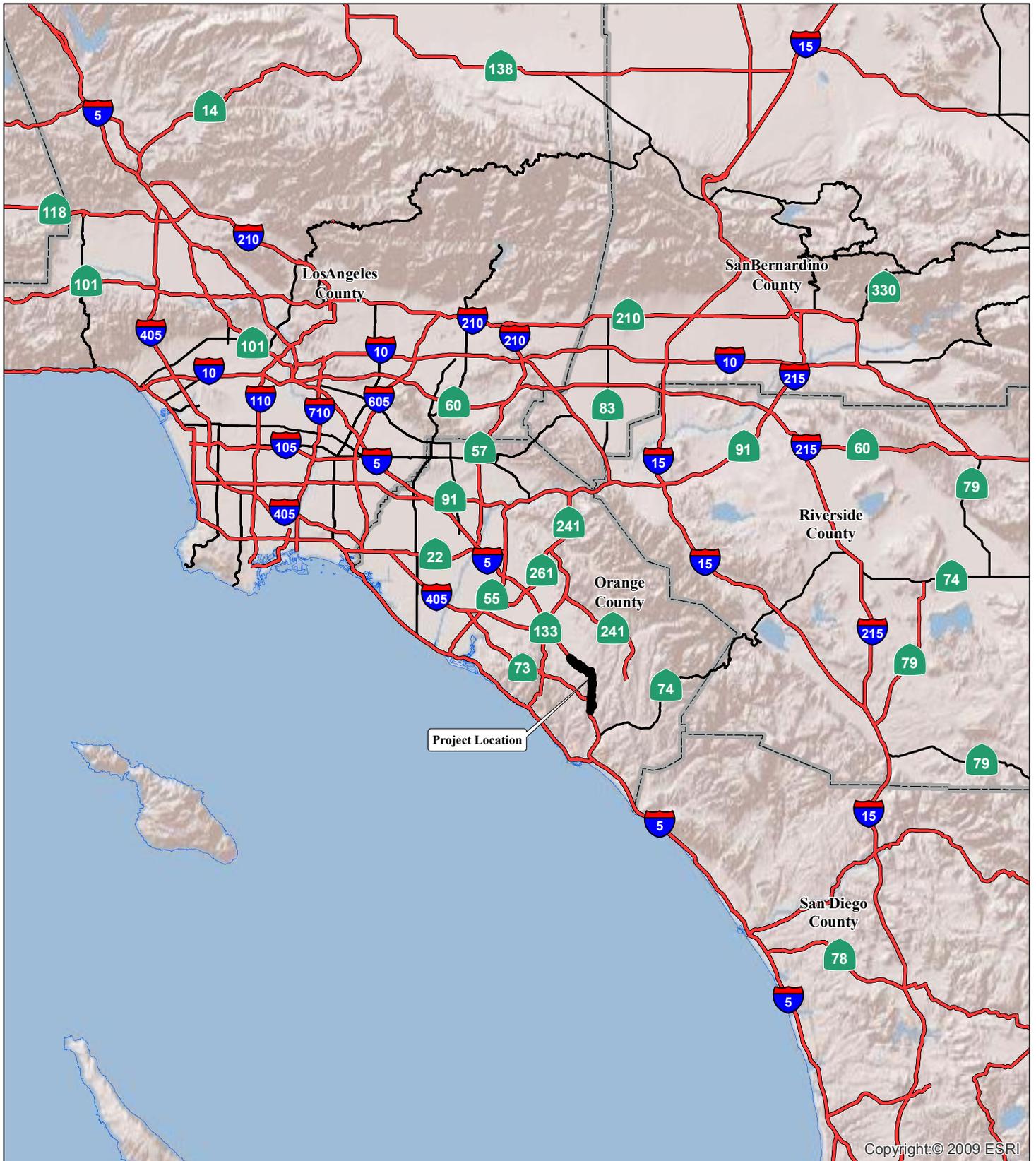
1.1 Introduction

The California Department of Transportation (Caltrans) is the lead agency under the California Environmental Quality Act (CEQA). Caltrans is also the lead agency under the National Environmental Policy Act of 1969 (NEPA), as assigned by the Federal Highway Administration (FHWA), in accordance with NEPA (42 United States Code [USC] 4321 et seq.); and the Council on Environmental Quality (CEQ) Regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508). Caltrans, in cooperation with the Orange County Transportation Authority (OCTA), the City of Laguna Niguel, the City of Mission Viejo, the City of Laguna Hills, and the City of Lake Forest, is proposing to widen Interstate 5 (I-5) from State Route 73 (SR-73) to El Toro Road. This project is known as the I-5 Widening Project: SR-73 to El Toro Road (or the proposed project). A regional location map is included in Figure 1-1.

Caltrans, in cooperation with OCTA, proposes to add general-purpose lanes in each direction on I-5 between Avery Parkway and Alicia Parkway and extend the second high-occupancy vehicle (HOV) lane from Alicia Parkway to El Toro Road. The project limits on I-5 extend from 0.5 mile (mi) south of the SR-73 interchange (Post Mile [PM] 12.4) to 0.2 mi north of the El Toro Road Undercrossing (UC) (PM 18.9), reestablish existing auxiliary lanes and construct new auxiliary lanes, and improve several existing on- and off-ramps. Additionally, the project proposes no HOV buffer, which will accommodate continuous access to the HOV lanes throughout the project limits (approximately six mi). A project location map is included in Figure 1-2.

The proposed project is included in the Southern California Association of Governments (SCAG) 2012–2035 Regional Transportation Plan Sustainable Communities Strategy (RTP/SCS) (RTP ID 2M0730). The 2012 RTP was found to conform to the State Implementation Plan (SIP) on June 15, 2012 by the FHWA and Federal Transit Administration (FTA). The project is also included in the SCAG financially constrained 2013 Federal Transportation Improvement Program (FTIP). The FTIP was determined to conform to the SIP by the FHWA and FTA on December 14, 2012 (FTIP ID ORA111801).

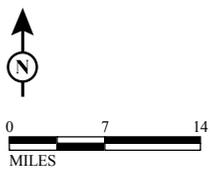
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LEGEND

 Project Location

FIGURE 1-1



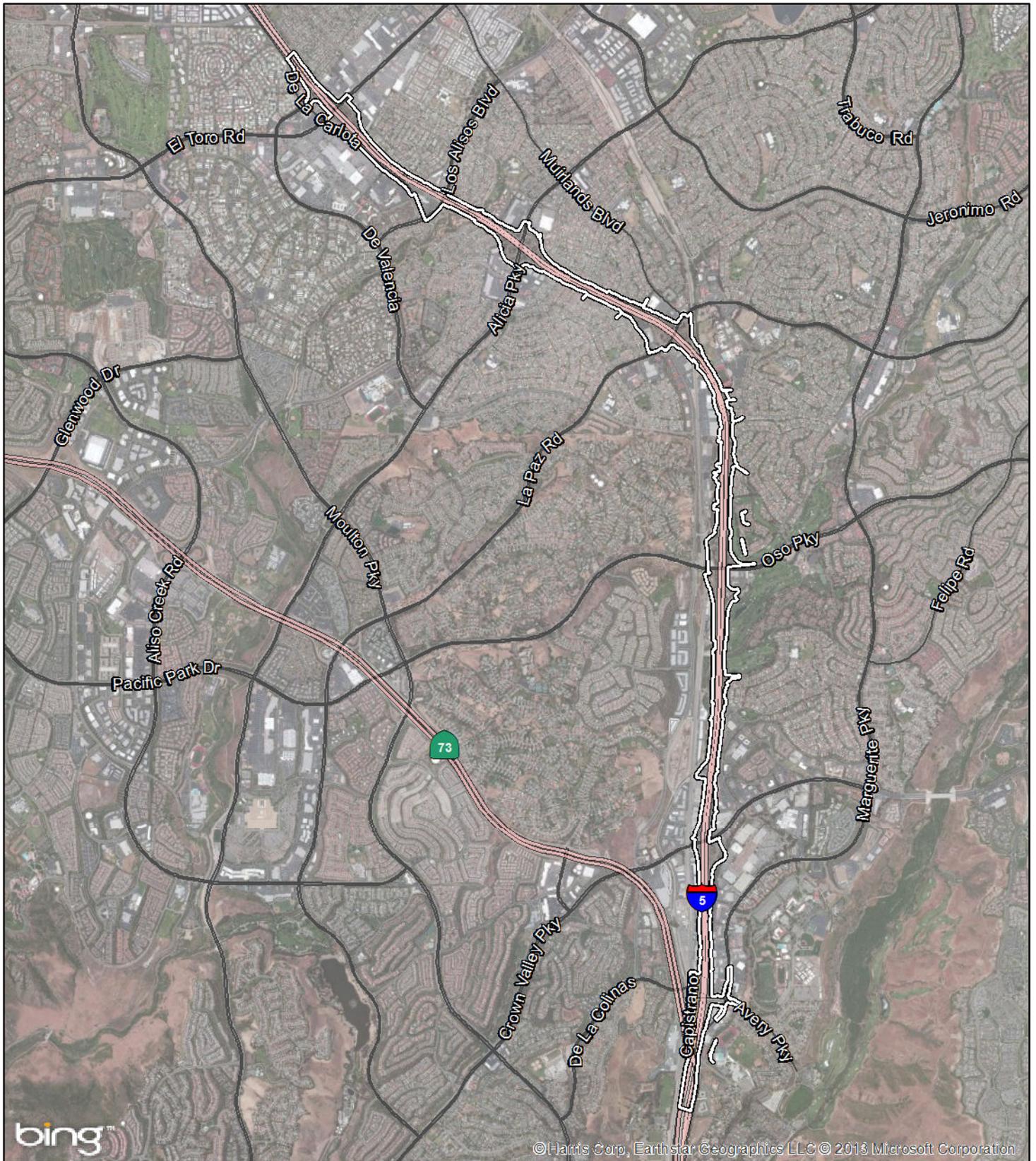
I-5 Widening Project: SR-73 to El Toro Rd

Regional Location

12-ORA-5 PM 12.4/18.9

EA# 0K0200

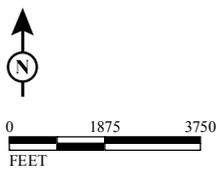
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LEGEND

 Project Location

FIGURE 1-2



SOURCE: Bing Maps (c.2010)

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I-5 Widening Project: SR-73 to El Toro Rd

Project Location

12-ORA-5 PM 12.4/18.9

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The FTIP is a capital listing of all transportation projects proposed over a six-year period for the SCAG region. The projects include highway improvements; transit, rail, and bus facilities; HOV lanes; signal synchronization; intersection improvements; and freeway ramps.

The proposed project is planned and programmed under the FTIP. Although Alternative 3 is not consistent with the proposed project description in the FTIP, Alternative 2 (Preferred Alternative) is consistent and listed as follows:

ADD 1 GP LANES FROM AVERY TO ALICIA IN EACH DIRECTIONS; EXTEND 2ND HOV FROM EL TORO TO ALICIA IN EACH DIRECTIONS; PROVIDE OPERATIONAL IMPROVEMENTS; AND RECONSTRUCT INTERCHANGES AT AVERY PKWY & LA PAZ Rd.

Major regional planning studies within the proposed project's Study Area are the South Orange County Major Investment Study (SOCMIS) (see discussion in Section 1.2.2.3, Social Demands and Economic Development, for more information about this project) and the South Orange County Transportation Infrastructure Improvement Project (SOCTIIP). SOCTIIP proposes a 16 mi long toll road in south Orange County connecting I-5 at the San Diego border to State Route 241 (SR-241).

A Route Concept Report (RCR) was prepared and developed by Caltrans District 12 Division of Planning and was approved in April 2000. The RCR shows I-5 as an ultimate 10-lane facility with four mixed-flow lanes, one to two HOV lanes, and auxiliary lanes where feasible in each direction from 0.1 mi south of Avenida Pico to the Los Angeles County line. The RCR is compatible with the RCRs prepared for this route by Caltrans District 7 (Los Angeles County) and Caltrans District 11 (San Diego County).

Subsequent to public circulation of the Initial Study/Environmental Assessment (IS/EA) and consideration of public comments, the Project Development Team (PDT) recommended that Alternative 2 as the Preferred Alternative for the I-5 Widening Project. This chapter provides descriptions of the previous project studies conducted to date, the preferred project alternative, other alternatives considered in this document and other project alternatives previously considered but eliminated from evaluation in this document.

1.1.1 Project Setting

I-5 is a major north-south route that is used for interregional, interstate, and international travel and goods movement. It connects San Diego County from the south to Los Angeles County to the north and traverses many cities, including cities in Orange County. Within

the project limits, I-5 is four general-purpose lanes and one HOV lane in the northbound (NB) and southbound (SB) directions.

The existing I-5 within the project limits is located in a mostly urbanized area of the Cities of Laguna Niguel, Mission Viejo, Laguna Hills, and Lake Forest and provides the primary thoroughfare through these cities. The area surrounding the proposed project is characterized by vacant land, residential, commercial, recreational, educational, and industrial properties located adjacent to the project limits.

1.2 Purpose and Need

1.2.1 Purpose of the Project

The purpose of the I-5 Widening Project is to improve both existing and forecasted mainline congestion on I-5 from SR-73 to El Toro Road and improve interchange operations. The following goals/objectives have also been identified for consideration within the project limits:

- Increase capacity and operations within the Study Area
- Provide extension of the HOV network within a portion of the proposed project limits to improve operation
- Improve merging/diverging from freeway ramps and improve ramp intersections where needed
- Improve existing auxiliary lanes and add auxiliary lanes where needed to improve weaving operations.

1.2.2 Need for the Project

The I-5 corridor is the only major freeway connecting Los Angeles and Orange Counties with San Diego County. The existing (2011) traffic volume for this corridor was approximately 358,000 vehicles per day and is expected to increase by approximately 25 percent by 2045, bringing freeway volumes up to 448,000 vehicles per day.¹ Currently, this stretch of the I-5 corridor has insufficient capacity on the freeway mainline, interchange areas, on- and off-ramps, and local intersections to handle existing and projected future (2045) travel demand in the Study Area. This condition also affects the traffic operation at the interchanges within this segment of I-5. In summary, this corridor is operating with the following deficiencies within the project limits:

¹ *I-5 Widening Project from SR-73 to El Toro Road PA/ED Traffic Study, June 2012 (Table 2-10).*

- A lack of capacity that leads to congestion both during weekdays as well as during weekends and holidays
- Congestion at the freeway on- and off- ramps/intersections due to high traffic demands at the ramps
- Congestion due to constrained weaving and merging between the on- and off- ramps at several interchanges, which is exacerbated by high traffic volumes

1.2.2.1 Capacity, Transportation Demand, and Safety

The quality of traffic flow can be defined in terms of level of service (LOS). The measure used to provide an estimate of LOS on a freeway facility is the density of vehicles traveling on the facility at a specific time. There are six grades of LOS, ranging from LOS A (representing free flow traffic conditions with low volumes and high speeds, resulting in low densities) to F (representing conditions where the traffic volumes exceed capacity and result in forced-flow operations at low speeds, resulting in high densities and delays). Table 1.2-1 illustrates LOS from A to F.

Table 1.2-1 Levels of Service

LEVELS OF SERVICE for Freeways			
Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. No delays
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. No delays
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. Minimal delays
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. Minimal delays
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. Significant delays
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. Considerable delays

Peak hours are the time periods in the morning and evening that correspond to the greatest number of vehicles utilizing roadways or freeways, which usually occur when commuters are traveling to and from work. Traffic volumes represent the number of vehicles on the roadway, and the volume-to-capacity (v/c) ratio represents the number of vehicles on the roadway compared to the capacity of the roadway. As the number of vehicles increases, the LOS decreases. Delay represents the average delay of a vehicle at an intersection/interchange. Existing 2011 LOS within the proposed Study Area are shown in Table 1.2-2. The mainline within the proposed project limits generally exceeds the desired operating condition of LOS C (average delay of 20.1 to 35.0 seconds per vehicle) for most segments. Several segments, in both the NB and SB directions, operate at LOS D (average delay of 35.1 to 55.0 seconds per vehicle), E (average delay of 55.1 to 80.0 seconds per vehicle), or F (average delay of over 80.0 seconds per vehicle). Within the proposed project limits, the a.m. peak hour is more congested on NB I-5, and the p.m. peak hour is more congested on SB I-5, indicating a peak directional flow. However, there are some instances where NB I-5 experiences LOS E and F conditions in the p.m. peak hour and SB I-5 experiences LOS E and F conditions in the a.m. peak hour. This is due to commuter traffic as a result of major employment centers south of El Toro Road.

As shown later in Section 2.2, Growth, Table 2.2-1, SCAG projects that the population in the County of Orange (County) will increase by 14.5 percent between 2008 and 2035. In addition, SCAG projects that the population will increase by 13.2 percent in the City of Lake Forest, 5.6 percent in the City of Laguna Hills, 4.3 percent in the City of Laguna Woods, 4 percent in the City of Laguna Niguel, 4.1 percent in the City of Mission Viejo, and 9.9 percent in the City of San Juan Capistrano by 2035.

Table 1.2-2 presents future vehicle volumes and LOS results for the proposed project limits for the No Build condition in 2045. In 2045, during the a.m. peak hour, the NB volumes are projected to range from approximately 6,310 to 14,600 vehicles. During the p.m. peak hour, SB volumes are expected to range from 7,770 to 13,810 vehicles. This is an increase of approximately 820 to 2,100 vehicles over existing traffic conditions in the NB direction and 960 to 2,190 vehicles in the SB direction. Table 1.2-2 shows that a substantially greater number of freeway segments would operate at LOS F during either one or both peak hours.

As indicated in the *Traffic Report* (June 2012) for 2045, the a.m. peak period is equally or more congested on NB I-5 within the proposed project limits than SB I-5, and the p.m. peak period is equally or more congested on SB I-5 than NB I-5 within the proposed project limits. Table 1.2-2 shows that in the future condition (2045), without the proposed

project, all freeway segments are estimated to operate at LOS D, E, or F, with the exception of the following:

- SB I-5 between SR-73 and Avery Parkway during the a.m. peak period
- SB I-5 at Avery Parkway during the a.m. and p.m. peak period
- SB I-5 at Crown Valley Parkway during the a.m. and p.m. peak period
- NB I-5 at El Toro Road during the p.m. peak period.

Therefore, without the proposed project, the Study Area would experience worsening traffic congestion on the mainline, on- and off-ramps, and local intersections during the a.m. and p.m. peak periods and weekends.

Safety is also a concern in the Study Area. Caltrans Traffic Accident Surveillance and Analysis System (TASAS) provides detailed accident rates for all highways in the State. Caltrans District 12 provided accident data for NB and SB I-5 between the Avery Parkway interchange area (PM 12.3) and the El Toro Road interchange area (PM 18.99) for the period of July 2007 through June 2010.

During the three-year period from July 2007 through June 2010, there were 1,658 accidents within the proposed project limits, with one being fatal and 484 involving injuries. Three segments of the I-5 mainline within the proposed project limits have a higher accident rate than the statewide average for total accidents; two of these segments also have a higher accident rate than the statewide average for fatality and injury accidents. Additionally, improvements to Study Area ramps are needed due to the high traffic demand.

It is anticipated that the proposed project may lead to a decrease in the frequency of congestion-related accidents on the I-5 mainline due to the operational improvements and increased capacity.

Table 1.2-2 Existing Condition (2011) and Future No Build Condition (2045) Mainline LOS

Location	Direction	Existing Condition (2011) Mainline LOS						Future Condition (2045) Mainline LOS (No Build)					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Volume	HOV Volume	LOS	Volume	HOV Volume	LOS	Volume	HOV Volume	LOS	Volume	HOV Volume	LOS
Mainline btwn SR-73 & Avery Parkway	Northbound	6,270	1,060	C	6,690	1,050	D	7,150	1,390	F	7,740	1,380	F
	Southbound	5,940	680	C	7,340	1,230	C	7,000	980	C	8,500	1,670	D
Avery Parkway	Northbound	5,670	1,060	C	6,020	1,050	C	6,410	1,390	F	6,790	1,380	F
	Southbound	5,630	680	C	6,810	1,230	C	6,420	980	C	7,770	1,670	C
Mainline btwn Avery Parkway & Crown Valley Parkway	Northbound	6,350	1,180	F	6,930	1,160	E	7,410	1,510	F	7,840	1,490	F
	Southbound	6,490	780	C	7,740	1,350	D	7,580	1,080	D	9,180	1,700	E
Crown Valley Parkway	Northbound	5,490	1,180	D	6,260	1,160	C	6,310	1,510	F	7,140	1,490	F
	Southbound	5,930	780	C	6,970	1,350	C	6,740	1,080	C	8,040	1,700	C
Mainline btwn Crown Valley Parkway & Oso Parkway	Northbound	7,620	1,310	F	8,380	1,250	F	8,810	1,590	F	9,670	1,580	F
	Southbound	8,090	910	D	9,360	1,500	E	9,530	1,210	F	11,360	1,720	F
Oso Parkway	Northbound	6,960	1,310	F	7,250	1,250	D	7,970	1,590	F	8,490	1,580	E
	Southbound	7,750	910	D	8,850	1,500	D	9,020	1,210	D	10,550	1,720	F
Mainline btwn Oso Parkway & La Paz Road	Northbound	8,670	1,440	F	8,250	1,370	E	10,150	1,640	F	9,820	1,670	F
	Southbound	7,920	1,030	D	9,750	1,640	F	9,310	1,330	E	11,870	1,750	F
La Paz Road	Northbound	8,350	1,440	F	7,510	1,370	D	9,720	1,640	F	9,060	1,670	F
	Southbound	7,800	1,030	D	9,630	1,640	F	9,190	1,330	D	11,650	1,750	F
Mainline btwn La Paz Road & Alicia Parkway	Northbound	10,170	1,550	F	8,400	1,470	E	12,050	1,680	F	10,260	1,720	F
	Southbound	8,200	1,130	C	10,540	1,800	F	9,840	1,430	D	13,030	1,760	F
Alicia Parkway	Northbound	9,800	1,550	E	7,380	1,470	C	11,650	1,680	F	9,160	1,720	F
	Southbound	7,990	1,130	D	9,550	1,800	E	9,590	1,430	D	12,740	1,760	F

Table 1.2-2 Existing Condition (2011) and Future No Build Condition (2045) Mainline LOS

Location	Direction	Existing Condition (2011) Mainline LOS						Future Condition (2045) Mainline LOS (No Build)					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Volume	HOV Volume	LOS	Volume	HOV Volume	LOS	Volume	HOV Volume	LOS	Volume	HOV Volume	LOS
Mainline btwn Alicia Parkway & El Toro Road	Northbound	12,500	1,680	F	1,580	9,350	F	14,600	1,860	F	11,270	1,970	F
	Southbound	9,260	1,240	C	11,620	1,930	F	10,910	1,570	F	13,810	2,450	F
El Toro Road	Northbound	11,520	1,680	F	8,020	1,580	C	13,390	1,860	F	9,680	1,970	C
	Southbound	8,980	1,240	D	11,120	1,930	F	10,560	1,570	F	13,290	2,450	F

Source: I-5 Widening Project from SR-73 to El Toro Road PA/ED Traffic Study (June 2012).

btwn = between

HOV = high-occupancy vehicle

I-5 = Interstate 5

LOS = level of service

PA/ED = Project Approval/Environmental Documentation

SR-73 = State Route 73

1.2.2.2 Roadway Deficiencies

The I-5 corridor within the Study Area has insufficient capacity on the freeway mainline (general-purpose and HOV lanes), resulting in unacceptable LOS E or F conditions during the a.m. and p.m. peak hours and on the weekend/holidays. As discussed above in Section 1.2.2.1, the design year (2045) forecast volumes indicated that peak-hour congestion and delays are expected to worsen in the future. Several factors contributing to the poor LOS and traffic congestion have been identified along this portion of the I-5 corridor, including limited mainline capacity, short merging distances at the on- and off-ramps and constrained weaving. The proposed addition of general-purpose lanes, extension of the section of HOV lane, and ramp modifications are anticipated to help address these roadway deficiencies.

1.2.2.3 Social Demand and Economic Development

I-5 is a corridor of regional and statewide importance since it is the only major freeway corridor for commerce and daily commuters connecting San Diego County to Los Angeles County with freeway-to-freeway interchanges to the SR-73, Interstate 405 (I-405), State Route 55 (SR-55), and State Route 22 (SR-22) freeways. It is also one of the main routes to beaches and tourist attractions in the County's coastal communities.

Regional Plans

Growth management and control plans and programs in the Study Area include the SCAG RTP/SCS, Orange County Congestion Management Program (CMP), Master Plan of Arterial Highways (MPAH)/Long Range Transportation Plan (LRTP), and the SOCMIS.

The SCAG 2012–2035 RTP/SCS includes a strong commitment to reduce emissions from transportation sources to comply with Senate Bill 375, improve public health, and meet the National Ambient Air Quality Standards as set forth by the federal Clean Air Act. As such, the 2012–2035 RTP/SCS contains a regional commitment for the broad deployment of zero- and near-zero emission transportation technologies in the 2023–2035 time frame and clear steps to move toward this objective. This is especially critical for the goods movement system. The development of a world-class zero- or near-zero emission freight transportation system is necessary to maintain economic growth in the region, to sustain quality of life and to meet federal air quality requirements. The 2012 2035 RTP/SCS puts forth an aggressive strategy for technology development and deployment to achieve this objective. This strategy will have many co-benefits, including energy security, cost certainty, increased public support for infrastructure, greenhouse gas (GHG) reduction, and economic development. Regional freeway projects outlined in the

RTP/SCS include improvements to I-5 within the Study Area. These freeway improvements in concert with rail, transit and active transportation improvements, and land use planning programs will meet federal air quality standards and comply with Senate Bill 375.

The Orange County CMP was required as a result of Assembly Bill (AB) 471, and as subsequently modified by AB 1791, which requires urbanized cities with a population of 50,000 or more to adopt a CMP. The program requirement became effective when Proposition 111, which increased the State Gas Tax by nine cents over a five-year period, was enacted by the voters in June 1990. The CMP also contributes to federal Congestion Management System (CMS) requirements, which work towards a systematic process to manage congestion and provide information to decision-makers on transportation system performance and alternative strategies for alleviating congestion and enhancing the mobility of persons and goods. This database of information on congestion can then be used for selecting and implementing cost-effective strategies to manage new and existing facilities. The CMS also establishes performance measures to identify and monitor the extent of both recurring and non-recurring congestion and the effectiveness of congestion reduction and mobility enhancement strategies. The goals of Orange County's CMP are to support regional mobility and air quality objectives by reducing traffic congestion; to provide a mechanism for coordinating land use and development decisions that support the regional economy; and to determine gas tax fund eligibility. To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. OCTA developed the policies that constitute Orange County's CMP in coordination with local jurisdictions, Caltrans, and the South Coast Air Quality Management District (SCAQMD). Required elements identified in the CMP within the Study Area include highway LOS standards, transit service, transportation demand management (TDM), Land Use Impact Analysis, and Capital Improvement Programs (CIP). Although the passage of AB 2419 (statutes of 1996) provided an opportunity to opt out of the CMP process, OCTA's Board of Directors elected to continue with it and the CMP remains relevant as a requirement for local jurisdictions to receive Measure M2 funds.

The MPAH was established by the County of Orange (County) in 1956. The purpose of this plan is to ensure that a regional highway network would be planned, developed, and preserved in order to improve the County's existing freeway system. Improvements included as part of the proposed project are consistent with street classifications and proposed interchange locations identified by the MPAH.

The LRTP established by the OCTA outlines a vision for multimodal transportation improvements throughout Orange County. These projects, programs, and improvements are designed to address the transportation needs of Orange County residents, commuters, and visitors for the next 25 years. OCTA prepares the LRTP every four years to account for new planning efforts, as well as changes in demographics, economic conditions, and available sources of transportation funding. The proposed project is included in the 2010 LRTP's Year 2035 Preferred Plan Freeway Projects.

OCTA has completed the SOCMIS, which addresses future transportation challenges in the next 20 years within the region. The SOCMIS project limits begin at the I-5/SR-55 interchange in the City of Tustin at the northern limit and extend to the Orange/San Diego County line at the southern limit. Additional transportation improvements were considered as part of the SOCMIS; these were adopted by the OCTA Board of Directors in May 2007.

Local Plans

Existing land use plans for the project area include the General Plan Land Use Elements for the Cities of Laguna Niguel, Mission Viejo, Laguna Hills, and Lake Forest. These land use plans identify opportunities for future growth and development within these four cities and are discussed in Section 2.1 (Land Use) of this document. These four cities are built out, and most additional population and employment growth is expected to take place through the natural increase and redevelopment of existing land uses or infill development of vacant parcels. Land uses within the Study Area are already established, with limited opportunity for a new unplanned large-scale development. However, some Study Area cities have planned projects; these projects are discussed in Section 2.1, Land Use.

1.2.2.4 Legislation

The proposed project is included as part of the OCTA Renewed Measure M Transportation Investment Plan (M2). Measure M, a 0.5 cent sales tax for transportation improvements was originally passed in 1990 and renewed by County voters on November 7, 2006, and will be a continued investment of local tax dollars in the County's transportation infrastructure for another 30 years (through 2041). The proposed project is one of the projects identified in the M2020 Plan (identified as Projects C and D) for M2 that includes those projects and programs that can be delivered on an expedited schedule between now and 2020. Projects included in M2 are strategic improvements needed to minimize systemwide freeway traffic congestion in the County. Subject to approval of a Natural Community Conservation Plan/Habitat Conservation Plan

(NCCP/HCP) between OCTA and federal and State resource agencies, an Environmental Mitigation Program will be implemented to provide for high-value environmental benefits such as habitat protection and/or biological resource preservation in exchange for streamlined permit project approvals for M2 freeway projects. The proposed project is among several other proposed projects along the I-5 corridor that are part of M2, including:

- Improvements to I-5 from Pico to Vista Hermosa (including Pico Interchange) (Projects C and D)
- Improvements to I-5 from Vista Hermosa to Pacific Coast Highway (PCH) (Project C)
- Improvements to I-5 from PCH to San Juan Creek Road (Project C)
- Improvements to I-5 and Ortega Highway (State Route 74 [SR-74]) Interchange (Project D)
- Improvements to I-5 from SR-55 to State Route 57 (SR-57) (Project A)
- Improvements to SR-55 from I-405 to the I-5 (Project F)

1.2.2.5 Modal Interrelationships and System Linkages

I-5 is a major north-south regional facility in the States of California, Oregon, and Washington. Within the proposed project limits, I-5 provides the Cities of Lake Forest, Laguna Hills, Laguna Woods, Laguna Niguel, Mission Viejo, and San Juan Capistrano with direct access to the Cities of San Clemente, Dana Point, and Irvine, extending to north Orange County and Los Angeles County. I-5 also provides direct access to major east-west corridors, specifically State Route 76 (SR-76) and State Route 78 (SR-78) to the south, and SR-74, SR-73, SR-241, State Route 133 (SR-133), SR-55, SR-57, and State Route 91 (SR-91) to the north. There are two parallel or contiguous transportation facilities (SR-73 and SR-241) in the vicinity of the proposed project limits that could reduce traffic demand on I-5. However, these state routes are tolled facilities and do not provide direct access to the same areas as I-5. Therefore, these facilities do not offset the need for improvements to the proposed project segment of I-5.

The proposed project site and vicinity are served by OCTA, Amtrak, and Metrolink. OCTA provides local bus routes throughout the Study Area. The proposed project improvements accommodate bus facilities served by OCTA along routes that include Community Routes 85, 86, 87, and 91. In addition, OCTA has a shared-ride service that provides for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by a disability. OCTA has a Senior Mobility Program (SMP) that is designed to fill the gap between local fixed-route buses and Americans with

Disabilities Act (ADA) paratransit or ACCESS service by providing local transportation services to seniors in participating cities in the County.

Amtrak and Metrolink are both commuter rail lines that provide service to the Cities of Laguna Niguel, Mission Viejo, and other areas, including downtown Los Angeles and several locations in Orange County. Amtrak is operated by the National Railroad Passenger Corporation (NRPC) and Metrolink is operated by the Southern California Regional Rail Authority (SCRRA), which both provide transit services to the Counties of Orange, Santa Barbara, San Bernardino, Ventura, Riverside, San Diego, and Los Angeles. There is an Amtrak station and a Metrolink station located in Laguna Niguel approximately 0.09 mi west of I-5.

1.2.2.6 Air Quality Improvements

Within the Study Area, both HOV lanes and ramp metering have been incorporated into the I-5 freeway as transportation control measures. HOV lanes have already been constructed on I-5 from Avery Parkway to Alicia Parkway to address existing and forecasted congestion during peak travel periods, which tends to be directional. NB traffic is heavier in the AM peak hour and SB traffic is heavier in the PM peak hour. Additionally, all on-ramps within the Study Area are metered to optimize the operation of the on-ramps during peak periods.

OCTA offers several TDM programs to encourage use of alternative modes of transportation or more efficient use of vehicles. Rideshare services and programs, including commuter and local bus services, commuter rail services, and assistance in forming, joining, and managing carpools and vanpools are provided by OCTA. Portions of most of the major roadways within the Study Area are designated Class II on-road bike lanes (Avery Parkway, Cabot Road, Marguerite Parkway, Oso Parkway, La Paz Road, Muirlands Boulevard, Alicia Parkway, and Los Alisos Boulevard). One Class I bikeway (Aliso Creek, Off-Road Paved, Class I Bikeway) and one on-road Class III bike lane (Crown Valley Parkway) are located within the Study Area. These bikeways can connect to local OCTA bus lines (as OCTA allows storage of bikes on its buses) within the Study Area. These local bus routes connect to bus routes on I-5 (Local Route 91 from Crown Valley Parkway to La Paz Road, Local Route 83 at Laguna Hills Mall, and Intracounty Express Route 216).

1.2.2.7 Independent Utility and Logical Termini

The proposed project would construct additional general-purpose lanes and extend the second HOV lane in both directions on I-5 from SR-73 to El Toro Road. Given the

existing and forecasted travel demand within the I-5 facility within the Study Area, as described in Section 1.2.2, and the inconsistency in the number of general-purpose and HOV lanes on the existing I-5, the limits of the proposed improvements represent logical termini for addressing mainline operation within the Study Area. Currently, there is one more general-purpose lane on I-5 north of Alicia Parkway compared to south of Alicia Parkway. North of Alicia Parkway, the I-5 mainline includes five general-purpose lanes in each direction while south of Alicia Parkway, there are four general-purpose lanes. The inconsistency in the number of general-purpose lanes results in localized congestion that necessitates mainline improvements within the Study Area. Additionally, the termini for the HOV lanes are logical since traffic volumes lessen substantially north of Alicia Parkway reducing the demand for the additional HOV lane. The project termini appropriately address existing forecasted mainline and HOV demand and operational efficiency within the Study Area.

The proposed project would result in improvements to the current traffic conditions along I-5 and would not rely on implementation of any additional transportation improvements being made in the Study Area to address the identified need. As such, the proposed project is considered to have independent utility. Furthermore, the proposed project would not restrict considerations of alternatives for other reasonably foreseeable transportation improvements since the project is being developed in coordination with other planned local and regional transportation improvements within or adjacent to the Study Area.

1.3 Project Description

The proposed project is located in Orange County on I-5. Caltrans, in cooperation with OCTA, the City of Lake Forest, the City of Laguna Hills, the City of Laguna Niguel, and the City of Mission Viejo, is proposing to widen I-5 between SR-73 and El Toro Road. The project purpose is to increase capacity and operations within the project limits; provide extension of the HOV network within a portion of the project limits to increase capacity; improve merging/diverging from freeway ramps and improve ramp intersections where needed; and improve existing auxiliary lanes and add auxiliary lanes where needed to improve weaving operations. The project limits on I-5 extend from 0.5 mi south of the SR-73 interchange (PM 12.4) to 0.2 mi north of the El Toro Road UC (PM 18.9). The proposed project will add general-purpose lanes in each direction on I-5 between Avery Parkway and Alicia Parkway, extend the second HOV lane from Alicia Parkway to El Toro Road, reestablish existing auxiliary lanes, construct new auxiliary lanes, and improve several existing on- and off-ramps. The project passes through the

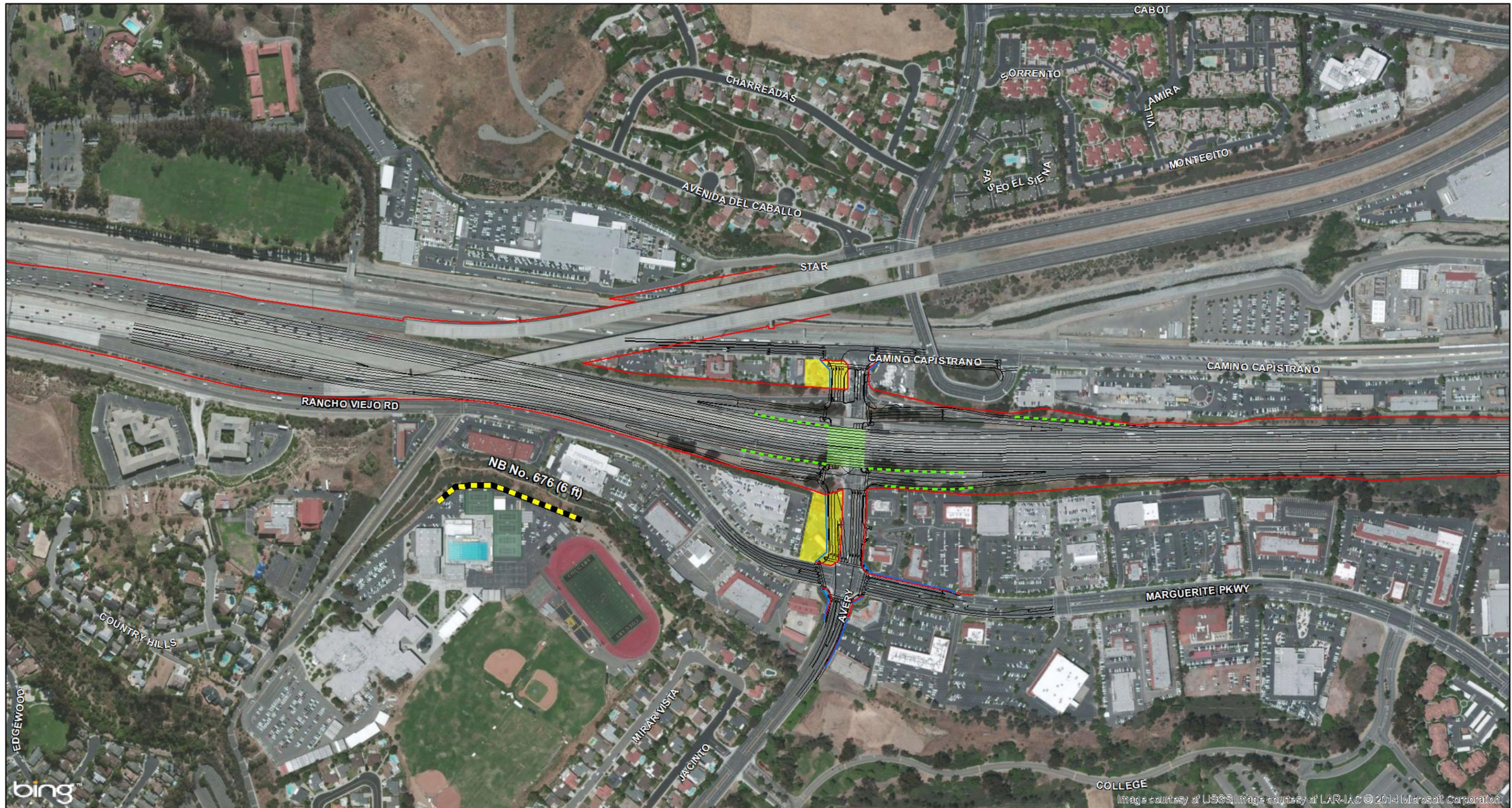
Cities of Lake Forest, Laguna Hills, Laguna Niguel, Laguna Woods, Mission Viejo, and San Juan Capistrano in Orange County, California.

Subsequent to public circulation of the IS/EA and consideration of public comments, the PDT recommended Alternative 2 as the Preferred Alternative for the I-5 Widening Project. The total anticipated project cost for Alternative 2 is \$461 million. The project alternatives are described below in Section 1.4.

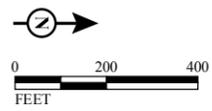
1.4 Project Alternatives

This section describes the proposed project and the design alternatives that were developed by a multidisciplinary team to achieve the proposed project purpose and need while avoiding or minimizing environmental impacts. Criteria used to evaluate these alternatives include impacts to resources, feasibility, ability to meet the purpose and need, and cost. A summary of impacts by alternative is provided in Table 1.9-2 (provided at the end of this section). The alternatives, as described in this section, consist of the No Build Alternative (Alternative 1) and two Build Alternatives (Alternatives 2 and 3).

Alternative 2 proposes to add one general-purpose lane in each direction on I-5 between Avery Parkway and Alicia Parkway, extend the second HOV lane from Alicia Parkway to El Toro Road, reestablish existing auxiliary lanes and construct new auxiliary lanes, and improve several existing on- and off-ramps. Additionally, the project proposes no HOV buffer, and the HOV lane will accommodate continuous access throughout the project limits. Alternative 3 proposes the same improvements as Alternative 2 but also proposes a second additional general-purpose lane in each direction from Crown Valley Parkway to Alicia Parkway. Please see Figures 1-3 and 1-4 for features of the proposed Build Alternatives.



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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replaced |
| BMP | Bridge: Widen |
| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



SOURCE: Bing (c. 2010); RBF (01/2012); TranSystems (2012)
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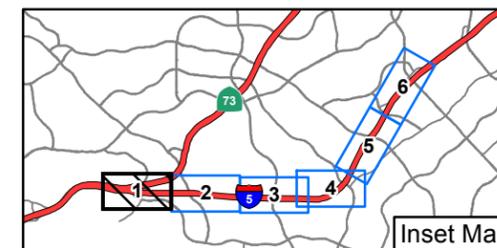
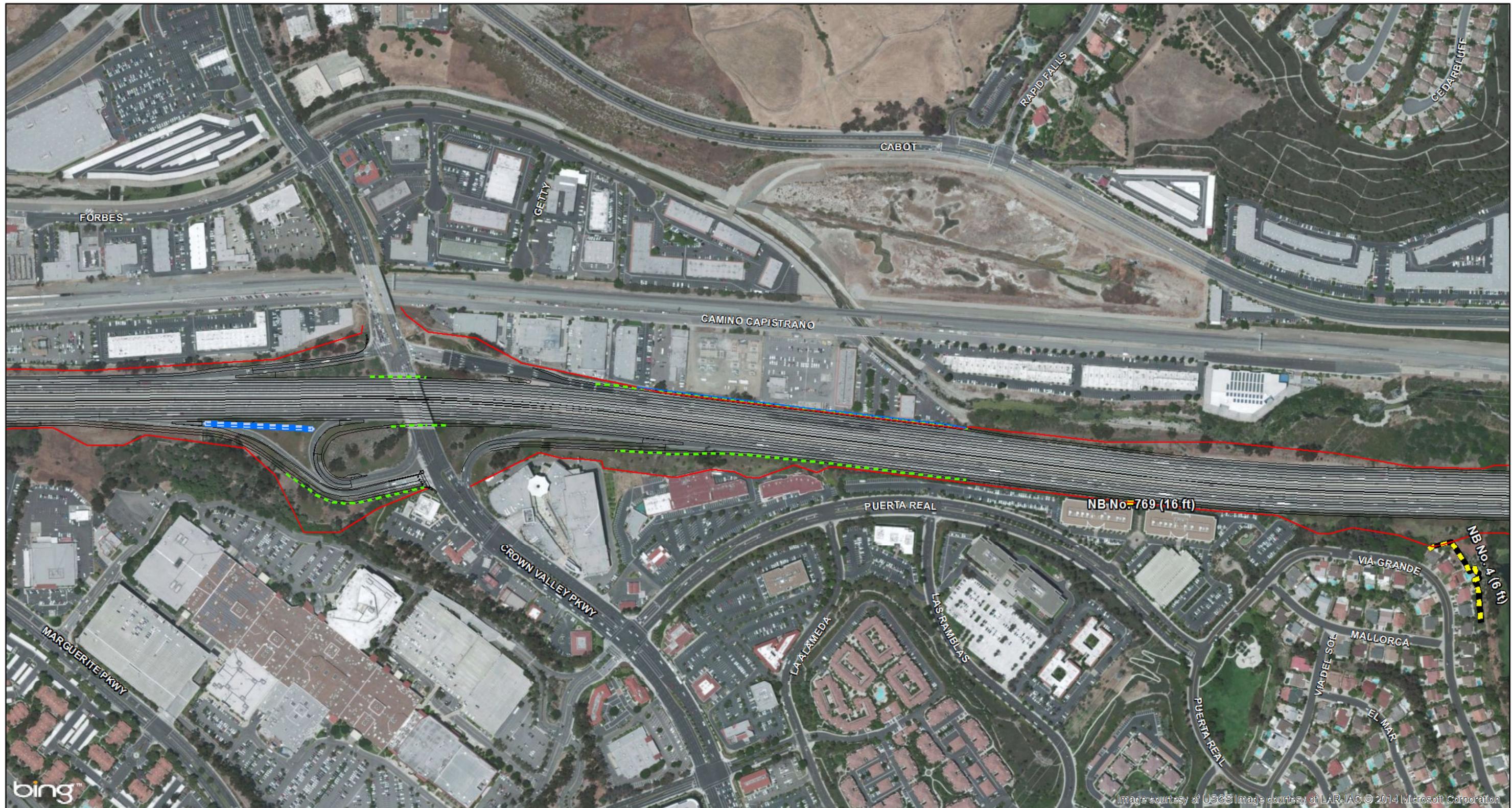


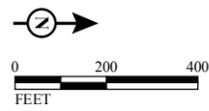
FIGURE I-3
 Sheet 1 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
 12-ORA-5 PM 12.4/18.9
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replaced |
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| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



SOURCE: Bing (c. 2010); RBF (01/2012); TranSystems (2012)
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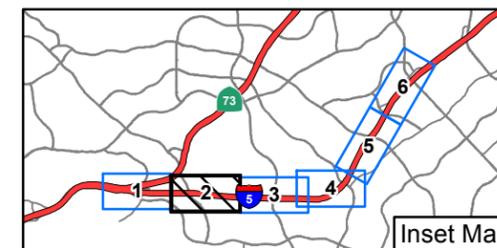


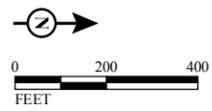
FIGURE I-3
 Sheet 2 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
 12-ORA-5 PM 12.4/18.9
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replaced |
| BMP | Bridge: Widen |
| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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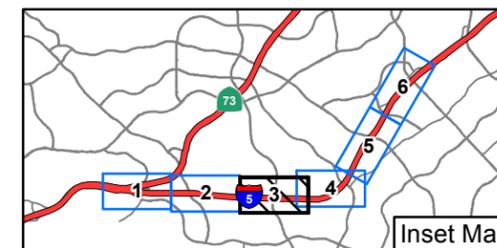
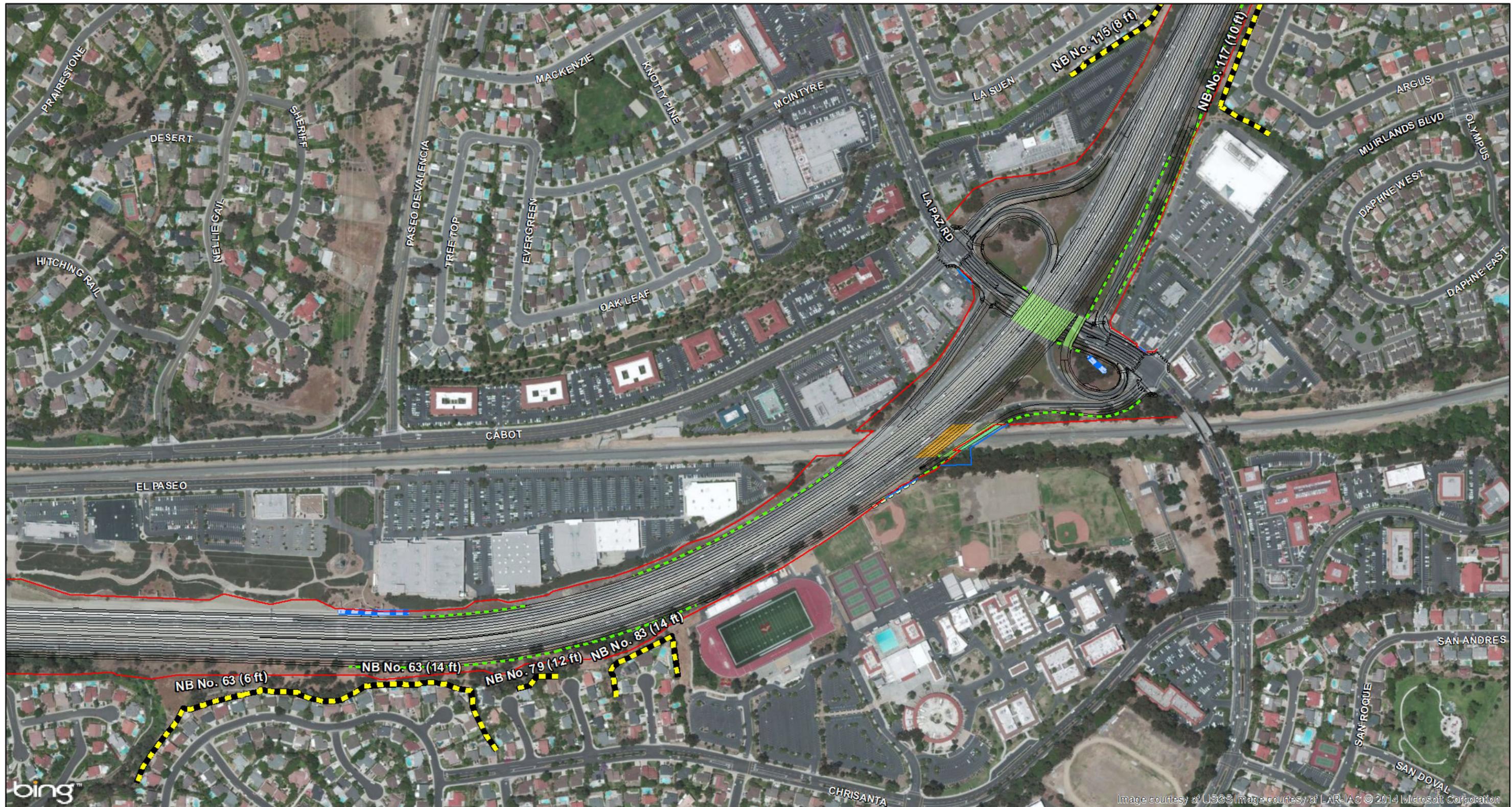


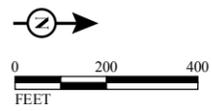
FIGURE I-3
 Sheet 3 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
 12-ORA-5 PM 12.4/18.9
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replaced |
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| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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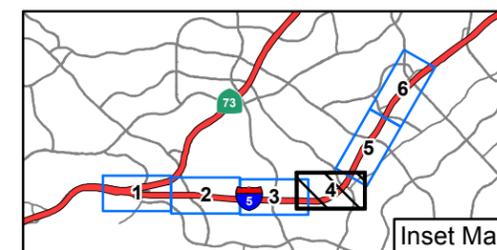
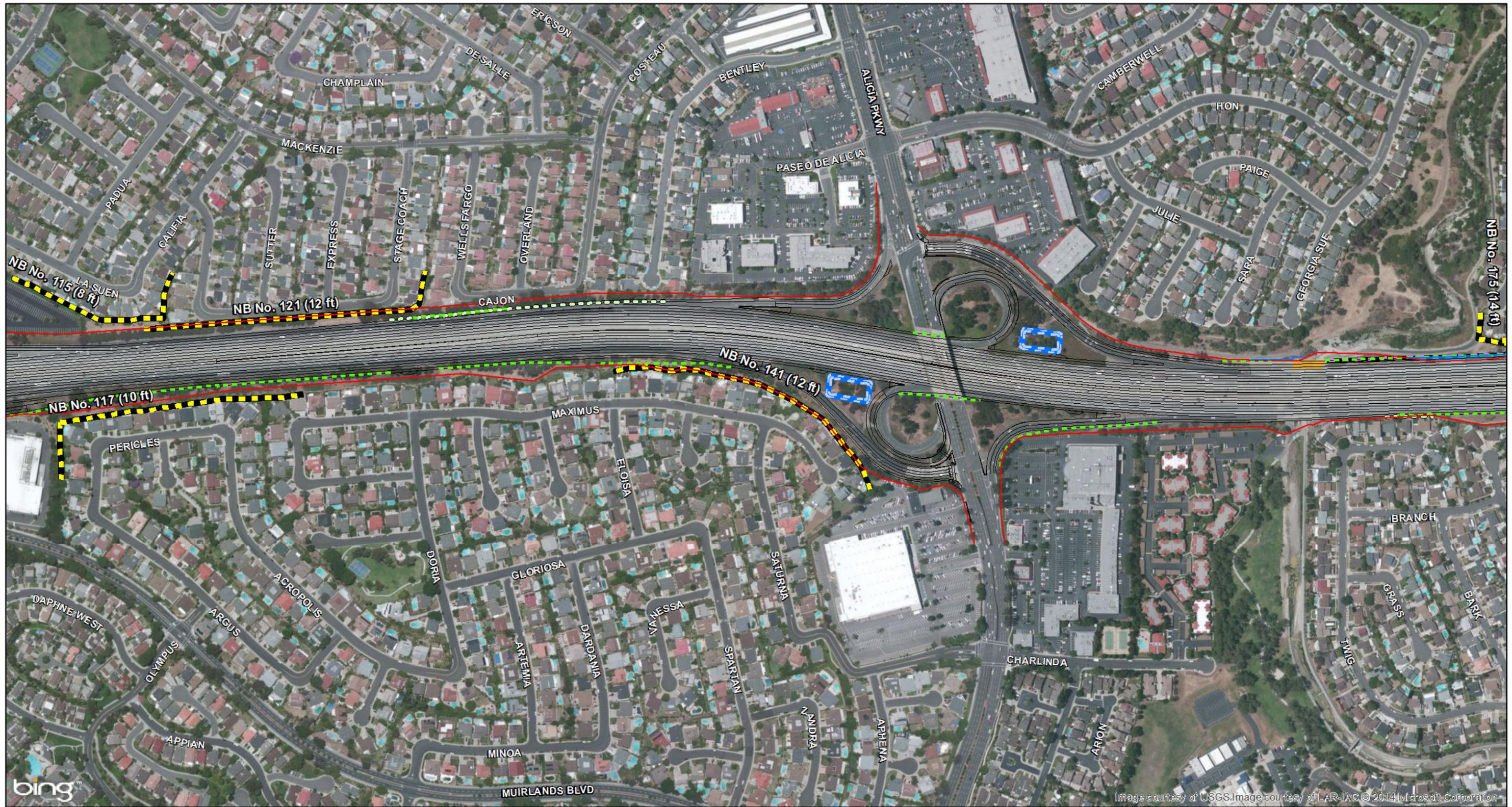


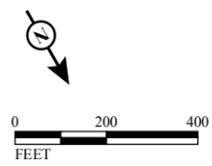
FIGURE I-3
 Sheet 4 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
 12-ORA-5 PM 12.4/18.9
 EA# 0K0200

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- Existing ROW
- Proposed ROW
- Pavement Edges/Geometry
- BMP
- Retaining Walls
- Wall - Replacement
- Modeled Noise Barriers
- Community Enhancement Wall
- Bridge: Replaced
- Bridge: Widen
- Full Acquisition
- Partial Acquisition



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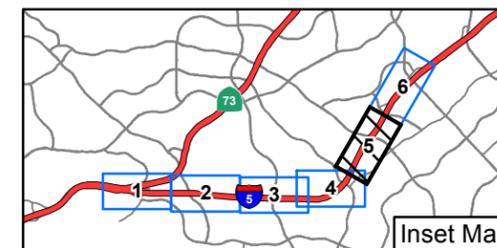
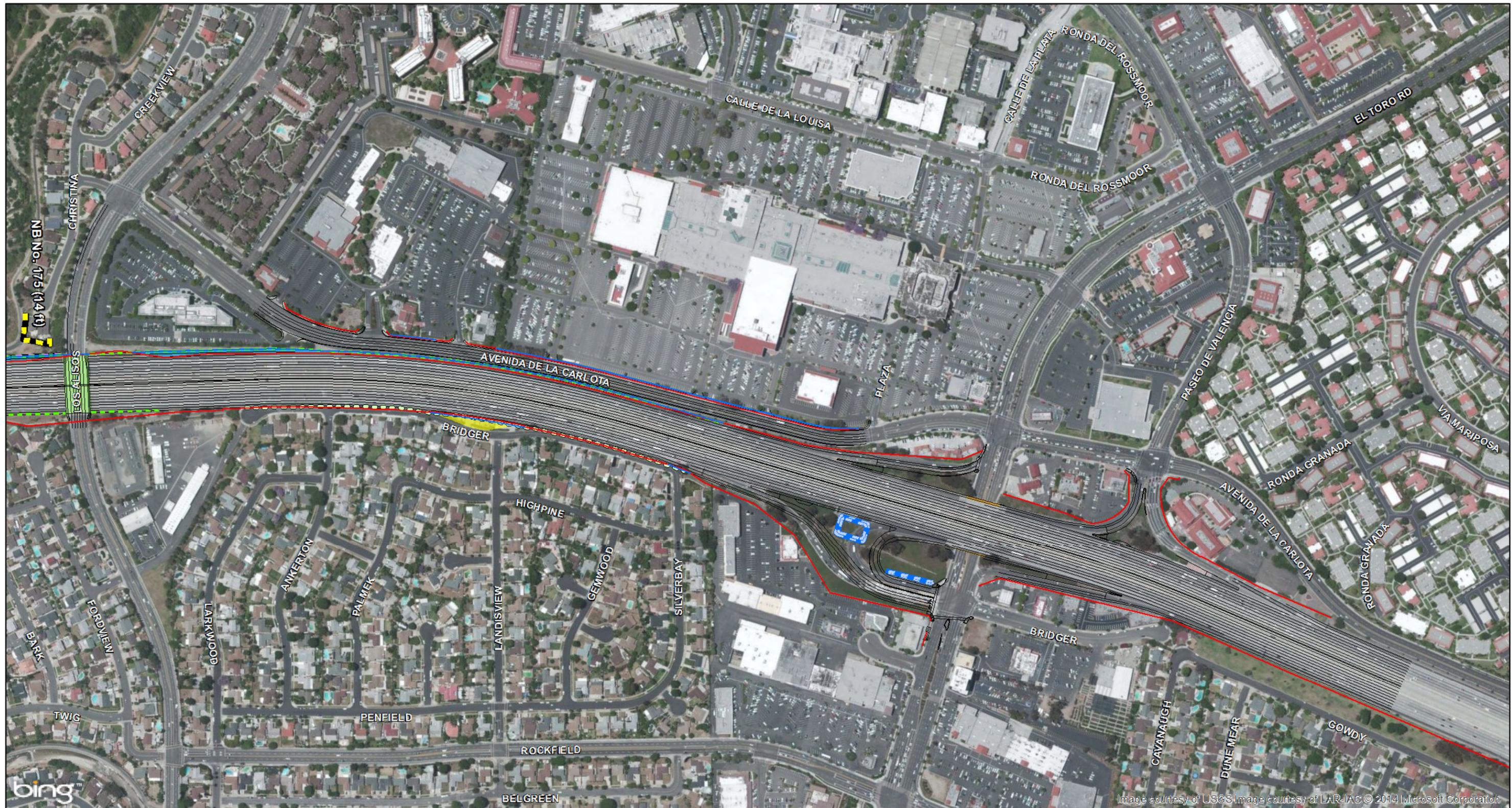


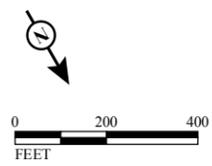
FIGURE I-3
 Sheet 5 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replaced |
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| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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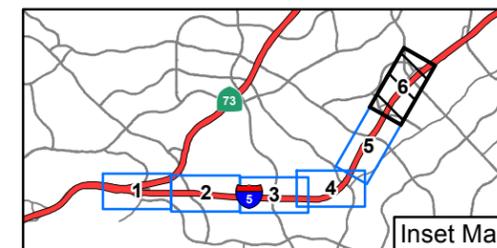
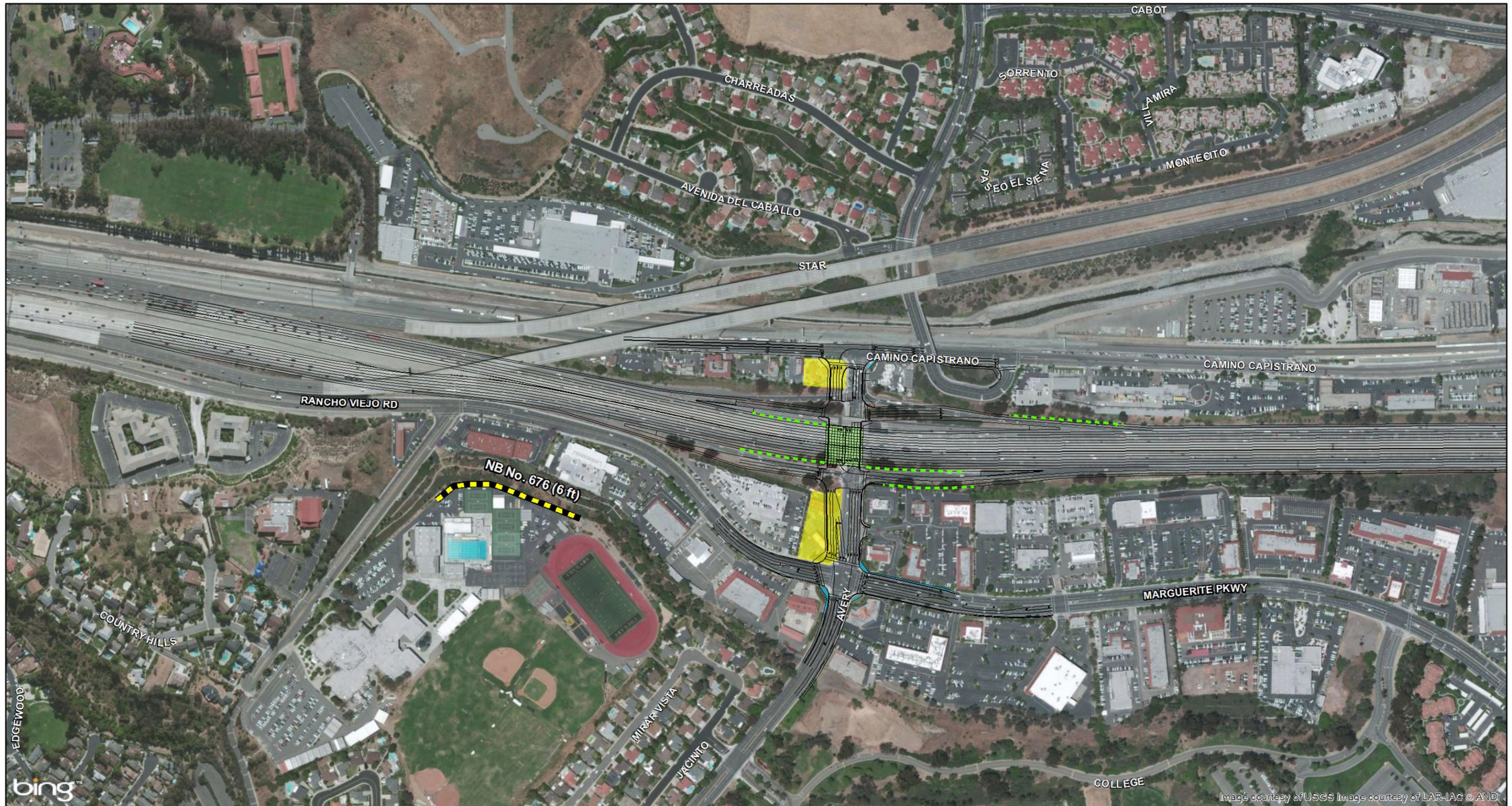


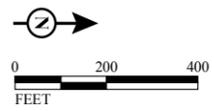
FIGURE I-3
 Sheet 6 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 2 (Preferred Alternative)
 12-ORA-5 PM 12.4/18.9
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replace |
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| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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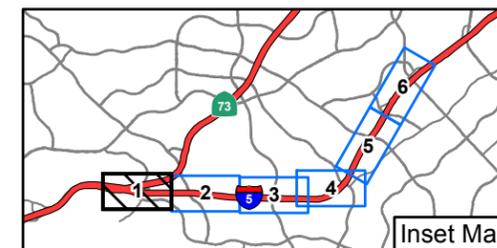
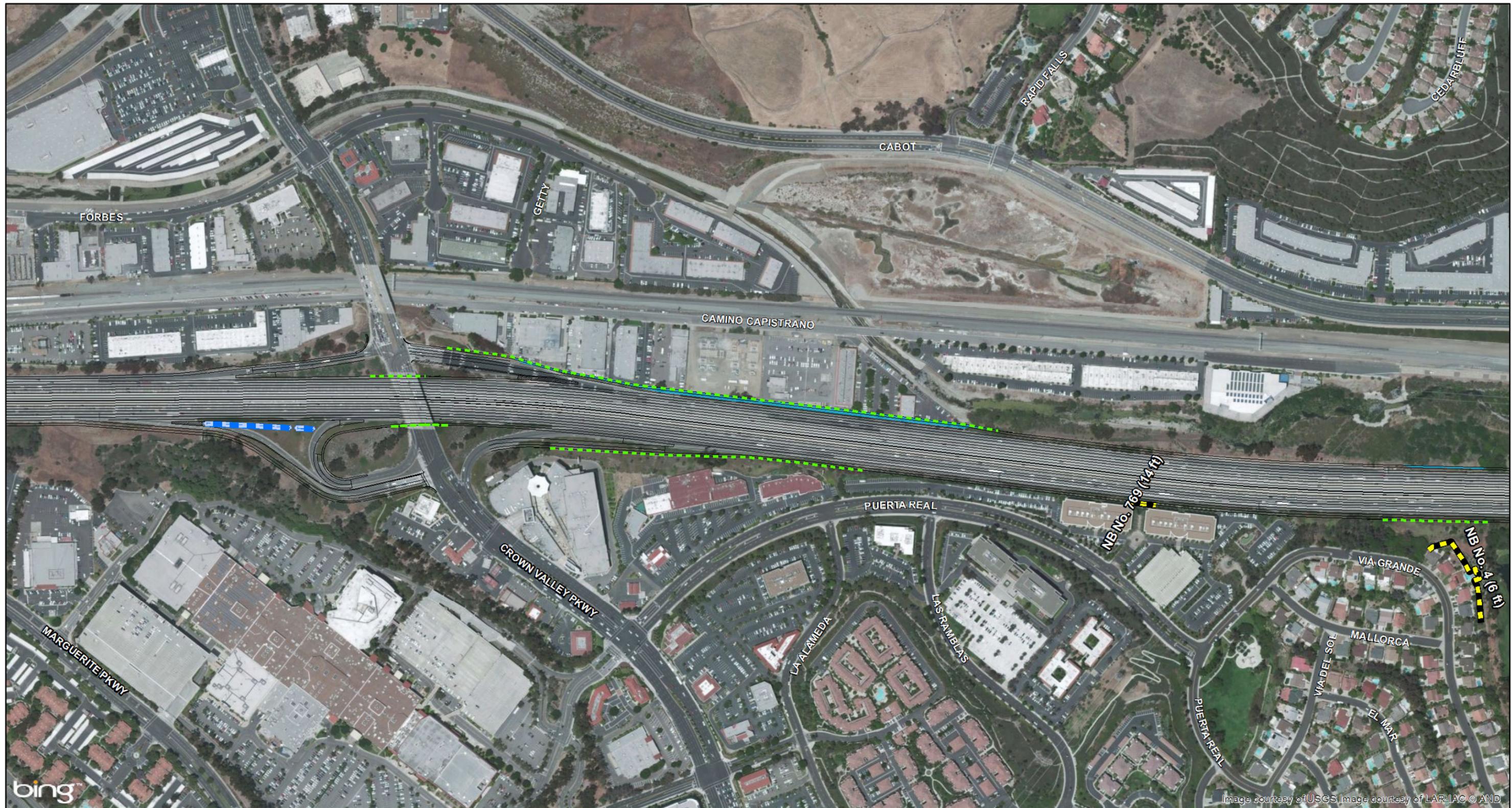


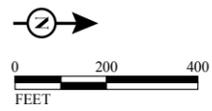
FIGURE I-4
 Sheet 1 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 3
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replace |
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| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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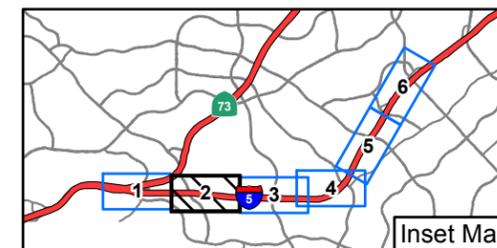


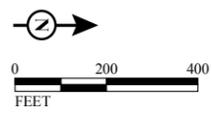
FIGURE I-4
 Sheet 2 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 3
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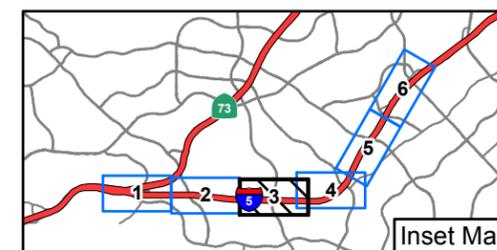
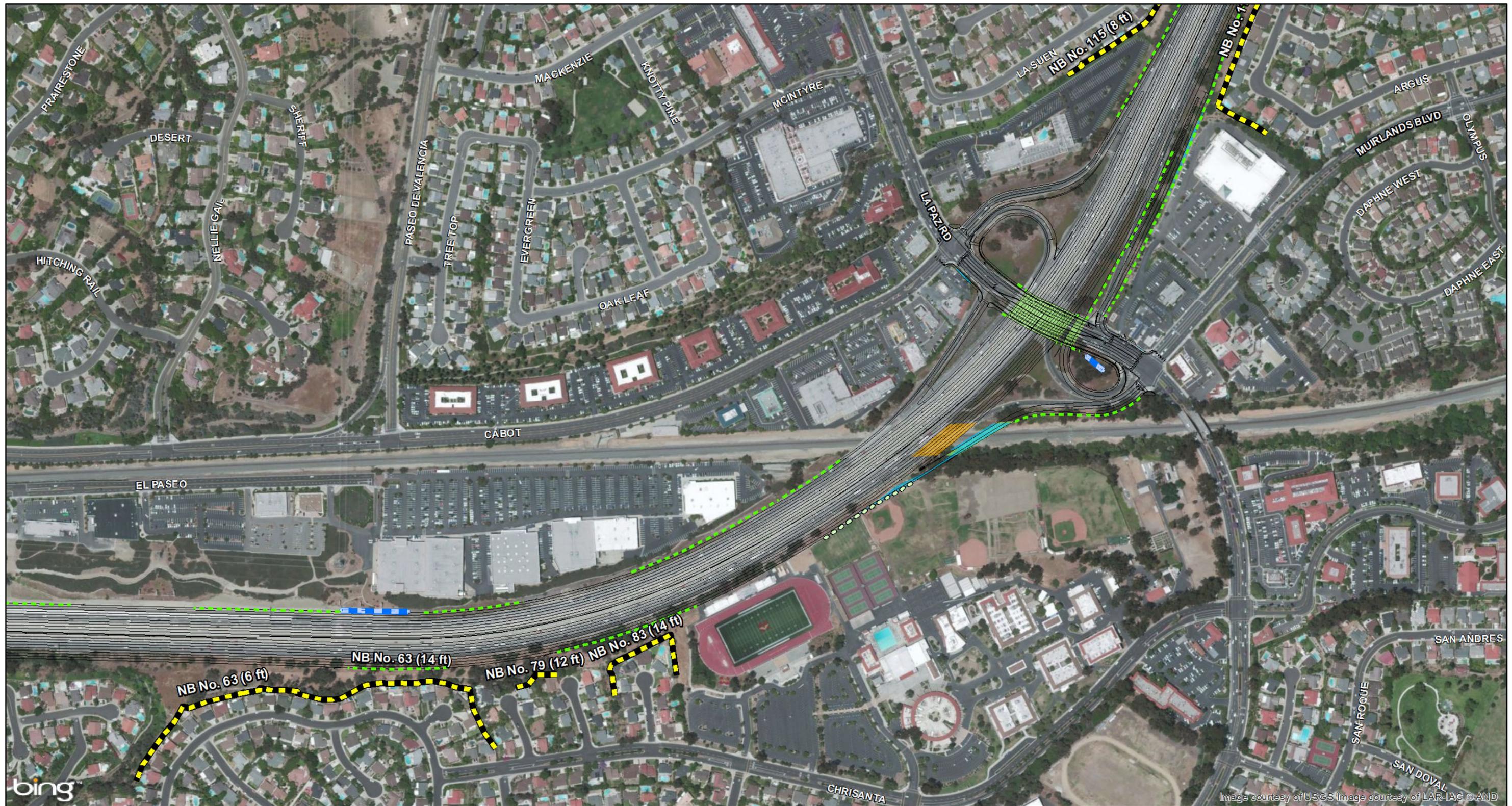


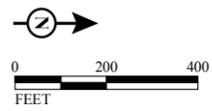
FIGURE I-4
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I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 3
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replace |
| BMP | Bridge: Widen |
| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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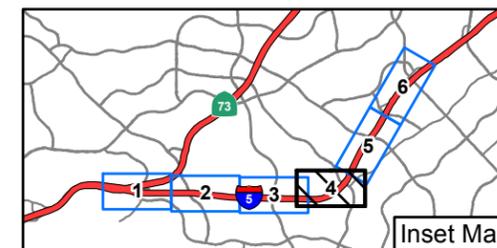
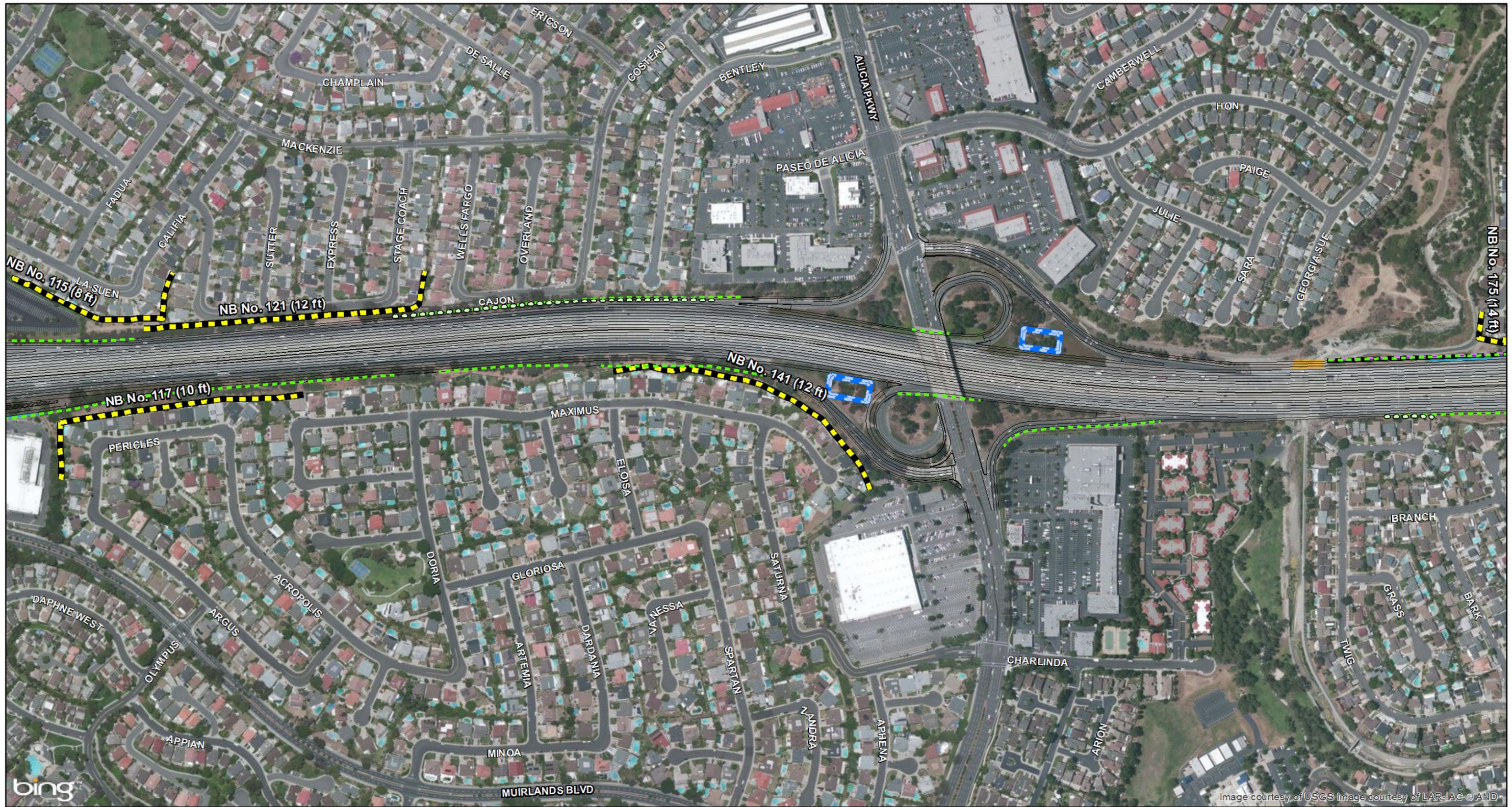


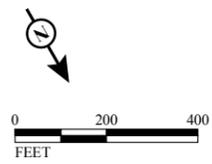
FIGURE I-4
 Sheet 4 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
 Alternative 3
 12-ORA-5 PM 12.4/18.9
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replace |
| BMP | Bridge: Widen |
| Retaining Walls | Full Acquisition |
| Wall - Replacement | Partial Acquisition |



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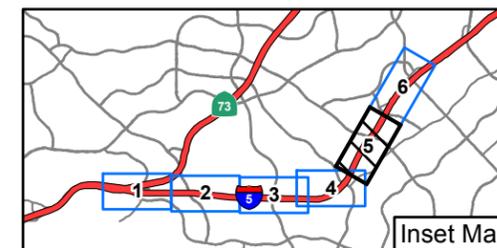
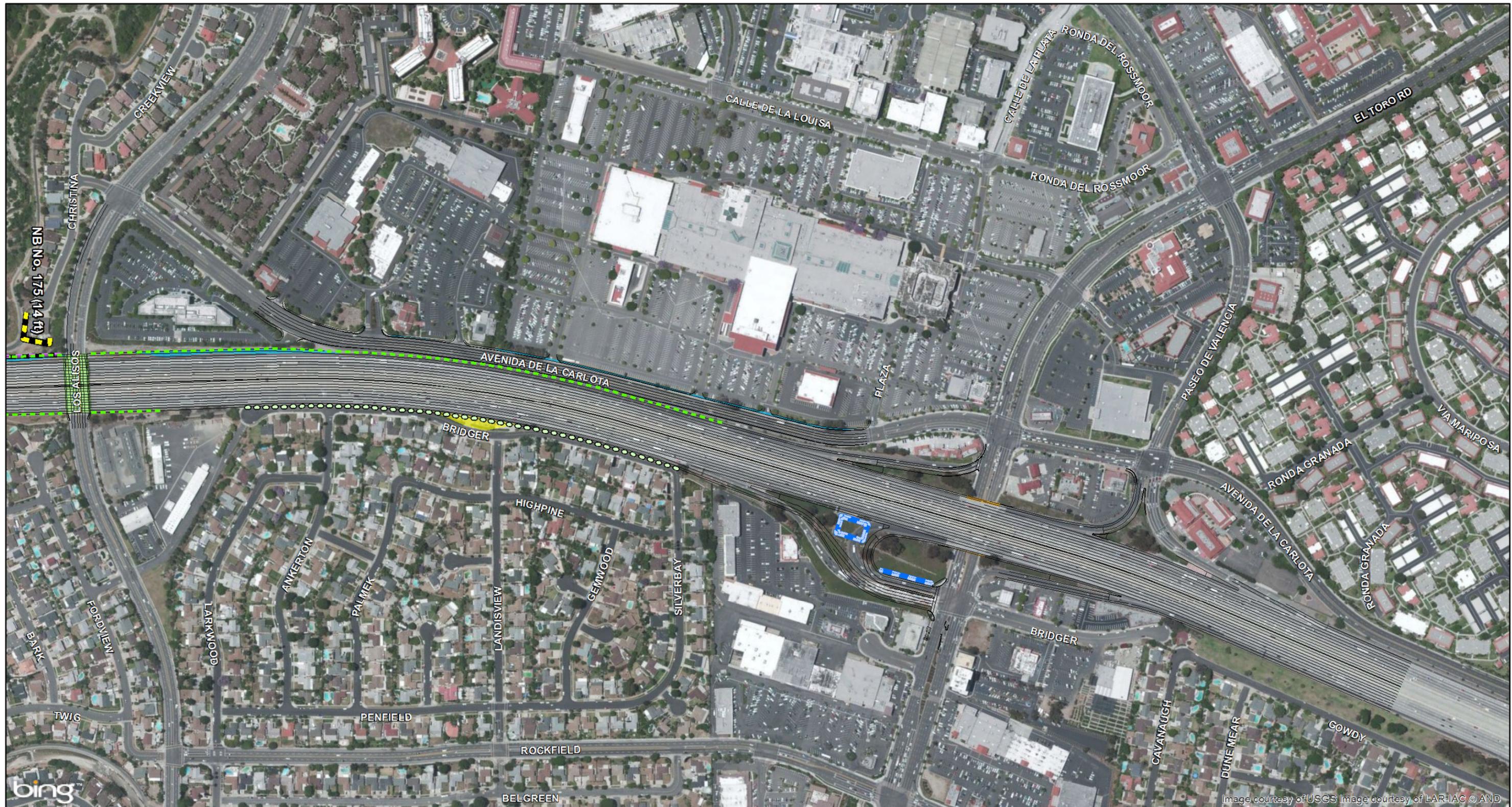


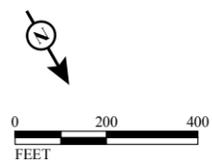
FIGURE I-4
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I-5 Widening Project: SR-73 to El Toro Road
 Project Features
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| Existing ROW | Modeled Noise Barriers |
| Proposed ROW | Community Enhancement Wall |
| Pavement Edges/Geometry | Bridge: Replace |
| BMP | Bridge: Widen |
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| Wall - Replacement | Partial Acquisition |



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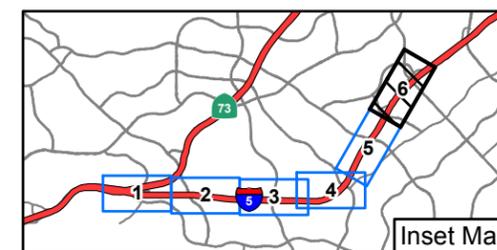


FIGURE I-4
 Sheet 6 of 6

I-5 Widening Project: SR-73 to El Toro Road
 Project Features
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 12-ORA-5 PM 12.4/18.9
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1.4.1 Common Design Features of the Build Alternatives

The proposed project will remove the existing I-5 paved shoulders and construct new traveled way and new shoulder pavement to the outside of the NB and SB lanes. Full standard widths are proposed, including a 10-foot (ft) inside shoulder, a 12 ft HOV lane, 12 ft general-purpose lanes, and a 10 ft outside shoulder throughout the majority of the project limits. No buffer is proposed between the HOV lane and general-purpose lanes, which will accommodate continuous access throughout the project limits. These alternatives add one general-purpose lane in each direction from Avery Parkway to Alicia Parkway, and also propose the extension of the second HOV lane from the Alicia Parkway interchange area to where it currently terminates at the El Toro Road UC. In this section, standard lane and shoulder widths are proposed as well. The centerline of I-5 is proposed to be shifted to the west in this area to accommodate the widening, which requires minor realignment of Avenida de la Carlota.

1.4.1.1 General-Purpose Lanes

The Build Alternatives propose to add one general-purpose lane from Avery Parkway to Alicia Parkway.

1.4.1.2 High Occupancy Vehicle Lanes

The Build Alternatives propose the extension of the second HOV lane from the Alicia Parkway interchange area to where it currently terminates at the El Toro Road UC.

1.4.1.3 Auxiliary Lanes

The Build Alternatives propose to reestablish existing auxiliary lanes through the project limits and construct new auxiliary lanes at the following locations:

- NB I-5 prior to the off-ramp to Avery Parkway
- Between Oso Parkway NB on-ramp and La Paz Road NB off-ramp
- Between La Paz Road NB on-ramp and Alicia Parkway NB off-ramp
- Between Oso Parkway SB on-ramp and Crown Valley Parkway SB off-ramp (existing auxiliary lane is not continuous), as well as add a second auxiliary lane (for 1,500 ft) to Crown Valley Parkway SB off-ramp
- Between La Paz Road SB on-ramp and Oso Parkway SB off-ramp (existing auxiliary lane is not continuous)
- Between El Toro Road SB on-ramp and Alicia Parkway SB off-ramp (existing auxiliary lane is not continuous; second auxiliary will also be reestablished)

1.4.1.4 Avery Parkway Interchange Improvements

The on- and off-ramps at Avery Parkway will be realigned and the NB off-ramp will be widened to three lanes at the intersection with Avery Parkway. Similarly, the NB on-ramp would be widened to three lanes, and the SB off-ramp would be widened to four lanes at the intersection. The SB off-ramp would be improved to two lanes at the diverge from I-5, with one mainline auxiliary lane for the second lane. The overall configuration of the interchange will be similar to the existing configuration. Additionally, Avery Parkway will be improved under the structure to provide side-by-side dual left-turn lanes to both the NB and SB on-ramps and three through lanes in the eastbound (EB) and westbound (WB) directions. The Build Alternatives propose to replace the Avery Parkway UC structure to accommodate the wider Avery Parkway cross-section under the structure and to improve the existing nonstandard vertical clearance of 14 ft, 8 inches with the minimum required 15 ft. In order to achieve minimum vertical clearance for this structure, a two-span structure is proposed to minimize the structure depth, and the Avery Parkway profile will be lowered through the interchange area. Additionally, to ensure that all existing mainline lanes are open through construction, the I-5 centerline will be realigned easterly approximately 40 ft through the interchange.

The Build Alternatives will incorporate an interconnect line to optimize signal timing and operations for the closely spaced intersections at the interchange. Standard outside shoulders (which would accommodate bicycles) will be provided throughout the majority of the interchange in the EB and WB directions. Sidewalk will be provided through the interchange in the EB and WB directions.

1.4.1.5 La Paz Road Interchange Improvements

Widening of La Paz Road under the freeway will require replacement of the La Paz Road UC structure. The overall configuration of the interchange will remain the same, but La Paz Road will be improved under the structure to provide two through lanes in each direction, as well as right-turn lanes to the NB and SB loop on-ramps. The Build Alternatives propose to replace the La Paz Road UC structure to accommodate the wider La Paz Road cross-section under the structure and to improve the existing nonstandard vertical clearance of 14 ft, 10 inches with the minimum required 15 ft. This includes replacement of the structure for the NB loop-on ramp from La Paz Road. In order to achieve minimum vertical clearance for this structure, a two-span structure is proposed to minimize the structure depth. No profile adjustment is proposed for either I-5 or La Paz Road. Additionally, to ensure that all existing mainline lanes are open through construction, the I-5 centerline will be realigned easterly approximately 77 to 85 ft through the interchange.

Bicycle lanes and standard outside shoulders will be provided throughout the majority of the interchange in the EB and WB directions. Sidewalk will be provided through the interchange in the EB and WB directions.

1.4.1.6 Ramps

The following ramps within the project limits will be modified in order to accommodate the additional general-purpose lanes, which include improvements ranging from restriping to complete reconstruction.

Avery Parkway

- Modify ramps as described above in Section 1.4.1.2

Crown Valley Parkway

- Realign, reconstruct, and widen NB off-ramp
- Realign and reconstruct NB loop on-ramp and directional on-ramp
- Realign, reconstruct, and widen SB off-ramp
- Realign and reconstruct SB on-ramp

Oso Parkway

- Realign and reconstruct NB off-ramp, loop on-ramp, and directional on-ramp
- Realign and reconstruct SB off-ramp, loop on-ramp, and directional on-ramp

La Paz Road

- Realign, reconstruct, and widen NB off-ramp, NB loop on-ramp, and directional on-ramp
- Realign, reconstruct, and widen SB off-ramp, SB loop on-ramp, and directional on-ramp

Alicia Parkway

- Realign, reconstruct, and widen NB off-ramp
- Realign and reconstruct NB loop on-ramp and directional on-ramp
- Realign, reconstruct, and widen SB off-ramp
- Realign and reconstruct SB loop on-ramp and SB directional on-ramp

El Toro Road

- Realign, reconstruct, and widen NB off-ramp
- Realign and reconstruct NB loop on-ramp and NB directional on-ramp
- Realign and restripe SB hook off-ramp
- Realign and reconstruct SB hook on-ramp and directional on-ramp

1.4.1.7 Structures

The following structures within the project limits will be modified as follows:

Avery Parkway UC (Bridge No. 55-0232)

- Modify UC as described above in Section 1.4.1.2

Crown Valley Parkway (Bridge No. 55-0444)

- Tieback walls for NB and SB I-5

Oso Creek (Bridge No. 55-0233)

- Structure widening for NB and SB I-5
- Seismic retrofit (pier strengthening/ground improvement)

Oso Parkway (Bridge No. 55-0509)

- Tieback walls for NB and SB I-5

El Toro Overhead (OH) (Bridge No. 55-0221)

- Structure widening for NB I-5
- Structure replacement for NB off-ramp to La Paz Road
- Reinforced concrete box (RCB) extension

La Paz Road UC (Bridge No. 55-0234)

- Modify UC as described above in Section 1.4.1.3

Alicia Parkway Overcrossing (OC) (Bridge No. 55-0591)

- Tieback walls for NB I-5

Los Alisos Boulevard OC (Bridge No. 55-0631)

Replace the Los Alisos Boulevard OC structure to accommodate the wider I-5 cross-section under the structure. No profile adjustment is proposed. Additionally, the new structure will be constructed to accommodate three future lanes in each direction on Los Alisos Boulevard to be consistent with the ultimate lane configuration in the Master Plan of Arterial Highways (MPAH).

Aliso Creek UC (Bridge No. 55-0014)

- Structure widening for SB I-5
- Structure retrofit (pier strengthening/ground improvement)

El Toro Road UC (Bridge No. 55-0235)

- Structure widening for NB and SB I-5

- Structure retrofit

1.4.1.8 Design Exceptions

Exceptions to mandatory and advisory design standards are required for both Alternatives 2 and 3. Alternatives 2 and 3 would require exceptions to six mandatory and 15 advisory design standards at various locations within the Study Area. Fact Sheets for the common nonstandard mandatory features have been reviewed and approved by Caltrans on June 4, 2013. Fact Sheets for the common nonstandard advisory features are currently under review by Caltrans.

1.4.1.9 Noise Attenuation

As identified in the *Noise Study Report* (April 2013), of the modeled noise barriers evaluated for Alternatives 2 and 3, the following noise barriers were determined to be feasible for both Build Alternatives. Please refer to Figures 1-3 and 1-4 for location of these noise barriers.

- Noise Barrier No. 676: A 666 ft long barrier within the Capistrano Valley High School property line located on the NB side of I-5, south of Avery Parkway.
- Noise Barrier No. 769: A 124 ft long barrier located along the State right-of-way (ROW) on the NB side of I-5 between Crown Valley Parkway and Oso Parkway.
- Noise Barrier No. 4: A 543 ft long barrier located along the private property line and/or within the private property on the NB side of I-5 between Crown Valley Parkway and Oso Parkway.
- Noise Barrier No. 13: A 447 ft long barrier located at the edge of shoulder on the NB side of I-5 between Crown Valley Parkway and Oso Parkway.
- Noise Barrier No. 38: A 717 ft long barrier along the State ROW on the NB side of I-5 between Oso Parkway and La Paz Road.
- Noise Barrier No. 41: A 416 ft long barrier located along the private property line on the NB side of I-5 between Oso Parkway and La Paz Road.
- Noise Barrier No. 63: A 1,947 ft long barrier located along the private property line on the NB side of I-5 between Oso Parkway and La Paz Road.
- Noise Barrier No. 79: A 200 ft long barrier located along the private property line on the NB side of I-5 between Oso Parkway and La Paz Road.
- Noise Barrier No. 83: A 599 ft long barrier located along the private property line on the NB side of I-5 between Oso Parkway and La Paz Road.
- Noise Barrier No. 117: A 1,301 ft long barrier along the private property line located on the NB side of I-5, north of La Paz Road. This barrier is made of two segments.

The first segment is approximately 244 ft in length. The second segment is approximately 1,057 ft in length.

- Noise Barrier No.141: A 1,315 ft long barrier along the State ROW/private property line located on the NB side of I-5 between La Paz Road and Alicia Parkway.
- Noise Barrier No. 115: A 959 ft long barrier along the private property line located on the SB side of I-5, north of La Paz Road.
- Noise Barrier No.121: A 1,336 ft long barrier along the State ROW/private property line located on the NB side of I-5, south of Alicia Parkway. This barrier is made of two segments. The first segment is approximately 928 ft in length. The second segment is approximately 408 ft in length.
- Noise Barrier No. 175: A 252 ft long barrier along the private property line located on the SB side of I-5, south of Los Alisos Boulevard.
- Noise Barrier No. 19: A 785 ft long barrier located along the edge of shoulder on the NB side of I-5 between Crown Valley Parkway and Oso Parkway.
- Noise Barrier No. 19a: A 768 ft long barrier along the private property line located on the NB side of I-5, south of Oso Parkway.

The preliminary noise abatement measures presented are based on current project alignments and profiles, which may be subject to refinement during the design phase. As such, the physical characteristics of noise abatement measures described herein may also be subject to change. The final decision of noise abatement measures are made during final design. The public will be notified of the final location and height of noise abatement measures during final design.

Additionally, the proposed project under Alternatives 2 and 3 would remove all or portions of the existing walls within the project area to accommodate proposed roadway improvements. The existing walls would be removed as part of the proposed project, relocated outside of the widening proposed by the project, and replaced. Below is a summary of the existing walls that would be removed and replaced:

- Existing Wall No. 13: The existing wall along the NB side of I-5 between Alicia Parkway and Los Alisos Boulevard from Station (STA) 174+80 to STA 176+80 for both Alternative 2 and 3.
- Existing Wall No. 15e: The existing wall along the NB side of I-5 between Los Alisos Boulevard and El Toro Road from STA 187+15 to STA 208+00 would be removed and replaced.

Noise barrier surveys were sent to the benefited receptors for the feasible and reasonable noise barriers identified in the Noise Study Report (NSR) and Noise Abatement Decision Report (NADR). Based on the Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (May 2011) for abatement located within State ROW, if more than 50 percent of the votes from responding benefited receptors oppose the abatement, the abatement will not be considered reasonable. Votes from property owners and non-owner occupants of benefited receptors were surveyed. For owner-occupied dwelling units, the property owner gets one vote. For non-owner-occupied dwelling units, the renter gets 10 percent of one vote and the owner get 90 percent of one vote. Noise Barrier Nos. 13 and 19 are proposed within State ROW.

For noise abatement to occur on private property, 100 percent of owners of property upon which the abatement is to be placed must support the proposed abatement. In the case of proposed noise abatement on private property, no response from a property owner, after a reasonable number of attempts, is considered a “no” vote. Noise Barrier Nos. 4, 19a, 41, 49, 63, 115, 117, 676, and 769 are proposed on private property.

On September 6, 2013, a sound wall survey letter was sent by FedEx to the residents potentially benefitted by Noise Barrier Nos. 4, 13, 19/19a, 41, 49, 63, 115, 117, 676, and 769. This survey requested each owner’s opinion on whether or not they are in favor of a sound wall, and, for Noise Barrier Nos. 4, 19a, 41, 49a, 49b, 63, 115, 117, and 676, whether they would be willing to donate their ROW in order to make the sound wall reasonable. Residents were asked to respond by October 7, 2013 and informed that surveys not received by the due date would be counted as a “no” vote.

Following the due date from the initial survey, the responses were tallied for each of the sound walls. Because responses were not received from all residents, a follow-up letter was sent on October 28, 2013 to the non-responding property owners, which included a cover letter explaining the intention of the follow-up letter and the original letter package (original cover letter, survey response, and exhibit). Residents were asked to respond by November 18, 2013.

Following the second due date, several responses still were not received, so the Cities of Laguna Hills and Mission Viejo requested the noise abatement decision be delayed so that they could contact residents within their respective cities that had not submitted a response. Their outreach effort continued through the end of February 2014.

As a result of responses collected for these surveys following the two letters and the outreach efforts by the Cities of Laguna Hills and Mission Viejo, using the voting

criteria, it was determined that Noise Barrier Nos. 4, 19, 41, 49, 676, and 769 will be considered for construction, and Noise Barrier No. 13, 19a, 63, 115, and 117 will be built.

For those barriers proposed on private property (Noise Barriers No. 19a, 63, 115, and 117), per the Caltrans Traffic Noise Analysis Protocol, owners of property where barriers will be placed are required to enter into a contract with Caltrans that allows for construction of barrier and periodic inspection or structural repair. This contract also requires the property owners to agree to accept aesthetic maintenance responsibility and agree not to remove the barrier without consent of all property owners and Caltrans. These contract provisions will be a permanent burden on the property involved. Coordination will continue with the owners for barriers proposed on private property during the final design phase, which will include review of the required contract provisions.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change during the design phase. As such, the physical characteristics of noise abatement measures described herein may also be subject to change. The final decision regarding noise abatement measures is made during final design. The public will be notified of the final location and height of noise abatement measures during final design.

1.4.1.10 Retaining Walls

Table 1.4-1 lists the retaining walls proposed under the Build Alternatives.

1.4.1.11 Community Enhancement Wall

A community enhancement masonry block wall would be constructed on the southbound side of I-5 from the Los Alisos Boulevard OC (Sta 181+05) to the northerly edge of the Aliso Creek bridge. This wall would be approximately 800 feet long and 14 feet high. A portion of this wall would be constructed atop Retaining Wall No. 173.

1.4.1.12 Utilities

All existing utilities within Caltrans ROW would be protected in place or relocated within the proposed project limits during construction of the proposed project.

Table 1.4-2 lists the utility relocations proposed under both Build Alternatives. Please see Section 2.4, Utilities, of this IS/EA for more detail regarding these utilities.

Table 1.4-1 Retaining Walls for Build Alternatives 2 and 3

Wall No.	Length (ft)	Max Height (ft)	Average Height (ft)	Proposed Wall Type ¹
690	395	16	11.3	Type I
696	660	14	10.7	Type 1
701	495	16	14.3	Type 1 on piles
737	238	12	11	Type 1 or Cut Wall
738	248	10	7.5	Type 1 or Cut Wall
8	541	14	11.7	Type 1 or Cut Wall
32	483	20	14.7	Type 1 or Cut Wall
37	16	18	16.9	Type 1 or Cut Wall
75	438	18	14	Type 1
85	1034	16	10.5	Type 1
98	380	44	25.9	MSE
100	262	44	25.9	MSE
102	547	36	23.4	MSE
108	765	24	19.6	MSE
110	2471	44	24.6	Soil Nail
133	1299	20	16.3	Type 1 or MSE
134	570	22	16.9	Type 1 or Cut Wall
140	698	20	11.7	Type 1 or Cut Wall
154	220	16	11.4	Type 1 or Cut Wall
155	161	18	16.1	Type 1 or Cut Wall
158	697	8	7	Type 1 or Cut Wall
173	587	26	16.8	MSE
176	531	22	19.9	Soil Nail
182	299	22	21.2	Type 1 or Cut Wall
191	1736	12	9.5	Type 1

¹ Wall type designations: Caltrans Standard Type 1 (cantilevered wall less than 36 ft high); MSE – Mechanically Stabilized Earth; Cut Wall – wall is constructed from the top of the wall down to the base during excavation activities; soil nail - reinforces natural soils.

Caltrans = California Department of Transportation
ft = feet

Table 1.4-2 Utility Relocations for Build Alternatives 2 and 3

Owner	Type	Description
Gas		
SCG	870 ft of 8-inch gas line	Within Avery Parkway
SCG	985 ft of 12-inch high-pressure gas line	Within Avery Parkway
SCG	325 ft of 12-inch gas line	Within La Paz Road
Water		
MNWD	565 ft of 15-inch sewer line	Within Avery Parkway
MNWD	845 ft of 16-inch water line	Within Avery Parkway
MNWD	Encasement of 12-inch water line	Crossing I-5 at Oso Creek UC
MNWD	Encasement of 14-inch water line	Crossing I-5 at Oso Creek UC
MNWD	Encasement of 8-inch water line	Crossing I-5 at Oso Creek UC
MNWD	955 ft of 21-inch water line	Within La Paz Road
ETWD	465 ft of 42-inch transmission water main	Crossing I-5 at Aliso Creek UC
ETWD	280 ft of 8-inch water line	Crossing I-5 north of Los Alisos Boulevard
ETWD	Extend 16-inch water line and encasement	Crossing I-5 north of Los Alisos Boulevard
ETWD	Extend 10-inch sewer line and encasement	Crossing I-5 north of Los Alisos Boulevard
Electrical		
SDG&E	410 ft of overhead electrical line including installation of two new steel poles	Along Avery Parkway
SDG&E	500 ft of overhead electrical line including replacement of three anchored wood poles	Along Camino Capistrano
SCE	310 ft of electrical underground line	Within Los Alisos Boulevard OC
SCE	1,820 ft of overhead 66 kV transmission line and replacement of eight poles	Along SB I-5 from Los Alisos Boulevard to El Toro Road and crossing I-5 north of Los Alisos Boulevard
SCE	2,000 ft of underground electrical line	Within Avenida de la Carlota
Oil		
Kinder Morgan	Pothole 10-inch oil line and relocate outside of the proposed bridge foundation and RCB extension	Crossing I-5 at the El Toro OH
Telephone		
AT&T	845 ft of telephone line	Within Avery Parkway
AT&T	285 ft of telephone line	Within Camino Capistrano
Level 3	1,450 ft of telephone line	Within the I-5/La Paz Road interchange
AT&T	460 ft of telephone line	Alicia Parkway SB on-ramp
AT&T	385 ft of telephone line	Aliso Creek
AT&T	3,535 ft of telephone line	Within Avenida de la Carlota and along SB I-5 from south of Los Alisos Boulevard to the junction with Avenida de la Carlota
Communications		
Cox Communications	1,030 ft of underground communication line	Within La Paz Road
Fiber Optic		
Level 3	285 ft of fiber optic line	Along Camino Capistrano

AT&T = American Telephone & Telegraph
 ETWD = El Toro Water District
 ft = feet
 I-5 = Interstate 5
 kV = kilovolt
 MCD = Mobile communication device
 MNWD = Moulton Niguel Water District
 NB = northbound

OH = overhead
 RCB = reinforced concrete box
 SB = southbound
 SCE = Southern California Edison
 SCG = Southern California Gas
 SDG&E = San Diego Gas and Electric
 UC = undercrossing
 VCP = Vetrified clay pipe

1.4.1.13 Drainage

Oso Creek, La Paz Channel, and Aliso Creek are the three main streams that flow through the Study Area and cross under I-5. These streams accept runoff from this portion of I-5. Oso Creek flows south adjacent to I-5. The La Paz channel originates northeast of I-5 and after crossing under the freeway, flows parallel to I-5, under Oso Parkway, and confluences with Oso Creek, south of Oso Parkway. Lastly, Aliso Creek originates northeast of I-5.

Existing culverts were identified and reviewed to determine how they currently function and how they will function after the project. Proposed improvements may require abandoning or removal of some drainage systems, or adjusting some with respect to the finished grade. Others may conflict with proposed sound walls or retaining walls and will be relocated. These impacts may be minimized or avoided by the following:

- Relocation, extension, and adjustment of systems as necessary
- Additional inlets with connecting pipes where required
- Abandonment or removal of systems that are no longer serviceable

Where feasible, the drainage design would maintain existing drainage flow patterns and incorporate existing drainage systems as much as possible, given existing physical constraints; and allow on-site runoff to sheet flow off the pavement where feasible to provide opportunities for storm water treatment. Major drainage design concepts are:

Avery Parkway Interchange

- Construction of new parallel drainage systems along the widened NB and SB freeway edge of shoulder to convey the flows to existing or new cross culverts
- Removal or abandonment of existing 30-inch storm drain within Avery Parkway
- Construction of new parallel storm drain systems along both sides of the widened Avery Parkway, connecting to a reconstructed portion of the eight ft by three ft RCB
- Construction of ramp drainage systems as needed where some will connect to the two parallel systems along each side of Avery Parkway

Crown Valley Parkway Interchange

- Reconstruction or modification of the median drainage systems to collect runoff from elevated areas, then conveying the runoff into existing or new cross culverts
- Construction of new parallel drainage systems to convey the flows to existing or new cross culverts
- Construction of ramp drainage systems as needed

Oso Parkway Interchange

- Construction of new parallel drainage systems along the widened NB and SB freeway edge of shoulder to convey the flows to existing or new cross culverts

Construction of ramp drainage systems as needed

La Paz Road Interchange

- Construction of new parallel drainage systems along the widened NB and SB freeway edge of shoulder to convey the flows to existing or new cross culverts
- Extension of two triple six ft by five ft RCB culverts that parallel the railroad tracks
- Removal or abandonment of existing storm drain systems along La Paz Road
- Construction of new parallel storm drain systems along both sides of the widened La Paz Road
- Construction of ramp drainage systems as needed

Alicia Parkway Interchange

- Reconstruction or modifications of the median drainage systems to collect runoff from the elevated areas then conveying the runoff into existing or new cross culverts
- Construction of new parallel drainage systems along the widened NB and SB freeway edge of shoulder to convey the flows to existing or new cross culverts
- Construction of ramp drainage systems as needed

El Toro Road Interchange

- Construction of new median drainage systems to collect runoff from elevated areas, then conveying the runoff into existing or new cross culverts
- Construction of new parallel drainage systems along the widened NB and SB freeway edge of shoulder to convey the flows to existing or new cross culverts
- Construction of ramp drainage systems as needed

In addition, Best Management Practices (BMPs) will be provided as follows:

- Crown Valley Parkway Interchange – Construction of a vegetated biofiltration swale adjacent to the NB lanes in the area between the NB off-ramp and the NB loop on-ramp.
- Oso Parkway Interchange – Construction of an infiltration or detention treatment basin adjacent to the SB lanes in the area between the SB loop on-ramp and the SB off-ramp.
- Alicia Parkway Interchange – Construction of two infiltration or detention treatment basins. One basin will be constructed adjacent to the NB lanes in the area between the

NB off-ramp and the NB loop on-ramp. The other basin will be constructed adjacent to the SB lanes in the area between the SB loop on-ramp and the SB off-ramp.

- El Toro Road Interchange – Construction of an infiltration or detention treatment basin adjacent to the NB lanes in the area between the NB off-ramp and the NB loop on-ramp.

1.4.1.14 Railroad Involvement

A railroad facility owned by the Southern California Regional Rail Authority (SCRRA) crosses under the I-5 south of the La Paz Road interchange. In order to accommodate the widened I-5 cross-section, the bridge carrying mainline traffic crossing over the railroad will be widened and the bridge carrying the NB off-ramp to La Paz Road traffic will be replaced. To accommodate this widening, right-of-way will be required from SCRRA. Due to the improvements, a Construction and Maintenance (C&M) Agreement will be needed during the PS&E phase.

1.4.1.15 Staging

The project proposes to be constructed by temporary striping of the mainline freeway to create a buffer zone for placement of temporary K-railing along existing travel lanes. The HOV lanes and three existing general-purpose freeway lanes would be striped to 11 ft to provide the work area required during construction. The outside lane will remain 12 ft to accommodate truck traffic.

The existing ramps may be closed temporarily for reconstruction of the on-ramps and off-ramps at gore areas and street intersections. However, ramp closures would be limited to potential weekend and night closures and are not expected to exceed a period of five consecutive days. Traffic attempting to get to and from local roads would have to detour using the next existing interchanges. Consecutive ramps shall not be closed unless full freeway closure is required.

The Transportation Management Plan (TMP), a standard condition placed on all Caltrans construction projects, is designed to minimize construction activity-related motorist delays, queuing, and accidents by the effective application of traditional traffic-handling practices and innovative approaches. The purpose of the TMP is to relieve congestion and maintain traffic flow within the Study Area during construction activities. The proposed project TMP proposes to keep all lanes open during construction, with the exception of overnight lane closures. The TMP will be finalized during final design.

The TMP includes traffic mitigation strategies for the duration of construction, addresses lane closure requirements, and seeks to inform the public and motorists regarding the

construction schedule, potential detours, and anticipated traffic delays during construction. The TMP will consist of, but not be limited to, the following elements to avoid and minimize traffic inconvenience caused by construction activities:

Traffic Control: Traffic control elements, such as lane/shoulder closures and temporary signing/stripping on the I-5 ramps and the I-5 mainline will be required. All traffic lanes will be kept open during construction, with the exception of overnight closures. Ramp closures will be limited to weekend closures and would not exceed a period of one week. Also, funds have been allocated as part of the Transportation Management Plan (TMP) so that compensation can be provided to the cities for possible increased police services during construction.

Construction Zone Enhanced Enforcement Program (COZEEP): Through coordination with Caltrans and the California Highway Patrol (CHP), this program was developed to provide a safer work zone for both construction workers and the motoring public. The program uses two CHP officers who enforce lane closures and also provide a visual deterrent to errant/speeding vehicles.

Public Awareness Campaign (PAC): Vehicles traveling through the construction zone would likely experience longer than normal delays. To reduce these delays and confusion to the motoring public during construction activities, the OCTA, in conjunction with Caltrans, will implement a PAC. The purpose of the PAC is to keep the surrounding community members abreast of the project's progress and construction activities that could affect their travel plans. The use of mailers/flyers, local newspapers advertising, local radio information, and public meetings, as appropriate, will be effective tools for disseminating this information.

Signage: Post information signage on I-5 and the local arterials prior to and during construction to inform motorists of delays, ramp closures, and alternate routes. Encroachment permits will be required from the cities for placement of signage on local arterials during construction.

Emergency Access: Adequate local emergency access will be provided at all times to adjacent uses. Proper detours and warning signs would be established to ensure public safety. The TMP will be devised so that construction will not interfere with any emergency response or evacuation plans.

Pedestrian Access: Provide a pedestrian and bicycle lane detour plan to accommodate sidewalk and bicycle lane closures.

During construction, temporary construction easements (TCEs) will be acquired. These TCEs are used for locating, constructing, improving, grading, landscaping, and other necessary work, including the operation of equipment and the movement of workers. These easements are temporary during construction and will be restored to their previous condition upon completion of construction. Staging areas will be located in loop-ramp areas, TCEs, or property acquired as part of the proposed project.

1.4.1.16 Signing

Signs would be removed and relocated to accommodate the widening. All existing overhead signs at the exit ramps will be replaced and relocated to the new edge of shoulders, auxiliary lane, or general-purpose lanes.

1.4.1.17 ROW Acquisition

There are four nonresidential, single business retail properties that will be relocated under the Build Alternatives. Three of these acquisitions occur adjacent to the I-5/Avery Parkway interchange. Only one additional property will be affected at the I-5/El Toro Road interchange area. In addition, the Build Alternatives will require 24 nonresidential partial acquisitions, and 93 parcels required for TCEs.

Further discussion of potential acquisitions is provided in Section 2.3, Community Impacts.

1.4.1.18 Transportation Systems Management/Transportation Demand Management

Transportation Systems Management (TSM) elements will be included in the project Build Alternatives. These elements include: ramp metering, auxiliary lanes, turning lanes, traffic signal coordination, and bicycle and pedestrian improvements. Additionally, the project Build Alternatives will consist of TDM elements, as they will provide travel time savings, operating cost savings, and increased travel reliability. Additionally, the proposed project is expected to further increase the occupancy rate on I-5 and thus decrease the traffic demand.

1.4.1.19 Anticipated Construction Schedule

Construction is anticipated to begin in 2018 and be completed in 2022. During construction of this project, no substantial traffic delays are anticipated, and the existing number of mainline lanes will be maintained during construction. There will be some

lane closures due to temporary traffic striping at night for the construction of overhead signs.

1.4.1.20 Federal Involvement

Per the current Joint Stewardship and Oversight Agreement (Agreement) between Caltrans and FHWA, dated September 2007, this project has been assessed to determine whether it will be a High Profile Project. The project is considered a High Profile Project as defined by the selection criteria outlined in the Agreement (because total cost exceeds \$400 million). The Agreement requires full oversight of the project by FHWA. The total project cost estimate (including support costs) is \$461 million for Alternative 2 and \$506 million for Alternative 3. Because both alternatives have cost estimates that are either approaching or exceeding \$500 million, it is possible that the project could be classified as a major project. As a result, a Cost Estimate Review (CER) was conducted from October 22 to 24, 2013 in Orange County, CA. Based on the risk assessment model developed during the CER, there is an 80% certainty that the total project costs will be between \$409 million and \$489 million. The 70% confidence level is approximately \$465 million in Year of Expenditure (YOE) dollars. Because estimated cost at the required 70% confidence level by FHWA is less than \$500 million, the project is not currently considered major. If at any point in the future the total project cost exceeds \$500 million, it will be classified as major and Caltrans shall notify FHWA and reassess this project using major project criteria. Additionally, a Project Management Plan (PMP) will be required to be prepared and submitted to FHWA. Because the project has a total cost greater than \$100 million, a Financial Plan is also required to be prepared. The Initial Financial Plan (IFP) must be submitted and approved prior to the authorization of federal financial assistance for construction.

1.4.2 Unique Design Features of the Build Alternatives

Unique design features of the two Build Alternatives (Alternatives 2 and 3) are described below.

1.4.2.1 Alternative 2

The following discussion describes the features unique to Alternative 2.

Noise Attenuation

The following additional noise barriers were determined to be feasible for Alternative 2:

- Noise Barrier No. 49: A 283 ft long barrier located along the property line on the NB side of I-5 between Oso Parkway and La Paz Road. This barrier is also identified for Alternative 3 but would require a longer barrier length with that alternative.

Additional existing walls to be removed and replaced are:

- Existing Wall No. 4: A portion of this wall along the NB off-ramp at La Paz Road would be removed from STA 95+70 to STA 97+80.
- Existing Wall No. 7: A portion of this wall or the entire wall along the SB side of I-5 between La Paz Road and Alicia Parkway would be removed from STA 132+35 to STA 143+88.

Retaining Walls

Table 1.4-3 lists the additional retaining walls proposed under Build Alternative 2.

Table 1.4-3 Retaining Walls for Build Alternative 2

Wall No.	Length (ft)	Max Height (ft)	Average Height (ft)	Proposed Wall Type ¹
691	201	10	7.4	Type 1
698	509	22	14.7	MSE
747	161	14	9.4	Type 1
748	990	24	17.2	Type 1 or Cut Wall
61	266	6	6	Type 1

¹ Wall type designations: Caltrans Standard Type 1 (Cantilevered wall less than 36 ft high); MSE – Mechanically Stabilized Earth; Cut Wall – wall is constructed from the top of the wall down to the base during excavation activities; soil nail - reinforces natural soils.

Caltrans = California Department of Transportation
ft = feet

Cost

The estimated total cost for Alternative 2 is \$461 million.

1.4.2.2 Alternative 3

The following discussion describes the features unique to Alternative 3.

General-Purpose Lanes

Alternative 3 proposes to add a second additional general-purpose lane from Crown Valley Parkway to Alicia Parkway.

Structures

One additional structure, beyond those identified in Section 1.4.1, would be modified for Alternative 3:

El Toro Road Overhead (OH) (Bridge No. 55-0221)

- Structure widening for SB I-5

Noise Attenuation

The following additional noise barriers were determined to be feasible for Alternative 3:

- Noise Barrier No. 49: A 500 ft long barrier located along the property line on the NB side of I-5 between Oso Parkway and La Paz Road.

Additional existing walls to be removed and replaced are:

- Existing Wall No. 4: A portion of this wall along the NB off-ramp at La Paz Road would be removed from STA 93+40 to 97+80.
- Existing Wall No. 7: A portion of this wall or the entire wall along the SB side of I-5 between La Paz Road and Alicia Parkway would be removed from STA 132+35 to STA 146+12.

Utilities

Table 1.4-4 lists the additional utilities to be relocated under Alternative 3.

Table 1.4-4 Utility Relocations for Build Alternative 3

Owner	Type	Description
Water		
MNWD	Extend existing encasement of 10-inch sewer line	Crossing I-5 north of Crown Valley Parkway
Electric		
SDG&E	305 ft of underground electrical line	Crossing I-5 north of Crown Valley Parkway
SDG&E	400 ft of conductors of overhead electrical transmission line, including relocation of two steel poles	Crossing I-5 north of Crown Valley Parkway
SDG&E	690 ft of overhead electrical distribution line	Along Mission Viejo High School property
Fiber Optic		
Verizon	Relocate fiber optic line to avoid conflict with replaced NB off-ramp footings	Crossing I-5 at the El Toro OH

ft = feet
 I-5 = Interstate 5
 MNWD = Moulton Niguel Water District
 SDG&E = San Diego Gas and Electric

Retaining Walls

Table 1.4-5 lists the additional retaining walls proposed under Build Alternative 3.

Table 1.4-5 Retaining Walls for Build Alternative 3

Wall No.	Length (ft)	Max Height (ft)	Average Height (ft)	Proposed Wall Type1
739	2389	32	12.6	MSE
744	1315	26	21	Soil Nail
2	455	10	9.5	Type 1 or Cut Wall
55	481	12	11.3	Type 1
65	617	18	16.8	Type 1
72	435	20	16.4	Type 1 or Cut Wall
82	630	20	16.7	Type 1 or Cut Wall
115	602	12	9.1	Type 1 or Cut Wall

Wall type designations: Caltrans Standard Type 1 (Cantilevered wall less than 36 ft high); MSE – Mechanically Stabilized Earth; Cut Wall – wall is constructed from the top of the wall down to the base during excavation activities; soil nail - reinforces natural soils.

Caltrans = California Department of Transportation
ft = feet

ROW Acquisition

In addition to the full acquisitions discussed in Section 1.4.1.16, Alternative 3 will require seven additional nonresidential partial acquisitions.

Further discussion of potential acquisitions is provided in Section 2.3, Community Impacts.

Cost

The estimated total cost for Alternative 3 is approximately \$506 million.

1.4.2.3 Alternative 1: No Build

The No Build Alternative proposes no improvements to I-5, maintaining the existing four general-purpose lanes and one HOV lane throughout the project limits in the NB and SB directions. All freeway facilities would remain as they currently exist, with the exception of proposed projects that are under development or currently in construction. These projects include, but are not limited to, the widening of Crown Valley Parkway, improvements to I-5 between Avenida Pico and San Juan Creek Road, I-5/SR-74 Interchange improvements, I-5/La Paz Road Interchange improvements, and I-5/Alicia Parkway Interchange improvements. Under the No Build Alternative, the Study Area will continue to experience heavy levels of congestion, discontinuity of the HOV lane network, and deteriorating LOS on the I-5 mainline and freeway ramps. The No Build Alternative may create cumulative impacts if the project need is addressed by multiple smaller projects completed over an extended period of time.

1.5 Project Schedule

This environmental document was circulated for public review in September 2013 and is anticipated to be completed and approved in early 2014. Final design and ROW acquisition is anticipated to be completed in late 2017. Project construction is anticipated to begin in 2018 and continue until 2022. The I-5 Widening Project will be bid for construction as three segments but these segments would be built concurrently. The segments are as follows.¹

- Segment 1: Southern project limits (approximately Station [STA] 663+00) to STA 778+85 (PM 12.4 to 14.5)
- Segment 2: STA 0+96.19 to STA 140+00 (PM 14.5 to 17.1)
- Segment 3: STA 140+00 to Northern project limits (approximately STA 240+00) (PM 17.1 to 18.9)

This construction phasing will adhere to the scope of this environmental document. Replacement planting may be split from the roadway project and be bid as a separate follow-up highway planting project with a three-year plant establishment period. Additional highway planting design details will be developed during the PS&E phase.

¹ Non-sequential stationing between Segments 1 and 2 is a result of the following station equation: $STA\ 778+85 = 0+96.19$.

1.6 Environmental Decision Process

After the public circulation period, all comments were considered, and the PDT recommended a preferred alternative and made a final determination of the proposed project's effect on the environment. The PDT is comprised of Caltrans, OCTA, and representatives from the Study Area cities. In accordance with CEQA, no unmitigable significant adverse impacts were identified, and Caltrans prepared this Mitigated Negative Declaration (MND). Similarly, Caltrans determined that the action does not significantly impact the environment, and Caltrans, as assigned by FHWA, is issuing this Finding of No Significant Impact (FONSI) in accordance with NEPA.

1.7 Identification of the Preferred Alternative

On November 20, 2013, the PDT decided to recommend Alternative 2 as the Preferred Alternative. In making this selection, the PDT compared the alternatives analyzed in the IS/EA using the evaluation criteria as defined by the purpose and need for the project. These criteria were as follows:

- Increase capacity and operations within the Study Area;
- Provide extension of the HOV network within a portion of the proposed project limits to improve operation;
- Improve merging/diverging from freeway ramps and improve ramp intersections where needed; and
- Improve existing auxiliary lanes and add auxiliary lanes where needed to improve weaving operations.

Utilizing these criteria, Alternative 2 was recommended as the preferred alternative because it best meets the purpose and need for the project. Alternative 2 would increase capacity and operations without acquisition of substantial ROW and achieve a major component of OCTA's M2020 Plan for Measure M. Alternative 2 was recommended over Alternative 3 because the traffic analysis showed that Alternative 3 would create a bottleneck at the northerly project limits. This is due to the fact that Alternative 2 will match the existing cross section in the El Toro area (five general purpose lanes), while Alternative 3 would require the six proposed general purpose lanes to transition back to five. As a result, there was not sufficient benefit to warrant implementation of Alternative 3. The impacts associated with Alternative 2 are minimal compared to the benefits to the motoring public and the surrounding residents.

1.8 Alternatives Considered but Eliminated from Future Discussion

An analysis of the proposed project provided a comprehensive study of design solutions that were considered for addressing the need for improvements within the proposed project limits on I-5. The concepts discussed below were evaluated and eliminated from further discussion based on impacts to resources, feasibility, and inability to meet the purpose and need.

1.8.1 TSM Alternative

The TSM Alternative consists of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals at intersections to improve existing peak-hour traffic flow and to reduce queuing of vehicles. TSM also encourages automobiles, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system.

Although TSM measures would not solely satisfy the purpose and need of the project, TSM measures have been incorporated into the Build Alternatives for this project as summarized below:

- Ramp Metering
- Auxiliary Lanes
- Turning Lanes
- Traffic Signal Coordination
- Bicycle and Pedestrian Improvements

1.8.2 TDM Alternative

The TDM Alternative focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Typical activities within this alternative reduce the amount of single-occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Promoting mass transit and facilitating nonmotorized alternative means of transportation

are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting. In some cases, TDM may also involve changing work schedules, with the resultant greater travel flexibility producing a more even pattern of transportation network use, muting the effect of morning and evening rush hours.

Implementation of the I-5 Widening Project Build Alternatives will add up to two additional general-purpose lanes, reestablish existing auxiliary lanes and construction of auxiliary lanes, and extend a second HOV lane in each direction on I-5 from Alicia Parkway to El Toro Road. The widening of the general-purpose lanes and the reestablishments of existing and construction of new auxiliary lanes will reduce traffic congestion on the I-5 mainline, increase capacity and operations within the Study Area, and improve merging/diverging from freeway ramps and improve weaving operations. The HOV lane extension will provide travel time savings, operating cost savings, and increased travel reliability. Either of the Build Alternatives, if selected, is expected to further increase the occupancy rate on I-5 and thus decrease the traffic demand. As discussed earlier under Section 1.2.2.6, Modal Interrelationship and System Linkages, the TDM strategies are consistent with the Cities of Laguna Niguel, Mission Viejo, Laguna Hills, and Lake Forest General Plans.

1.8.3 Avery Parkway Interchange Options

Ten options (including a No Build) for the reconfiguration of the Avery Parkway interchange were rejected at different phases of the project development process. Eight of these options (including a No Build) were eliminated from further consideration upon the Avery Parkway Interchange Feasibility Study and are discussed below in Section 1.7.3.1. Two of the options were carried forward for evaluation in the Project Approval/ Environmental Documentation (PA/ED) phase. One of these options (Option B – hook ramps) was eliminated by the PDT and is discussed below in Section 1.7.3.2, and the other option (Option A – tight diamond) was carried forward as part of Build Alternatives 2 and 3.

1.8.3.1 Avery Parkway Interchange Feasibility Study

For the Avery Parkway interchange, a separate study was completed before the decision was made to include the interchange improvements in the I-5 Widening Project. OCTA prepared the *I-5/Avery Parkway Feasibility Study*, dated June 2011. This feasibility study considered 10 alternative concepts for the reconfiguration of the Avery Parkway interchange. Two of these concepts were brought forward for further consideration: the tight diamond design (Option A), and the hook ramp design (Option B). The remaining

eight were rejected from further evaluation. The rejected concepts are summarized below, based on information provided in the feasibility study:

- **Improved Diamond Interchange with Roundabout:** Replace the Avery Parkway SB ramps and Camino Capistrano intersections with a “five-point” roundabout. This concept would combine the closely spaced intersections of Avery Parkway/ Camino Capistrano and Avery Parkway/SB ramps. A preliminary traffic operations analysis of this concept showed that the combination of high entry traffic volumes and high circulatory traffic volumes at certain locations within the roundabout results in poor operations (LOS F and substantial queuing issues) at the roundabout. Due to the poor operations at the roundabout, this alternative concept was eliminated from further consideration.
- **Single Point Interchange:** Improve the interchange utilizing a single point interchange (SPI) configuration. The Avery Parkway UC would be replaced in this concept and I-5 would need to be raised over 12 ft to accommodate standard vertical clearance between Avery Parkway and the new three-span UC structure. Raising I-5 over 12 ft presents several significant challenges, including providing standard mainline and ramp profile design associated with the raised freeway. The gore locations of the northerly ramps to and from Avery Parkway would need to shift north more than 300 ft due to the significant change in the mainline profile. This gore shift would result in decreased weaving lengths between Avery Parkway and Crown Valley parkway, thus adversely affecting mainline operations or requiring a braided ramp configuration that would significantly increase project costs and would likely affect the implementation of larger, more regional projects in the future. Additionally, the stage construction of an SPI configuration cannot be accomplished while maintaining five lanes open in each direction during construction. Due to these technical challenges, this alternative concept was eliminated from further consideration.
- **Paseo de Colinas Extension:** Improve the interchange by eliminating the Paseo de Colinas “buttonhook” and extending Paseo de Colinas over I-5 and intersecting with Marguerite Parkway north of Avery Parkway. The SB ramps would be relocated to hook ramps tying into Camino Capistrano at the previous Paseo de Colinas “buttonhook” location and the NB ramps would remain in a diamond configuration. The profile of the Paseo de Colinas extension to Marguerite Parkway is challenging and requires a structure over the railroad, Camino Capistrano, and I-5. The SB I-5 to WB Paseo de Colinas movement would be very circuitous requiring four left turns.

Additionally, the new Paseo de Colinas/ Marguerite Parkway intersection adds additional pressure to this segment of Marguerite Parkway and adversely affects the overall traffic operations of this local street. Due to these technical challenges and associated high costs, this alternative concept was eliminated from further consideration.

- **Hook Ramps:** Improve the interchange by creating hook ramps in both the SB and NB directions. The SB hook ramps would tie into Camino Capistrano south of Avery Parkway, and the NB hook ramps would tie into Marguerite Parkway north of Avery Parkway. Although this concept would improve traffic flow on Avery Parkway, the new NB hook ramps intersection with Marguerite Parkway adds additional pressure to this segment of Marguerite Parkway and adversely affects the overall traffic operations of this local street. Additionally, the NB hook ramps would have significant ROW impacts on the retail properties fronting Marguerite Parkway. Lastly, the NB weaving distance between Avery Parkway and Crown Valley Parkway would be decreased by over 300 ft, thus adversely affecting mainline operations. Due to these technical challenges and associated high costs, this alternative concept was eliminated from further consideration.
- **New Single Point Interchange between Avery Parkway and Crown Valley Parkway:** Create a new single point interchange between Avery Parkway and Crown Valley Parkway. The new interchange would connect Forbes Road to the west and Marguerite Parkway to the east. The ramps related to Crown Valley Parkway, the new interchange, and Avery parkway would be accomplished utilizing collector-distributor roads and braided ramps. Although this concept would reduce the traffic volumes at the Crown Valley Parkway and Avery Parkway interchanges, it presented several challenges. The first challenge was that the concept would have significant ROW (retail) impacts on both sides of I-5, which was not consistent with the intent of Renewed Measure M (M2). The second challenge was that it would be difficult to obtain approval for a new access point at this location from Caltrans and FHWA. In short, there would be three local interchanges within a 1 mi stretch of I-5 that would adversely affect the traffic operations of I-5. The new intersection at Marguerite Parkway adds additional pressure to this segment of Marguerite Parkway and adversely affects the overall traffic operations of this local street. Lastly, this concept would be very expensive and substantially outside of the budget available for this project. Due to these technical challenges and associated high costs, this alternative concept was eliminated from further consideration.

- ***Saddleback Connector:*** Create a new access point (half interchange) between Avery Parkway and Crown Valley Parkway. The new interchange ramps tie into Marguerite Parkway at the entrance to Saddleback College on the east side of I-5. The ramps related to Crown Valley Parkway, the new interchange, and Avery Parkway would be accomplished utilizing collector-distributor roads and braided ramps. Significant improvements of the interchange at Avery Parkway are also included in this alternative concept. Although this concept would reduce the traffic volumes at the Crown Valley Parkway and Avery Parkway interchange, it presented several challenges. The first challenge was that the concept would have significant ROW (retail) impacts on both the east and west sides of I-5, particularly the east side, which was not consistent with the intent of Renewed Measure M (M2). The second challenge was that it would be difficult to obtain approval for a new access point at this location from Caltrans and FHWA. In short, there would be three local interchanges within a one mi stretch of I-5 that would likely adversely affect the traffic operations of I-5. The new intersection at Marguerite Parkway adds additional pressure to this segment of Marguerite Parkway and adversely affects the overall traffic operations of this local street. Lastly, this concept would be very expensive and substantially outside of the budget available for this project. Due to these technical challenges and associated high costs, this alternative concept was eliminated from further consideration.
- ***Direct Connection between I-5 and Paseo de Colinas:*** Create direct ramp connections between SB I-5 and WB Paseo de Colinas and between EB Paseo de Colinas and NB I-5. It also provides direct ramps to and from a potential future train station parking garage west of I-5. The ramps related to Crown Valley Parkway, Avery Parkway, and the new connections to Paseo de Colinas would be accomplished utilizing collector-distributor roads and braided ramps. Significant improvements of the interchange at Avery Parkway are also included in this alternative concept. Additional traffic forecast modeling was developed to evaluate this concept. The modeling showed that the new ramp connections did not significantly decrease the traffic volumes at either Avery Parkway or Crown Valley Parkway. Technically, this concept presented several challenges. The first challenge was that the concept would have significant ROW (retail) impacts on the west side of I-5, which was not consistent with the intent of Renewed Measure M (M2). The second challenge was that it would be difficult to obtain approval for a new access point at this location from Caltrans and FHWA. In short, there would be three local interchanges within a one mi stretch of I-5 that would likely adversely affect the traffic operations of I-5.

Lastly, this concept would be very expensive and substantially outside the budget available for this project. Due to these technical challenges, limited benefits and associated high costs, this alternative concept was eliminated from further consideration.

1.8.3.2 Design Option B – SB Hook On- and Off-Ramps

The following design option (Design Option B) was rejected after being evaluated by the PDT during the early stages of the PA/ED phase. Under this option, a SB hook off-ramp and SB hook on-ramp were proposed to be added to allow for the removal of the existing left-turn lane for traffic accessing SB I-5. The hook ramps would provide access to SB I-5 from Camino Capistrano, just south of the Camino Capistrano/Avery Parkway intersection. The SB off-ramp would be improved to two lanes at the diverge from I-5, with one mainline auxiliary lane for the second lane. The NB on- and off-ramp would be realigned and the NB off-ramp would be widened to three lanes at the intersection with Avery Parkway. Similarly, the NB on-ramp would be widened to three lanes at the intersection. Avery Parkway would be improved under the structure to provide dual left-turn lanes to the NB on-ramp and three through lanes in the EB and WB directions. Standard outside shoulders (which would accommodate bicycles) would be provided throughout the majority of the interchange in the EB and WB directions. Sidewalk would be provided through the interchange in the EB and WB directions.

After extensive review by the PDT, Design Option B was eliminated from further consideration due to operational and nonstandard design features. Caltrans completed a review of both design options that were originally under consideration for the I-5/Avery Parkway interchange, the modified tight diamond and SB hook ramps. The options were evaluated from both a traffic and design perspective. The modified tight diamond was found to allow for a larger footprint under the new structure and would provide an interconnect line between the signals. (Caltrans will require that the signals at the Avery Parkway/Camino Capistrano intersection and the Avery Parkway/Marguerite Parkway intersections be under Caltrans control.) The proposed SB hook ramps were found to be problematic because they propose a challenging profile and superelevation for the off-ramp. Movements onto Avery Parkway would need to be carefully signed because there would no longer be direct access. (Access would be provided off of Camino Capistrano.) Additionally, the option would restrict future widening along Camino Capistrano. Operationally, the tight diamond was found to perform slightly better than the SB hook ramps. For these reasons, Caltrans proposed that the modified tight diamond move forward as the most feasible option and that the SB hook ramps be eliminated from further consideration. The City of Mission Viejo and the City of Laguna Niguel were also

in support of the modified tight diamond. The PDT made the decision to eliminate Design Option B on September 6, 2012.

1.9 Permits and Approvals Needed

Table 1.9-1 lists the permits, reviews, and approvals that would be required for construction of the proposed project.

Table 1.9-1 Required Permits, Reviews, and Approvals

Agency	Permit/Approval	Status
Federal Highway Administration (FHWA)	Cost Estimate Review	Review will be conducted prior to starting construction (supports IFP concurrence).
	Project Management Plan (PMP)	Required only if the project is determined to be a major project.
	Financial Plan	IFP must be submitted during the final design/right-of-way phase and approved prior to the authorization of Federal Finance Assistance for construction. Additionally, an Annual Update (AU) must be provided until construction completion.
United States Army Corps of Engineers	Section 404 Authorization	A Letter of Permission will be obtained during design.
National Marine Fisheries Service	Section 7 consultation for southern California steelhead.	Informal consultation with NMFS has been conducted and concurrence on the "no effect" determination was received on January 31, 2014.
United States Fish and Wildlife Service	Section 7 consultation for CAGN. Formal Section 7 Consultation is not expected at this time, but informal consultation is mandatory due to the temporary impact to CAGN.	Informal consultation with USFWS has been conducted and concurrence on the "not likely to adversely affect" determination was received on March 26, 2014
Federal Emergency Management Agency, Cities of Laguna Hills, Laguna Niguel, Mission Viejo	Condition Letter of Map Revision	Letter will be obtained during final project design
California Department of Fish and Wildlife	1602 Lake or Streambed Alteration Agreement	Permit will be obtained after certification of environmental document and prior to construction.
Regional Water Quality Control Board	Section 401 Water Quality Certification	Certification will be obtained after certification of environmental document and prior to construction.
State Water Resources Control Board	Section 402 NPDES/Caltrans NPDES Permit CAS000003 and CAS00002 (General Construction Permit)	The Construction General Permit has been adopted and was effective as of July 1, 2010. The Caltrans NPDES Permit was effective as of July 1, 2013.
Southern California Regional Rail Authority (SCRRA)	Construction and Maintenance (C&M) Agreement	Agreement will be obtained prior to construction.
	Coordination with staff regarding design of El Toro Overhead structure.	Coordination will take place during final design.
	Right of Entry agreement, SCRRA Form 6	Agreement will be obtained prior to construction (during final design)
Orange County Flood Control District	Encroachment Permit	Letter or permit will be obtained prior to construction.
Orange County Health Care Agency	Well permit for wells and test borings	Letter or permit will be obtained prior to construction.
County of Orange	Concurrence on Section 4(f) <i>de minimis</i>	Concurrence was received January

Table 1.9-1 Required Permits, Reviews, and Approvals

Agency	Permit/Approval	Status
	finding.	17, 2014.
Saddleback Valley Unified School District	Concurrence on Section 4(f) <i>de minimis</i> finding.	Concurrence was received February 21, 2014
Utilities (SCG, MNWD, AT&T, SDG&E, Level 3, Kinder Morgan, Cox Communications, Verizon, Qwest, ETWD, and SCE)	Utility Agreements	Agreements will be obtained after certification of environmental document and after confirming need for relocation following utility potholing in the PS&E phase. Agreements will be executed prior to construction.
Cities of Mission Viejo, Lake Forest, Laguna Niguel, and Laguna Hills	Maintenance agreement or other necessary agreements for traffic signals, street lighting, pavement rehabilitation, and landscaping.	New agreements or updated agreements with individual cities will be obtained prior to construction.

AT&T = American Telephone & Telegraph

AJ = Annual Update

CAGN = coastal California gnatcatcher

Caltrans = California Department of Transportation

CLOMR = Conditional Letter of Map Revision

ETWD = El Toro Water District

FEMA = Federal Emergency Management Agency

FONSI = Finding of No Significant Impact

MNWD = Moulton Niguel Water District

IFP = Initial Financial Plan

NPDES = National Pollutant Discharge Elimination System

PMP = Paleontological Mitigation Plan

PS&E = Plans, Specifications, and Estimates

SCE = Southern California Edison

SCG = Southern California Gas

SDG&E = San Diego Gas and Electric

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Land Use (Temporary)	This alternative will have no temporary land use impacts.	<p><i>Section 4(f) Temporary Use</i></p> <p>Access to existing parkland or recreational facilities may be temporarily affected, especially along a segment of the Aliso Creek Class I Bikeway under I-5 south of Los Alisos Boulevard during construction activities. Build Alternative 2 may result in the temporary closure of Aliso Creek Class I Bikeway during bridge construction on the section of I-5 over the trail. This closure may be necessary to protect the safety of trail users and construction workers. The length of time in which the trail would be temporarily closed would be minimal (two to three days) and a detour is proposed on Los Alisos Boulevard during this closure. At a minimum, trail users would be detoured during times when construction equipment is being brought to the site when falsework is being constructed to facilitate the widening of the Aliso Creek bridge. This temporary detour would be included in the Transportation Management Plan (TMP) developed during the PS&E phase of the project. Additionally, the project design includes provision of a 15-foot (ft) 0-inch wide falsework opening over the bikeway to facilitate the construction of the bridge superstructure which would allow for a 14 ft 0-inch minimum vertical clearance over the bikeway. This will allow bicycle users to continue using the facility during the majority of construction, during which</p>	<p><i>Section 4(f) Temporary Use</i></p> <p>Access to existing parkland or recreational facilities may be temporarily affected, especially along a segment of the Aliso Creek Class I Bikeway under I-5 south of Los Alisos Boulevard during construction activities. Build Alternative 2 may result in the temporary closure of Aliso Creek Class I Bikeway during bridge construction on the section of I-5 over the trail. This closure may be necessary to protect the safety of trail users and construction workers. The length of time in which the trail would be temporarily closed would be minimal (two to three days) and a detour is proposed on Los Alisos Boulevard during this closure. At a minimum, trail users would be detoured during times when construction equipment is being brought to the site when falsework is being constructed to facilitate the widening of the Aliso Creek bridge. This temporary detour would be included in the Transportation Management Plan (TMP) developed during the PS&E phase of the project. Additionally, the project design includes provision of a 15-foot (ft) 0-inch wide falsework opening over the bikeway to facilitate the construction of the bridge superstructure which would allow for a 14 ft 0-inch minimum vertical clearance over the bikeway. This will allow bicycle users to continue using the facility during the majority of construction, during</p>	<p>LU-1 Construction Area Trails Management Plan for the Aliso Creek Class I Bikeway. Prior to issuance of a grading permit, the California Department of Transportation (Caltrans) will approve a Construction Area Trails Management Plan. The Plan would be designed by a registered Traffic Engineer and would address potential trail closures, detours, or other disruptions to trail circulation on Aliso Creek Class I Bikeway. The Plan will identify types and locations of signage to direct trail users during construction and detour routes. Caltrans would verify that the Construction Contractor's Agreement requires the construction contractor to implement and comply with the Construction Area Trail Management Plan.</p> <p>LU-2 Development of Temporary Trail Closures and Detours for the Aliso Creek Class I Bikeway. Prior to any temporary closures or detours of the Aliso Creek Class I Bikeway, the California Department of Transportation (Caltrans) will require the project construction contractor to meet with the Director of OC Parks (or designee) to review the location and need for each closure and detour. Detours for the closures would be developed in</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>times, a detour would not be required.</p> <p>After an evaluation of the proposed project's potential effects on the Aliso Creek Trail, Caltrans has made a determination that the temporary use of land is <i>de minimis</i> within the meaning of Section 4(f). The temporary use of the Aliso Creek Trail would not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f).</p> <p>Additionally, approximately 0.08 acre (ac) under Alternative 2 would be temporarily disturbed along the western perimeter of Mission Viejo High School (MVHS). This temporary use would not affect the recreational use of this property. At the completion of grading, the areas that were temporarily used during construction would be restored to a condition as good as or better than prior to the project.</p> <p>After an evaluation of the proposed project's potential effects on Mission Viejo High School, Caltrans has made a determination that the temporary use of land is <i>de minimis</i> within the meaning of Section 4(f). The temporary use of Mission Viejo High School would not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f)</p> <p>Measures LU-1 through LU-5 avoid and/or minimize the temporary effects</p>	<p>which times, a detour would not be required.</p> <p>After an evaluation of the proposed project's potential effects on the Aliso Creek Class I Bikeway, Caltrans has made a determination that the temporary use of land is <i>de minimis</i> within the meaning of Section 4(f). The temporary use of the Aliso Creek Class I Bikeway would not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f)</p> <p>Additionally, approximately 0.30 ac under Alternative 3 would be temporarily disturbed along the western perimeter of MVHS. This temporary use would not affect the recreational use of this property. At the completion of grading, the areas that were temporarily used during construction would be restored to a condition as good as or better than prior to the project.</p> <p>After an evaluation of the proposed project's potential effects on Mission Viejo High School, Caltrans has made a determination that the temporary use of land is <i>de minimis</i> within the meaning of Section 4(f). The temporary use of Mission Viejo High School would not adversely affect the activities, features, or attributes that qualify the property for protection under Section 4(f)</p> <p>Measures LU-1 through LU-5 avoid and/or minimize the temporary effects</p>	<p>consultation with OC Parks.</p> <p>LU-3 Temporary Signing for Detours for the Aliso Creek Class I Bikeway. The California Department of Transportation (Caltrans) will require the project construction contractor to develop signs directing trail users to the detour routes in consultation with OC Parks. Appropriate directional and informational signage will be provided by the project construction contractor prior to each closure and far enough away from the closure so that trail users will not have to backtrack to get to the detour route.</p> <p>LU-4 Contact Information during Closures and Detours of the Aliso Creek Class I Bikeway. The California Department of Transportation (Caltrans) will require the project construction contractor to provide a contact number for trail users to contact the project construction contractor regarding upcoming or active trail closures. The construction contractor would also be required to provide that information to OC Parks.</p> <p>LU-5 Restoration of Affected Areas on the Aliso Creek Class I Bikeway. The California Department of Transportation (Caltrans) will require the project construction contractor to return trail segments closed temporarily</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		of this alternative related to the Aliso Creek Trail.	of this alternative related to the Aliso Creek Class I Bikeway.	during construction to the OC Parks to their original, or better, condition after completion of construction.
Land Use (Permanent)	This alternative would not be consistent with the purpose and need or with goals, policies, or objectives of regional transportation plans, including the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP). In addition, the No Build Alternative would not be consistent with applicable goals and policies identified in the General Plans for the County of Orange and the Cities of San Juan Capistrano, Mission Viejo, Laguna Niguel, Laguna Hills, Laguna Woods, and Lake Forest.	<p>Minor General Plan Amendments would be required as a result of the incorporation of nontransportation General Plan-designated land into the I-5 facility to ensure consistency with land uses as designated in the local General Plans.</p> <p>This alternative would require the removal of 0.1 ac undeveloped and unlandscaped portions of the Mission Viejo Golf Course.</p> <p><i>Section 4(f) Direct Use</i></p> <p>Approximately 0.12 acre (ac) under Alternative 2 of MVHS property would be permanently acquired. The area to be acquired consists of a slope area outside of the school's fenced area, a dirt area behind the backstop of a baseball field, and an equipment shed. The equipment shed would be relocated prior to construction within the same general area of its existing and would be replaced to a condition as good as or better than prior to the project. Additionally, the use of the baseball field would not be affected. The area acquired is considered minimal and would not impair the existing uses of the recreational facilities at the high school.</p> <p>After an evaluation of the proposed project's potential effects on Mission Viejo High School, Caltrans has made a determination that the direct use of</p>	<p>Minor General Plan Amendments would be required as a result of the incorporation of nontransportation General Plan-designated land into the I-5 facility to ensure consistency with land uses as designated in the local General Plans.</p> <p>This alternative would require the removal of 1.12 ac undeveloped and unlandscaped portions of the Mission Viejo Golf Course.</p> <p><i>Section 4(f) Direct Use</i></p> <p>Approximately 0.20 ac under Alternative 3 of MVHS property would be permanently acquired. The area to be acquired consists of a slope area outside of the school's fenced area, a dirt area behind the backstop of a baseball field, and an equipment shed. The equipment shed would be relocated prior to construction within the same general area of its existing and would be replaced to a condition as good as or better than prior to the project. Additionally, the use of the baseball field would not be affected. The area acquired is considered minimal and would not impair the existing uses of the recreational facilities at the high school.</p> <p>After an evaluation of the proposed project's potential effects on Mission Viejo High School, Caltrans has made a determination that the direct use of</p>	LU-6 If a Build Alternative is selected for implementation, the California Department of Transportation (Caltrans) will request the County of Orange and the cities along the alignment of Interstate 5 (I-5) to amend their respective General Plans to reflect the selected Build Alternative and the modification of land use designations for properties that will be acquired for the project that are not currently designated for transportation uses.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		land is <i>de minimis</i> within the meaning of Section 4(f). The direct use of Mission Viejo High School qualifies as <i>de minimis</i> under Section 4(f) Measure LU-6 avoids and/or minimizes the permanent effects of this alternative related to land use.	land is <i>de minimis</i> within the meaning of Section 4(f). The direct use of Mission Viejo High School qualifies as <i>de minimis</i> under Section 4(f) Measure LU-6 avoids and/or minimizes the permanent effects of this alternative related to land use.	
Growth (Temporary)	This alternative would not have temporary impacts on growth-inducing factors.	This alternative would not have any temporary direct or indirect impacts on growth-inducing factors since temporary construction does not induce growth.	See impact summary for Alternative 2.	None required.
Growth (Permanent)	This alternative is not anticipated to influence the amount, location, and/or distribution of growth or housing and jobs in the local cities and unincorporated areas within the Study Area. Existing congestion would remain within the Study Area and would continue in the future under this alternative and could affect the desirability of these areas for economic development.	This alternative would reduce existing and forecasted traffic congestion and maximize overall performance of the portion of the I-5 freeway within the Study Area. The Build Alternatives would specifically address existing and forecasted congestion within this part of I-5. Additionally, this alternative would address existing operational and capacity deficiencies and would not foster growth in excess of what is projected due to the lack of vacant land in the Study Area.	See impact summary for Alternative 2.	None required.
Community Impacts (Temporary)	This alternative would not have temporary direct or indirect effects to community character or cohesion, result in temporary relocations, or result in temporary effects to environmental justice populations.	Construction activities associated with this alternative would result in temporary indirect effects to community cohesion. Road detours and access restrictions due to construction activities would result in some traffic delays for local residents, businesses, and commuters. Short-term noise effects to some local neighborhoods may occur during construction of the freeway improvements and sound walls. A	Construction activities associated with this alternative would result in temporary indirect effects to community cohesion. Road detours and access restrictions due to construction activities would result in some traffic delays for local residents, businesses, and commuters. Short-term noise effects to some local neighborhoods may occur during construction of the freeway improvements and sound walls. A	None required.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>TMP would be prepared to address potential detours and access restrictions.</p> <p>This alternative would result in temporary impacts of 408,290 square feet (sf) for Temporary Construction Easements (TCEs). Effects from TCEs would cease after construction and the existing land use would be restored. Therefore, direct effects from TCEs during construction are considered minimal.</p> <p>This alternative would generate an estimated 3,454 direct jobs and would generate an estimated 6,654 indirect jobs, for a total of 10,108 jobs. These construction jobs would generate temporary employment and revenues for both local and regional economies.</p> <p>The temporary indirect and/or direct effects of this alternative would be the same for all populations within the Study Area regardless of ethnicity, income, or transit dependence; therefore, indirect or direct temporary effects of this alternative would not be disproportionate to any specific minority or low-income populations.</p>	<p>TMP would be prepared to address potential detours and access restrictions.</p> <p>This alternative would result in temporary impacts of 529,115 sf for TCEs. Effects from TCEs would cease after construction and the existing land use would be restored. Therefore, direct effects from TCEs during construction are considered minimal.</p> <p>This alternative would generate an estimated 3,795 direct jobs and would generate an estimated 7,311 indirect jobs, for a total of 11,106 jobs. These construction jobs would generate temporary employment and revenues for both local and regional economies.</p> <p>The temporary indirect and/or direct effects of this alternative would be the same for all populations within the Study Area regardless of ethnicity, income, or transit dependence; therefore, indirect or direct temporary effects of this alternative would not be disproportionate to any specific minority or low-income populations.</p>	
Community Impacts (Permanent)	This alternative would not have permanent direct or indirect effects to community character or cohesion, relocations, or environmental justice communities.	<p>The improvements associated with this alternative would reduce existing and projected future traffic congestion along this section of I-5 and at local ramp intersections and would improve mobility within the communities.</p> <p>This alternative would require four nonresidential acquisitions in the Cities of Mission Viejo and Lake</p>	<p>The improvements associated with this alternative would reduce existing and projected future traffic congestion along this section of I-5 and at local ramp intersections and would improve mobility within the communities.</p> <p>This alternative would require four nonresidential acquisitions in the Cities of Mission Viejo and Lake</p>	CI-1 The Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 (Uniform Act) (Public Law 910646, 84 Statutes 1894) mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced by its

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>Forest. The businesses to be displaced are within commercial areas that do not demonstrate indicators of high community cohesion; the acquisitions would not divide or fragment an existing, cohesive neighborhood. Therefore, implementation of this alternative would not result in adverse direct or indirect effects to community cohesion.</p> <p>This alternative would also result in the partial acquisition of approximately 83,316 sf of commercial property.</p> <p>Due to the full acquisition of four parcels required by this alternative, an estimated loss of annual property tax revenues would result in 0.0001, 0.00011, and 0.002 percent of annual property tax revenue for the Cities of Laguna Niguel, Mission Viejo, and Lake Forest, respectively. These acquisitions could also result in a loss of State and local jurisdictional sales tax revenues totaling \$246,788. Additionally, this alternative would result in the approximate displacement of 12 to 26 employees. All these displacements would represent lower than approximately 0.02 percent of the employed labor force in the Cities of Laguna Niguel, Mission Viejo, and Lake Forest, which is not substantial. In addition, potential employee displacement effects would be minimized if the displaced businesses are able to relocate within these cities.</p> <p>This alternative would benefit most</p>	<p>Forest. The businesses to be displaced are within commercial areas that do not demonstrate indicators of high community cohesion; the acquisitions would not divide or fragment an existing, cohesive neighborhood. Therefore, implementation of this alternative would not result in adverse direct or indirect effects to community cohesion.</p> <p>This alternative would result in the partial acquisition of approximately 137,422 sf of commercial property.</p> <p>Due to the full acquisition of four parcels required by this alternative, an estimated loss of annual property tax revenues would result in 0.0001, 0.00011, and 0.002 percent of annual property tax revenue for the Cities of Laguna Niguel, Mission Viejo, and Lake Forest, respectively. These acquisitions could also result in a loss of State and local jurisdictional sales tax revenues totaling \$246,788. Additionally, this alternative would result in the approximate displacement of 12 to 26 employees. All these displacements would represent lower than approximately 0.02 percent of the employed labor force in the Cities of Laguna Niguel, Mission Viejo, and Lake Forest, which is not substantial. In addition, potential employee displacement effects would be minimized if the displaced businesses are able to relocate within these cities.</p>	<p>projects. The Uniform Act provides for uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms, and establishes uniform and equitable land acquisition policies.</p> <p>CI-2 Where acquisition and relocation are unavoidable, the provisions of the Uniform Act and the 1987 Amendments, as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (March 2, 1989), would be followed. An independent appraisal of the affected property would be obtained, and an offer for the full appraisal would be made.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>Study Area residents, including minority and low-income populations (environmental justice communities) by improving mobility and circulation throughout the Study Area.</p> <p>Measures CI-1 and CI-2 avoid and/or minimize the effects of this alternative related to acquisitions.</p>	<p>This alternative would benefit most Study Area residents, including minority and low-income populations (environmental justice communities), by improving mobility and circulation throughout the Study Area.</p> <p>Measures CI-1 and CI-2 avoid and/or minimize the effects of this alternative related to acquisitions.</p>	
<p>Utilities and Emergency Services (Temporary)</p>	<p>This alternative would not have temporary effects to utilities and emergency services.</p>	<p>Under this alternative, SCG, Moulton Niguel Water District (MNWD), AT&T, San Diego Gas and Electric (SDG&E), Level 3, Kinder Morgan, Cox Communications, Verizon, Qwest, El Toro Water District (ETWD), and Southern California Edison (SCE) utility facilities would require relocation.</p> <p>Temporary limited closures during construction could affect motorist travel times and the response time of emergency service vehicles. The construction-related traffic impacts would be temporary, and a TMP would be prepared to minimize effects during the construction period.</p> <p>Measures U-1 through U-4 avoid and/or minimize the temporary effects of this alternative related to utilities and emergency services.</p>	<p>See impact summary for Alternative 2.</p>	<p>U-1 All public utility lines, pipes, and cables that are disturbed or removed to accommodate the proposed project will be replaced or relocated within the project limits to continue to meet the needs of residents and businesses in the community. During construction, arrangements will be made to avoid disruption in utility services. If interruption in service is unavoidable, notice will be given and proper arrangements will be made with residents and businesses.</p> <p>U-2 In accordance with standard project requirements, a Transportation Management Plan (TMP) will be prepared for the project prior to construction. The TMP will include plans and requirements for the project area that will be implemented during project construction to ensure traffic safety, minimize construction-related traffic congestion, and minimize driver</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>and pedestrian inconveniences.</p> <p>U-3 To ensure that emergency response times are not disrupted, the Orange County Sheriff and Fire Departments will be informed of the project construction schedule, lane closures (if any), and detour plans (if any) well in advance of any detour plan or lane closure being implemented throughout the construction period.</p> <p>U-4 Area residents and owners/managers of businesses and public facilities will be continually informed of the project development and construction plans prior to and during the construction period so that they are aware of the construction timing, traffic detour plans, lane/road closures, and transit detour plans.</p>
<p>Utilities and Emergency Services (Permanent)</p>	<p>The response times of emergency service providers (police, fire, and emergency vehicle services) could be affected by projected freeway congestion associated with the future No Build condition.</p>	<p>All effects to utilities would be temporary and would be rectified when relocations of certain utilities and project construction are complete. As a result, there are no permanent effects to utilities.</p> <p>Implementation of this alternative is anticipated to result in a positive effect to emergency services by improving the freeway levels of service (LOS) within the project limits, thereby potentially reducing emergency response times.</p>	<p>See impact summary for Alternative 2.</p>	<p>None required.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Traffic and Transportation/ Pedestrian and Bicycle Facilities (Temporary)	This alternative would not result in temporary indirect or direct effects to traffic volumes or circulation.	<p>Temporary ramp closures may occur during construction of interchange improvements. However, these closures would be limited to potential weekend closures and would not exceed a period of one week.</p> <p>Temporary traffic detour routes on I-5 would be necessary while falsework is being erected for construction of new bridges. Throughout the duration of construction, the proposed construction sequencing is intended to provide continuous, uninterrupted access to I-5.</p> <p>When needed, the Aliso Creek Class I Bikeway will be temporarily closed for short durations in the area under I-5, south of Los Alisos Boulevard, to protect the safety of trail users and construction workers. To ensure continuity of the Aliso Creek Class I Bikeway during the temporary closures at this location, temporary detours around this area would be provided. At the completion of grading, the trail segment at this location would be restored to its original alignments and to a condition as good as or better than prior to the project.</p> <p>The short-term traffic effects during construction would be avoided and/or minimized through the implementation of the TMP outlined in Measure TRA-1.</p>	See impact summary for Alternative 2.	<p>TRA-1 A Transportation Management Plan (TMP) will be completed in consultation with the California Department of Transportation (Caltrans) and included in the Plans, Specifications, and Estimates (PS&E) for implementation by the contractor prior to and during construction of any improvements.</p> <p>The TMP will consist of, but not be limited to, the following elements to avoid and minimize traffic inconvenience caused by construction activities:</p> <ul style="list-style-type: none"> • Traffic Control: Traffic control elements, such as lane/shoulder closures and temporary signing/stripping on the Interstate 5 (I-5) ramps and the I-5 mainline will be required. All traffic lanes will be kept open during construction, with the exception of overnight closures. Ramp closures will be limited to weekend closures and would not exceed a period of one week. Also, funds have been allocated as part of the Transportation Management Plan (TMP) so that compensation can be provided to the cities for possible increased police services during construction. • Construction Zone Enhanced Enforcement Program (COZEEP): Through coordination with Caltrans and the California Highway Patrol (CHP), this program was developed to provide a safer work zone for both construction workers and the motoring public. The program uses two CHP officers who

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>enforce lane closures and also provide a visual deterrent to errant/speeding vehicles.</p> <ul style="list-style-type: none"> • Public Awareness Campaign (PAC): Vehicles traveling through the construction zone would likely experience longer than normal delays. To reduce these delays and confusion to the motoring public during construction activities, the Orange County Transportation Authority (OCTA), in conjunction with Caltrans, will implement a PAC. The purpose of the PAC is to keep the surrounding community abreast of the project's progress and construction activities that could affect their travel plans. The use of mailers/flyers, local newspapers advertising, local radio information, and public meetings, as appropriate, will be effective tools for disseminating this information. • Signing: Post information signage on I-5 and the local arterials prior to and during construction to inform motorists of delays, ramp closures, and alternate routes. Encroachment permits will be required from the cities for placement of signage on local arterials during construction. • Emergency Access: Adequate local emergency access will be provided at all times to adjacent uses. Proper detours and warning signs will be established to ensure public safety. The TMP will be devised so that construction will not interfere with any emergency response or evacuation

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				plans. <ul style="list-style-type: none"> • Pedestrian Access: Provide a pedestrian and bicycle lane detour plan to accommodate sidewalk and bicycle lane closures.
Traffic and Transportation/ Pedestrian and Bicycle Facilities (Permanent)	This alternative would not meet the purpose and need to relieve congestion and reduce delay in the opening year (2022) or the future year (2045) and would result in indirect and direct impacts to traffic and transportation.	This alternative would result in improved operating conditions. Year 2022 - Four northbound mainline segments are projected to operate at Level of Service (LOS) F in the a.m. peak hour, and two northbound and three southbound mainline segments will operate at LOS F in the p.m. peak hour. Year 2045 - Seven ramp and six arterial intersections exceed the applicable performance standards. Seven northbound and two southbound mainline segments will operate at LOS F in the a.m. peak hour, and three northbound and five southbound mainline segments will operate at LOS F in the p.m. peak hour. This alternative would improve pedestrian and bicycle access at the Avery Parkway and La Paz Road interchanges, and therefore would not result in any indirect or direct impacts.	This alternative would result in improved operating conditions. Year 2022 - Three northbound mainline segments are projected to operate at LOS F in the a.m. peak hour, and one northbound and three southbound mainline segments will operate at LOS F in the p.m. peak hour. Year 2045 - Seven ramp and six arterial intersections exceed the applicable performance standards. Seven northbound and three southbound mainline segments will operate at LOS F in the a.m. peak hour, and six northbound and four southbound mainline segments will operate at LOS F in the p.m. peak hour. This alternative would improve pedestrian and bicycle access at the Avery Parkway and La Paz Road interchanges, and therefore would not result in any indirect or direct impacts.	None required.
Visual/Aesthetics (Temporary)	This alternative would not result in temporary visual effects to existing views to and from the adjacent areas.	Construction would expose surfaces, construction debris, equipment, and truck traffic to nearby sensitive viewers. Construction vehicle access and staging of construction materials would be visible from motorists	See impact summary for Alternative 2.	VIS-4 Construction Lighting. Construction lighting types, plans, and placement will be shielded from sensitive areas in order to minimize light and glare effects

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>traveling within the Study Area on I-5 as well as residents located in the project vicinity at elevations higher than I-5. These effects would be short term and would cease upon project completion.</p> <p>Previously visible mature trees would be removed and would result in a temporary visual effect until the replacement trees mature.</p> <p>Measure VIS-4 avoids and/or minimizes temporary visual effects of this alternative.</p>		on surrounding areas.
Visual/Aesthetics (Permanent)	<p>Under this alternative, the visual character and quality of the project site and vicinity would remain similar to the existing condition. However, this alternative would also result in more traffic congestion as population growth and the associated number of freeway travelers continue to increase over time, which reduces the visual character and quality of the area.</p> <p>The No Build Alternative does not include construction of additional sources of light and glare and would not introduce new sources of light and glare in the Study Area.</p>	<p>Under this alternative, long-term visual impacts would result from the permanent alteration of the visual environment through the widening of I-5, reconstruction of the Avery Parkway and La Paz Road interchanges, replacement of the Los Alisos Boulevard Orange County (OC) structure, and construction of retaining walls, sound walls, and a community enhancement wall. Build Alternative 2 would result in a 12 percent increase of pavement/hardscape within the ROW. As detailed in Chapter 1, Alternative 2 will include three new structures, four widened structures, 30 retaining walls (ranging from six ft to 44 ft high), 17 new sound walls, four sound walls to be replaced in-kind, and a community enhancement wall. However, the overall visual effect of this alternative is considered to be moderate, as the project would not substantially alter the visual character or quality of the project corridor.</p>	<p>Build Alternative 3 would result in a 17 percent increase of pavement/hardscape within the ROW. Although Alternative 3 would result in increased hardscape (approximately five percent) due to an additional travel lane as compared to Alternative 2, both alternatives would result in similar visual effects. Visual changes as a result of the Build Alternatives would occur only in the area between Crown Valley Parkway and Alicia Parkway (represented by Key View 3). Features of the Build Alternatives at Avery Parkway (represented by Key Views 4 and 5) as well as north of Alicia Parkway (represented by Key Views 1 and 2) are the same. As detailed in Chapter 1, Alternative 3 will include three new structures, five widened structures, 38 retaining walls (ranging from six ft to 44 ft high), 17 new sound walls, four sound walls to be replaced in-kind, and a community enhancement wall.</p>	<p>VIS-1 Landscaping. To maintain the context of the project area (color, form, and texture), landscaping will be installed that is compatible with the existing landscape along the portion of Interstate 5 (I-5) in the project vicinity and surrounding area. Landscaping will include specimen sized trees and/or shrub/groundcover mass planting, and landscape treatment along walls to soften the hardscape features and glare and radiant heat from the walls. The landscape concept, plan, and plant palette will be determined in consultation with, and approved by, the California Department of Transportation (Caltrans) District Landscape Architect during the Plans, Specifications, and Estimate (PS&E) phase. The planting plan will be reviewed and approved by the Caltrans Biologist and Caltrans District Landscape</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>Implementation of Alternative 2 would introduce additional sources of light and glare associated with vehicle headlights. No additional traffic signals or street lighting would be installed. However, some street lighting and traffic signals would be relocated in the vicinity of the La Paz Road and Avery Parkway interchanges. Light and glare effects from new sound walls would be introduced along I-5. Viewer groups in the vicinity of the project site would likely experience a slight increase in sources of light and glare, as compared to existing conditions.</p> <p>Measures VIS-1 through VIS-3 avoid and/or minimize permanent visual effects of this alternative.</p>		<p>Architect to avoid the use of invasive plant species as outlined in Measure BIO-35.</p> <p>Replacement planting implementation will be under a separate contract within a three-year period following the completion of construction in accordance with Caltrans policies. Trees in the interchanges, in conflict with the roadway improvement design, will be transplanted in the project area in a location in conformance with the Caltrans planting policy requirements. Specimen trees will be transplanted or replaced with a specimen box tree as approved by the Caltrans District Landscape Architect.</p> <p>Erosion control seed species will be determined by the Caltrans District Landscape Architect to ensure that the mix and application strategy is appropriate for the specific soil composition of the area.</p> <p>In areas where sound walls are visible from adjacent residential land uses, vines and landscape will be utilized to screen views to the wall. All vines and landscape proposed will conform with Caltrans planting policy requirements.</p> <p>VIS-2 Architectural Treatments. To minimize visual quality loss and to minimize the visual disruption</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>from the elements of the highway construction, architectural treatments will be provided to the walls in accordance with the <i>Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network</i>. All wall aesthetics will be approved by the Caltrans District Landscape Architect.</p> <p>VIS-3 Aesthetic Design Review. The California Department of Transportation District 12 Landscape Architecture Branch, will administer and chair an Aesthetic Design Review Team (ADRT) that includes local agency representatives to ensure the project landscape and structural elements are in compliance with the aesthetic requirements of the <i>Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network</i>.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Cultural Resources (Temporary)	This alternative would result in no temporary adverse effects related to known cultural resources.	This alternative would require ground disturbance and modification to existing freeway structures. These construction activities could result in impacts to unknown buried cultural materials or human remains. Any direct or indirect impacts to buried resources would be considered permanent; therefore, an analysis of direct or indirect temporary impacts to cultural resources is not applicable.	See impact summary for Alternative 2.	None required.
Cultural Resources (Permanent)	This alternative would result in no permanent adverse effects related to known cultural resources.	<p>No built environment resources within the project APE qualify as a "historical resource" pursuant to California Environmental Quality Act (CEQA), nor does any such resource qualify as a historic property per Section 106. Therefore, no historical resources will be impacted, and no historic properties will be affected by this project.</p> <p>This alternative is not anticipated to have an impact on any archaeological resources.</p> <p>Although considered unlikely, there is the potential to encounter unknown buried cultural materials or human remains within the APE during construction of this alternative.</p> <p>Measures CR-1, CR-2, and CR-3 avoid and/or minimize the effects of this alternative related to cultural resources.</p>	See impact summary for Alternative 2.	<p>CR-1 Within the vicinity of the previously documented historic adobes (Avila, Stein, and Serrano) and associated site location (P-30-000016), ground-disturbing activities will be monitored by a qualified archaeologist. An Archaeological Monitoring Area (AMA) will be delineated on the plans during the project's Plans, Specifications, and Estimates (PS&E) phase and incorporated into the final construction contract. A final Archaeological Monitoring Report will be required after construction is completed.</p> <p>CR-2 If cultural materials are discovered during construction, all earthmoving activity within and around the immediate recovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.</p> <p>CR-3 If human remains are discovered, State Health and Safety Code Section 7050.5 states that further</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				disturbances and activities will cease in any area or nearby area suspected to overlie remains, and the County Coroner will be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will also contact the Caltrans District 12 Environmental Branch Chief so that he/she may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.
Hydrology and Floodplain (Temporary)	This alternative would not result in temporary impacts related to floodplains.	During construction of this alternative, construction equipment would operate in the floodplain at the I-5 bridge over Aliso Creek, the La Paz Channel at the I-5 Crossing, and the I-5 bridge over Oso Creek. Construction activities have the potential to impact the natural and beneficial floodplain values of Aliso Creek, La Paz Channel, and Oso Creek by impacting water quality. See "Water Quality and Storm Water Runoff" discussion below for more detail. Measures HY-1 and HY-2 avoid and/or minimize the temporary effects of this alternative related to hydrology and floodplains.	See impact summary for Alternative 2.	HY-1 During construction, the construction contractor will schedule work within Aliso Creek, La Paz Channel, and Oso Creek to occur during the dry season (May to September). HY-2 Prior to construction within Aliso Creek, La Paz Channel, and Oso Creek, the California Department of Transportation (Caltrans) will obtain an encroachment permit from the Orange County Flood Control District. The construction contractor will comply with all requirements specified in the encroachment permit.
Hydrology and	This alternative would not	This alternative would permanently	See impact summary for Alternative 2.	HY-3 During final project design, the

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Floodplain (Permanent)	result in permanent adverse impacts related to floodplains.	<p>encroach into the Aliso Creek, La Paz Channel, and Oso Creek floodplains. The maximum change in water surface elevations compared to existing conditions at those locations would exceed the water surface elevation increase allowed by the National Flood Insurance Program (NFIP). Measure HY-5 requires that the final design at these crossings ensures that the increases are reduced to less than one ft. The longitudinal crossings of La Paz Channel and Oso Creek at I-5 would not encroach on those floodplains. The potential risk to life and property under this alternative would remain unchanged from existing conditions. The Build Alternatives would not result in permanent changes to living resource values in the floodplains; would result in permanent indirect impacts to coastal sage scrub (CSS) similar to existing conditions; would not result in a detrimental effect on cultural resource values; would not adversely reduce the ability of the floodplains to moderate flood flows; and would not affect water quality maintenance and groundwater recharge.</p> <p>The potential risk to natural and beneficial floodplain values as a result of this alternative is minimal.</p> <p>This alternative would not support incompatible floodplain development.</p> <p>The combined assessed level of risk under the Build Alternatives is "low</p>		<p>California Department of Transportation (Caltrans) will process a Conditional Letter of Map Revision (CLOMR) for the Aliso Creek, La Paz Channel, and Oso Creek 100-year floodplains through the Cities of Laguna Hills, Laguna Niguel, and Mission Viejo and the Federal Emergency Management Agency (FEMA). The project improvements within the Aliso Creek, La Paz Channel, and Oso Creek 100-year floodplain will not be constructed until the CLOMR is approved by the Cities of Laguna Hills, Laguna Niguel, Mission Viejo and FEMA.</p> <p>HY-4 Upon completion of construction, the California Department of Transportation (Caltrans) will process a Letter of Map Revision (LOMR) for the Aliso Creek, La Paz Channel, and Oso Creek 100-year floodplains through the Cities of Laguna Hills, Laguna Niguel, Mission Viejo and FEMA.</p> <p>HY-5 During the Project Specifications and Estimates (PS&E) phase,, the California Department of Transportation (Caltrans) will ensure that the project engineer prepares a Hydraulic Study based on final design plans. The project engineer will design, implement, and confirm proper function of proposed design refinements at La Paz Channel and Aliso Creek to ensure that the increase in water surface elevation attributable to</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		risk.” Measure HY-3 avoids and/or minimizes the permanent effect of this alternative related to hydrology and floodplains.		the project is less than the 1.0 foot, as required by the National Flood Insurance Program (NFIP).
Water Quality and Storm Water Runoff (Temporary)	Under this alternative, no improvements other than routine roadway and bridge maintenance would be made. Therefore, this alternative would result in short-term water quality impacts from construction-related activities.	<p>Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential erosion by rainfall/runoff and wind. Nonsediment-related pollutants of concern during construction include waste construction materials, chemicals, liquid products, petroleum products used in construction or the maintenance of heavy equipment, and concrete-related waste streams. During construction, the total disturbed area under this alternative is estimated at 132 ac. If Construction Best Management Practices (BMPs) are properly designed, implemented, and maintained, no adverse water quality impacts would occur during construction of this alternative.</p> <p>Groundwater dewatering may be necessary to construct the bridge structure footings; groundwater may contain constituents, such as nutrients, that could exceed the water quality objectives of downstream water bodies.</p> <p>Measures WQ-1 through WQ-3 would avoid and/or minimize the temporary effects of this alternative related to water quality.</p>	<p>Construction-related activities that are primarily responsible for sediment releases are related to exposing soils to potential erosion by rainfall/runoff and wind. Nonsediment-related pollutants of concern during construction include waste construction materials, chemicals, liquid products, petroleum products used in construction or the maintenance of heavy equipment, and concrete-related waste streams. During construction, the total disturbed area under this alternative is estimated at 137 ac. If Construction BMPs are properly designed, implemented, and maintained, no adverse water quality impacts would occur during construction of this alternative.</p> <p>Groundwater dewatering may be necessary to construct the bridge structure footings; groundwater may contain constituents, such as nutrients, that could exceed the water quality objectives of downstream water bodies.</p> <p>Measures WQ-1 through WQ-3 would avoid and/or minimize the temporary effects of this alternative related to water quality.</p>	<p>WQ-1 The proposed project will comply with the provisions of the California Department of Transportation (Caltrans) Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order No. 99-06-DWQ, NPDES No. CAS000003) and the newly adopted Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), which was effective July 1, 2013; and the <i>NPDES General Permit, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activities</i> (Order Number 2009-0009-DWQ, NPDES Number CAS000002), or subsequent permit in effect at the time of design and construction.</p> <p>WQ-2 A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented to address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP will identify the sources of pollutants that may affect the quality of storm water and include the construction site Best Management Practices</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>(BMPs) to control pollutants, such as sediment control, catch basin inlet protection, construction materials management, and nonstormwater BMPs. In addition, it will be prepared according to the requirements stated in the <i>National Pollutant Discharge Elimination System (NPDES) General Permit, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activities</i> (Construction General Permit, Order Number 2009-0009-DWQ, NPDES Number CAS000002) or subsequent permit in effect at the time of construction. All construction site BMPs will follow the latest edition of the <i>Storm Water Quality Handbooks: Construction Site Best Management Practices Manual</i> (Caltrans, March 2003) to control and minimize the impacts of construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other nonstormwater BMPs.</p> <p>WQ-3 Construction site dewatering must comply with the Santa Ana Regional Water Quality Control Board's (RWQCB) Order R8-2004-0021, <i>National Pollutant Discharge Elimination System (NPDES)</i></p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>Permit Number CAG998002; or San Diego RWQCB's Order R9-2008-0002, NPDES Permit Number CAG919002, for discharges to surface waters that pose an insignificant (<i>de minimus</i>) threat to water quality. If dewatering occurs during construction of the proposed project, it will comply with these permits, or subsequent permits, including but not limited to, the specific reporting and notification requirements. Applying for coverage includes submitting a completed Notice of Intent Form and a report with the specific additional information noted in the dewatering permit.</p>
<p>Water Quality and Storm Water Runoff (Permanent)</p>	<p>Under this alternative, there would be no direct impacts to water quality because there would be no change in land use. However, under this alternative, there would be an indirect impact to long-term pollutant loading since the existing runoff would continue to remain untreated.</p>	<p>This alternative would permanently increase the impervious surface area by 23 ac compared to the existing freeway facilities. The increase in impervious areas would cause a long-term increase in velocity at outlets and the amounts of pollutants typically generated by operating and maintaining a transportation facility. Pollutants of concern during operation of a transportation facility include sediments, trash, debris, petroleum products, metals, nutrients, solvents, waste paint, herbicides, and pesticides. Increased impervious areas associated with urbanizing development increase the volume of runoff during a storm, which more effectively transports pollutants to receiving waters and may lead to</p>	<p>This alternative would permanently increase the impervious surface area by 33 ac compared to the existing freeway facilities. The increase in impervious areas would cause a long-term increase in velocity at outlets and the amounts of pollutants typically generated by operating and maintaining a transportation facility. Pollutants of concern during operation of a transportation facility include sediments, trash, debris, petroleum products, metals, nutrients, solvents, waste paint, herbicides, and pesticides. Increased impervious areas associated with urbanizing development increase the volume of runoff during a storm, which more effectively transports pollutants to receiving waters and may lead to</p>	<p>WQ-4 Caltrans approved treatment Best Management Practices (BMPs) will be implemented to the Maximum Extent Practicable (MEP) consistent with the requirements of the <i>National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Stormwater Permit, and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans) Properties, Facilities, and Activities</i> (Order Number 99-06-DWQ, NPDES Number CAS000003); the newly adopted Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), which becomes effective July 1, 2013; or</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>adverse effects on water quality and downstream erosion.</p> <p>Currently, storm water runoff from I-5 within the project limits is untreated. Treatment Control BMPs and Design Pollution Prevention BMPs would be incorporated into the design of the Build Alternatives to target the constituents of concern in the storm water runoff from the freeway facilities and would address general-purpose pollutant removal because the receiving waters are impaired for sediment, metals, nutrients, toxics, and bacteria.</p> <p>Measure WQ-4 and WQ-5 would avoid and/or minimize the permanent effects of this alternative related to water quality.</p>	<p>adverse effects on water quality and downstream erosion.</p> <p>Currently, storm water runoff from I-5 within the project limits is untreated. Treatment Control BMPs and Design Pollution Prevention BMPs would be incorporated into the design of the Build Alternatives to target the constituents of concern in the storm water runoff from the freeway facilities and would address general purpose pollutant removal because the receiving waters are impaired for sediment, metals, nutrients, toxics, and bacteria.</p> <p>Measures WQ-4 and WQ-5 would avoid and/or minimize the permanent effects of this alternative related to water quality.</p>	<p>subsequent permit. Treatment BMPs may include biofiltration swales, biofiltration strips, infiltration devices, and media filters.</p> <p>WQ-5 Design Pollution Prevention Best Management Practices (BMPs) will be implemented, such as preservation of existing vegetation; slope/surface protection systems (permanent soil stabilization); concentrated flow conveyance systems such as ditches, berms, dikes, and swales; overside drains; flared end sections; and outlet protection/velocity dissipation devices.</p>
Geology/Soils/ Seismicity/ Topography (Temporary)	This alternative would not result in short-term/ temporary impacts to geological, mineral, or soil resources since no construction is proposed in this alternative. Hazards associated with seismic activity will exist as they do today under this alternative.	Construction activities for the project such as grading and cut-and-fill slopes would disturb soil and alter existing landforms. Temporary impacts would include soil compaction and an increased possibility of soil erosion. Exposed soils would be particularly prone to erosion during construction of the project, especially during heavy rains.	See impact summary for Alternative 2.	None required.
Geology/Soils/ Seismicity/ Topography (Permanent)	This alternative does not involve any construction activities and would not alter existing geologic or soil conditions; therefore, it would not result in any adverse impacts to geological, mineral, or soil	This alternative is expected to have a minimal impact on geologic and topographic conditions. However, design and construction of this alternative could be constrained by seismic shaking, landslides, slope instability, liquefaction, erosion, and corrosion. There is potential for	See impact summary for Alternative 2.	<p>GEO-1 Project design and construction of the Build Alternatives will be conducted in accordance with California Department of Transportation (Caltrans) guidelines, current regulations, and the California Building Code.</p> <p>Specifically, structures will be</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
	<p>resources. Hazards associated with seismic activity will exist as they do today under this alternative.</p>	<p>moderate to severe seismic shaking during the life of the improvements in this alternative. The project components would be designed and constructed to accommodate expected ground accelerations, which would minimize the potential for structural damage due to seismic events.</p> <p>Several slopes in the Study Area are in mapped earthquake-induced landslide hazard zones. Subsurface exploration and laboratory testing would be conducted during final design to further evaluate the potential earthquake-induced landslide hazard and to characterize the geotechnical conditions in those areas for use in preparing the final design. Implementation of measures in the Final Geotechnical Design Report (GDR) and Structure Foundation Reports (SFRs) will ensure that there are no direct or indirect permanent adverse impacts under this alternative due to landslides or slope instability.</p> <p>Part of the project is located in an area that may be subject to liquefaction. Potential impacts due to liquefaction and seismic compaction can be reduced during final design and construction based on implementation of measures recommended in the Final GDR and SFRs, which will ensure that no adverse direct or indirect permanent impacts from liquefaction occur under this alternative.</p> <p>Grading for this alternative would alter</p>		<p>designed to resist the maximum credible earthquake associated with nearby faults.</p> <p>GEO-2 During the Plans, Specifications, and Estimates (PS&E) phase, a detailed geotechnical investigation will be conducted by qualified geotechnical personnel to assess the geotechnical conditions at the project area. The geotechnical investigation will include exploratory borings to investigate site-specific soils and conditions and to collect samples of subsurface soils for laboratory testing. Those soil samples will be tested to determine liquefaction potential, collapsibility potential, stability, and corrosion potential. The project-specific findings and recommendations of the geotechnical investigation will be summarized in Structure Foundation Reports (SFRs) and a Geotechnical Design Report (GDR) to be submitted to the California Department of Transportation (Caltrans) for review and approval. Those findings and recommendations will be incorporated in the final design of the selected Build Alternative.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>existing landforms, which may increase the potential for erosion of those disturbed landforms. Erosion and sedimentation in natural drainages and along natural slopes may also impact the project components. Erosion control minimization measures, including improved drainage control and landscaping, will be included in the construction and operation of this alternative.</p> <p>Soils in the Study Area derived from the Capistrano and Monterey Formations and groundwater that has permeated those formations have the potential to contain high sulfate concentrations, which can be corrosive to steel, damaging to concrete, and could affect project components.</p> <p>Avoidance and minimization measures would substantially reduce or avoid short- and long-term geotechnical impacts under this alternative.</p> <p>Measures GEO-1 and GEO-2 avoid and/or minimize the permanent effects of this alternative related to geology, soils, seismicity, and topography.</p>		
Paleontology (Temporary)	Under this alternative, no temporary impacts to paleontological resources would occur.	This alternative would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in direct or indirect impacts to paleontological resources. The potential impacts to paleontological resources are considered permanent.	See impact summary for Alternative 2.	None required.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Paleontology (Permanent)	Under this alternative, no permanent impacts to paleontological resources would occur.	<p>As discussed above, there are areas of high paleontological sensitivity within the Study Area. With the exception of the Artificial Fill and Young Axial Channel Deposits, all other sediments in the Study Area have the potential to contain significant, unrenewable paleontological resources, and it is likely that paleontological localities would be encountered during project excavation.</p> <p>Measure PAL-1 avoids and/or minimizes this alternative's effects on paleontological resources.</p>	See impact summary for Alternative 2.	<p>PAL-1 Prior to construction activities, the California Department of Transportation (Caltrans) would ensure that a Paleontological Mitigation Plan (PMP) is prepared and adhered to during construction of the project portions that are identified as having high paleontological sensitivity. The PMP would include, but not be limited to, the following:</p> <ul style="list-style-type: none"> • A preconstruction field survey in areas identified as having a high paleontological sensitivity after vegetation and any paving is removed, followed by salvage of any observed surface paleontological resources prior to the beginning of additional grading. • Attendance at the pregrade meeting by a qualified paleontologist or representative. At this meeting, the paleontologist would explain the likelihood for encountering paleontological resources, what resources may be discovered, and the methods of recovery that would be employed. • During construction excavation, a qualified vertebrate paleontological monitor would initially be present on a full-time basis

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>whenever excavation would occur within the sediments that have a high paleontological sensitivity rating and on a spot-check basis for sediments that have a low sensitivity rating. Monitoring may be reduced to a part-time basis if no resources are being discovered in sediments with a high sensitivity rating (monitoring reductions, when they occur, would be determined by the qualified Principal Paleontologist). The monitor would inspect fresh cuts and/or spoils piles to recover paleontological resources. The monitor would be empowered to temporarily divert construction equipment away from the immediate area of the discovery. The monitor would be equipped to rapidly stabilize and remove fossils to avoid prolonged delays to construction schedules. If large mammal fossils or large concentrations of fossils are encountered, the grading contractor would consider using heavy equipment on site to assist in the removal and collection of large materials.</p> <ul style="list-style-type: none"> Localized concentrations of small (or micro-) vertebrates may be found in all native sediments. Therefore, it is recommended that these

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>native sediments occasionally be spot-screened on site through one-eighth to one-twentieth-inch mesh screens to determine whether microfossils are present. If microfossils are encountered, sediment samples (up to 3 cubic yards, or 6,000 pounds) would be collected and processed through one-twentieth-inch mesh screens to recover additional fossils.</p> <ul style="list-style-type: none"> • Recovered specimens would be prepared to the point of identification and permanent preservation. This includes the sorting of any washed mass samples to recover small invertebrate and vertebrate fossils, the removal of surplus sediment from around larger specimens to reduce the volume and cost of storage for the repository, and the addition of approved chemical hardeners/stabilizers to fragile specimens. • Specimens would be identified to the lowest taxonomic level possible and curated into an institutional repository with retrievable storage. The repository institutions usually charge a one-time fee based on volume, so removing surplus sediment is important. The repository institution may be a local museum or

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>university that has a curator who can retrieve the specimens upon request. A draft curation agreement would be established with an approved curation facility prior to the initiation of any paleontological monitoring.</p> <ul style="list-style-type: none"> • Preparation and submittal of the Paleontological Mitigation Report (PMR) documenting completion of the PMP.
Hazardous Waste/Materials (Temporary)	Under this alternative, no temporary effects related to hazardous waste materials would occur.	Potential concerns during construction of this Build Alternative are related to disturbance of potentially contaminated soil and/or groundwater; relocation of buried asbestos-containing cementitious pipe (transite); asbestos-containing materials (ACMs) in bridges constructed before 1996; the presence of ACMs, polychlorinated biphenyls (PCBs), mercury, and chlorofluorocarbons (CFCs) in buildings and structures that would be demolished or renovated; presence of PCBs in pad- and pole-mounted electrical transformers; potential for transformers leaking PCBs; presence of aerially deposited lead (ADL) in soils adjacent to roads; potential for elevated concentrations of metals, petroleum hydrocarbons, and volatile organic compounds (VOCs) in soils along the railroad tracks; and the potential for elevated concentrations of metals such as lead in yellow traffic striping and pavement-marking materials that would be removed as part of this alternative.	See impact summary for Alternative 2.	<p>HAZ-1 Prior to initiation of Project Specifications and Estimates (PS&E), a qualified consultant will conduct a Phase II Site Investigation (SI) for the properties with potential contamination that would be either partially or fully acquired by the proposed project. These properties include:</p> <ul style="list-style-type: none"> • Arco gasoline station (28662 Camino Capistrano) • Chevron gasoline station (28692 Camino Capistrano) • Shell gasoline station (28681 Marguerite Parkway) • 76 gasoline station/Laguna Hills Auto Spa (25172 Cabot Road) • Arco gasoline station (26001 La Paz Road) • USA gasoline station (23852 El Toro Road) • Orange County Transportation

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>Measures HAZ-1 through HAZ-10 avoid and/or minimize the temporary effects of this alternative related to hazardous waste/materials.</p>		<p>Authority (OCTA)/Southern California Regional Rail Authority (address not available).</p> <p>The SI would identify any Recognized Environmental Concerns (RECs) associated with on- or off-site releases and provide appropriate minimization, avoidance, and mitigation measures to prevent unnecessary exposure to contaminants during construction activities. Depending on the results of the SIs, subsequent sampling to determine the presence and/or absence of contaminated soil and/or groundwater or to characterize the extent of contamination on site may be required. The results of these studies will be used as part of the evaluation of any property to be acquired.</p> <p>HAZ-2 Nine facilities adjacent to or in close proximity to the Study Area have reported releases that may have impacted soil and groundwater underneath the Avery Parkway undercrossing (UC) (Bridge No. 55-0232), La Paz Road UC (Bridge No. 55-0234), and El Toro Road UC (Bridge No. 55-2035). Since groundwater is anticipated to be encountered and dewatering is anticipated to be necessary</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>during construction at these three bridge locations, prior to initiation of Project Specifications and Estimates (PS&E), the Orange County Transportation Authority (OCTA) would ensure that a qualified consultant conducts Phase II Site Investigations (SIs) to determine whether the presence of petroleum hydrocarbons; volatile organic compounds (VOCs), including fuel oxygenates; and chlorinated hydrocarbons (at El Toro Road UC only) occur in groundwater near the structures. If contaminated groundwater is encountered, appropriate remediation will be identified and responsibility for clean-up determined. Any remediation required by the proposed project would be included in the PS&E.</p> <p>HAZ-3 Prior to initiation of Project Specifications and Estimates (PS&E) phase, the Orange County Transportation Authority (OCTA) would ensure that a certified consultant conducts predemolition asbestos surveys of any bridges that would be renovated or demolished during project construction. This survey would be conducted in accordance with the United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 Code of</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>Federal Regulations (CFR), and South Coast Air Quality Management District (SCAQMD) Rule 1403. Additionally, notification of the SCAQMD prior to any structure renovation or demolition is mandatory according to Rule 1403 (d)(1)(B).</p> <p>If asbestos-containing materials (ACMs) need to be handled during construction, PS&E will include measures addressing handling of these materials.</p> <p>Access to parcels that would be acquired as part of the proposed project would not be granted until the right of way (ROW) process is complete; therefore, prior to completion of the Plans, Specifications, and Estimates (PS&E) phase and before any ground disturbance, demolition, or renovation activities, a certified consultant will conduct predemolition surveys for buildings that will be renovated or demolished. These surveys will include asbestos, lead-based paint (LBP), polychlorinated biphenyls (PCB), mercury, and chlorofluorocarbon (CFC) surveys. These surveys would be conducted in conformance with the EPA NESHAP 40 CFR and SCAQMD Rule 1403. Additionally, notification of the SCAQMD prior to any building structure renovation or demolition</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>is mandatory in accordance with Rule 1403 (d)(1)(B).</p> <p>The PS&E will require the contractor to properly dispose of any materials from building structures that exceed California Health and Safety Code criteria for hazardous waste at an appropriate State-certified landfill facility.</p> <p>HAZ-4 Prior to the completion of the Plans, Specifications, and Estimates (PS&E) phase and before any ground disturbance activities, transformer locations will be confirmed and transformers that would be removed or relocated be sampled by Southern California Edison (SCE) and San Diego Gas & Electric Company (SDG&E) for potential polychlorinated biphenyls (PCB).</p> <p>If PCB-containing materials require removal, the PS&E will address appropriate methods for handling and disposal of these materials.</p> <p>HAZ-5 Prior to the completion of Plans Specifications and Estimates (PS&E), soil sampling will be conducted for aerially deposited lead (ADL) in unpaved locations adjacent to the existing roadway right of way (ROW) within the</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>Study Area.</p> <p>If ADL is found, the PS&E will address appropriate methods for handling and disposal of this material.</p> <p>HAZ-6 During the Plans, Specifications, and Estimates (PS&E) phase, any yellow traffic striping and pavement marking materials to be removed will be tested. If contaminated, during construction, the PS&E would require the removal and disposal of any yellow traffic striping and pavement marking materials in accordance with the Caltrans Construction Manual, Chapter 7 106.</p> <p>HAZ-7 Prior to initiation of Project Specifications and Estimates (PS&E) phase, the Orange County Transportation Authority (OCTA) will ensure that a Phase II Site Investigation (SI) is conducted to assess the potential effect of the soil adjacent to the railroad tracks that would be disturbed during construction. This soil would be sampled for the presence of elevated concentrations of metals, petroleum hydrocarbons, and volatile organic compounds (VOCs) to determine whether the soils require special handling and disposal during construction.</p> <p>If the SI results indicate that the</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>impacted soil and groundwater need to be handled during construction, OCTA will ensure that an appropriate non-Site Specific Plan (SSP) would be prepared during the Plans, Specifications, and Estimates (PS&E) phase to address the handling of these materials.</p> <p>HAZ-8 If hazardous materials contamination or sources are suspected or identified during project construction activities, an environmental professional would evaluate the course of action required. This course of action will follow the Unknown Hazards Procedures described in Chapter 7 of the California Department of Transportation (Caltrans) Construction Manual (August 2006).</p>
Hazardous Waste/Materials (Permanent)	This alternative would not change the existing physical environment; therefore, no permanent effects would occur. As currently exists, routine maintenance activities would continue and would be required to follow applicable regulations with respect to handling and disposal of potentially hazardous materials.	Routine maintenance activities during operation of this alternative would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials.	See impact summary for Alternative 2.	None required.
Air Quality (Temporary)	This alternative would not include any construction in the Study Area. Therefore, this alternative would not	Short-term degradation of air quality during construction of this alternative may occur due to the release of particulate emissions (airborne dust)	See impact summary for Alternative 2.	AQ-1 During clearing, grading, earth moving, or excavation operations, excessive fugitive dust emissions will be controlled by regular

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
	<p>result in short-term adverse effects related to air quality.</p>	<p>generated by construction activities and emissions from construction equipment, including carbon monoxide (CO), nitrogen oxides (NO_x), VOCs, directly emitted particulate matter, and toxic air contaminants such as diesel exhaust particulate matter. Measures AQ-1 through AQ-5 would avoid and/or minimize short-term air quality effects during construction of this alternative.</p> <p>Measures AQ-1 through AQ-5 would avoid and/or minimize short-term air quality effects during construction of this alternative.</p>		<p>watering or other dust preventative measures using the following procedures, as specified in the South Coast Air Quality Management District (SCAQMD) Rule 403 (Section d[2] and Table 1).</p> <ul style="list-style-type: none"> • All material excavated or graded will be sufficiently watered to prevent excessive amounts of dust. • All material transported on site or off site will be either sufficiently watered or securely covered to prevent excessive amounts of dust. • The area disturbed by clearing, grading, earth moving, or excavation operations shall be minimized so as to prevent excessive amounts of dust. • These control techniques shall be indicated in project specifications. <p>AQ-2 Project grading plans shall show the duration of construction. Ozone precursor emissions from construction equipment vehicles shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturer's specifications.</p> <p>AQ-3 All trucks that are to haul</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				excavated or graded material on site shall comply with State Vehicle Code Section 23114, with special attention to Sections 23114(b)(F), (e)(2), and (e)(4), as amended, regarding the prevention of such material spilling onto public streets and roads.
Air Quality (Permanent)	Traffic congestion would continue to increase under this alternative. Long-term mobile emissions generated by vehicle trips would be greater under this alternative. Since this alternative would not improve air quality through a reduction in congestion, its air quality impacts are considered adverse.	<p>The CO hot-spot analysis concluded that operation of this alternative would alleviate several peak-hour deficiencies, would reduce congestion and overall travel time, and would not increase the number of vehicles operating in cold start mode.</p> <p>The qualitative hot-spot analysis determined that this alternative would not result in new violations of the federal particulate matter less than 10 microns in size (PM₁₀) and particulate matter less than 2.5 microns in size (PM_{2.5}) air quality standards.</p> <p>The analysis indicated that MSAT emissions would not vary substantially between the future No Build and this alternative, and that while diesel exhaust may pose potential cancer risks, most receptors' short-term exposure would cause only minimal harm, and these risks would also greatly diminish in the future due to planned emission control regulations.</p> <p>The potential for naturally occurring asbestos (NOA) to be present within the Study Area is low. The potential for</p>	See impact summary for Alternative 2.	None required.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>asbestos to be encountered during demolition under this alternative is also low because the majority of the demolition would be concrete, which does not contain asbestos.</p> <p>This alternative is listed in the SCAG financially constrained 2012–2035 RTP (RTP ID 2M0730), which was found to conform to the State Implementation Plan (SIP) by the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) on June 5, 2012. This alternative is also included in the SCAG financially constrained 2013 FTIP. The 2013 FTIP was also determined to conform by the FHWA/FTA on December 14, 2012. The design concept and scope of this alternative are consistent with the project description in the 2012 RTP, the 2013 FTIP, and the assumptions in SCAG’s regional emission analysis.</p> <p>This alternative would not result in adverse effects related to long-term air quality and would not contribute to adverse long-term air quality effects.</p>		
Noise (Temporary)	This alternative would not result in the construction of improvements within the Study Area and therefore would not result in temporary noise effects.	Short-term construction-related worker commutes and equipment transport noise impacts would be minimal compared to existing traffic volumes on I-5 and other area streets, and the traffic noise effects of those trips would not be substantial. However, noise associated with the use of construction equipment is estimated to be between 79 and 89 A-weighted	See impact analysis for Alternative 2.	N-1 The control of noise from construction activities will conform to the California Department of Transportation (Caltrans) Standard Specifications, Section 14-8.02, “Noise Control.” The noise level from the Contractor’s operations, between the hours of 9:00 p.m. and 6:00 a.m., will not exceed 86

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>decibels (dBA) maximum instantaneous noise level (L_{max}) at a distance of 50 ft from the active construction area during grading. The worst-case composite noise level at the nearest residence during grading would be 91 dBA L_{max} at a distance of 50 ft from an active construction area. The closest residences along I-5 are within 50 ft of the construction areas associated with the Build Alternatives. Therefore, these receptors may be subject to short-term noise reaching 91 dBA L_{max} or higher generated by the construction activities associated with this alternative.</p> <p>Measure N-1 would avoid and/or minimize short-term construction noise associated with this alternative.</p> <p>Measure N-1 would avoid and/or minimize short-term construction noise associated with this alternative.</p>		<p>dBA $L_{eq}(h)$ at a distance of 50 feet. In addition, the Contractor would equip all internal combustion engines with a manufacturer-recommended muffler and will not operate any internal combustion engine on the job site without the appropriate muffler.</p>
Noise (Permanent)	<p>Potential long-term noise effects under the No Build Alternative would be solely from traffic noise. Future No Build noise levels are shown in Table 2.14-9. Of the 356 modeled receiver locations, 52 receivers would or would continue to approach or exceed the Noise Abatement Criteria (NAC) under the future No Build condition.</p>	<p>Future noise levels under this alternative would approach or exceed the NAC at a number of receptors, as shown in Table 2.14-9. Of the 357 modeled receptors, 69 would approach or exceed the NAC Activity Categories B, C, or E under this alternative. However, with implementation of noise abatement, this impact is not considered to be adverse.</p> <p>No receptors would experience a substantial increase of 12 dBA or more over their corresponding</p>	<p>Future noise levels under this alternative would approach or exceed the NAC at a number of receptors, as shown in Table 2.14-9. Of the 357 modeled receptors, 75 would approach or exceed the NAC under Activity Categories B, C, or E under this alternative. However, with implementation of noise abatement, this impact is not considered to be adverse.</p> <p>No receptors would experience a substantial increase of 12 dBA or more over their corresponding</p>	<p>N-2 Noise Barriers 13, 19a, 63, 115, and 117 were determined to be feasible and reasonable and was preferred by affected homeowners and residents. Noise Barriers 13, 19a, 63, 115, and 117 will, therefore, be considered for construction. The final decision on construction of the noise barriers will be made during final design. Additionally, it is the California Department of Transportation's (Caltrans) current standard practice (based on Caltrans Traffic Noise</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>modeled existing noise levels for this alternative.</p> <p>Measure N-2 abates the permanent effects of this alternative related to noise.</p>	<p>modeled existing noise levels for this alternative.</p> <p>Measure N-2 abates the permanent effects of this alternative related to noise.</p>	<p>Analysis Protocol, May 2011) to provide walls with an acoustically absorptive material for the walls when receptors on the opposite side have a direct line of sight to the wall.</p>
<p>Natural Communities (Temporary)</p>	<p>This alternative does not propose any construction or other disturbance in the biological study area (BSA). Therefore, this alternative would result in no temporary adverse impacts related to natural communities.</p>	<p>This alternative would result in temporary impacts to the riparian habitats (primarily at Aliso and Oso Creeks) of 0.70 ac.</p> <p>Measures BIO-1 through BIO-5 have been identified to avoid and/or minimize effects to CSS and riparian habitats associated with this alternative.</p> <p>Measures BIO-6 through BIO-9 avoid and/or minimize effects to riparian habitats associated with this alternative.</p>	<p>This alternative would result in temporary impacts to the riparian habitats (primarily at Aliso and Oso Creeks) of 2.08 ac.</p> <p>Measures BIO-1 through BIO-5 have been identified to avoid and/or minimize effects to CSS and riparian habitats associated with this alternative.</p> <p>Measures BIO-6 through BIO-9 avoid and/or minimize effects to riparian habitats associated with this alternative.</p>	<p>BIO-1 Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around riparian/ riverine communities and coastal sage scrub (CSS) adjacent to the project disturbance limits to designate Environmentally Sensitive Areas (ESAs) to be avoided and preserved. No grading or fill activity of any type will be permitted within ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in such a manner as to prevent accidental damage to nearby ESAs. No structure of any kind, or incidental storage of equipment or supplies, will be allowed in ESAs. Silt fence barriers will be installed at the ESA boundaries to prevent accidental deposition of fill material into areas where vegetation is immediately adjacent to planned grading activities.</p> <p>BIO-2 In order to avoid impacts to nesting birds, any native or exotic vegetation removal, tree</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>trimming activities, or bridge demolition will occur outside of the bird nesting season. The nesting season is from February 15 to August 31. In the event that vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey to identify the locations of nests. Should nesting birds be found, an exclusionary buffer will be established by the biologist. This buffer will be clearly marked in the field by construction personnel under the guidance of the biologist, and construction or clearing will not be conducted in this zone until the biologist determines that the young have fledged or the nest is no longer active.</p> <p>BIO-3 A biologist will monitor all vegetation clearing and any other construction activities (at the discretion of a qualified biologist) for the duration of the project in areas adjacent to Environmentally Sensitive Areas (ESAs) to flush any wildlife species present prior to construction to avoid direct mortality to wildlife and to ensure compliance with and proper implementation of vegetation removal, Best Management Practices (BMPs), and ESAs, and to ensure that all biological</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>resource-related avoidance and minimization measures are properly adhered to.</p> <p>BIO-4 Shielded lighting will be used for any nighttime construction adjacent to native vegetated areas to avoid and minimize artificial night-lighting effects.</p> <p>BIO-7 To minimize indirect impacts, all equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located so as to prevent runoff from any spills from entering waters of the United States.</p> <p>BIO-9 During the Plans, Specifications, and Estimate (PS&E) phase, the design engineer will coordinate closely with the Orange County Transportation Authority (OCTA) to ensure consistency with OCTA's commitments and the permitting agencies' expectations pursuant to the M2 NCCP/HCP, including the Streambed Program, which is designed to facilitate the permitting process.</p> <p>It is anticipated that a Biological Resources Avoidance and Minimization Plan (BRAMP), for agency review and approval, will</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>be required. The BRAMP should include avoidance and minimization measures similar to BIO-1 through BIO-8. In addition, specific design and construction measures may be required for the following elements:</p> <ul style="list-style-type: none"> • Aquatic Species: to include pre-construction surveys and avoidance measures for southwestern pond turtle. • Covered Plant Species: to include pre-construction rare plant surveys and avoidance measures <p>Wildlife Crossings: to include consultation with biologist regarding design and construction of the Oso Creek Bridge modifications, in order to minimize impacts on wildlife movement under the bridge.</p>
<p>Natural Communities (Permanent)</p>	<p>This alternative proposes no construction or other disturbance in the BSA. Therefore, this alternative would result in no adverse permanent impacts related to natural communities.</p>	<p>This alternative would not result in direct permanent impacts to CSS through disturbance and/or removal of existing vegetation. Permanent indirect impacts (or permanent impacts caused by the project that occur at a later time or distance from the project, such as noise), are not expected to exceed existing conditions as a result of this alternative; however, such impacts are expected to extend into the surrounding natural habitat by approximately the same distance that I-5 is being widened.</p>	<p>See impact summary for Alternative 2.</p>	<p>BIO-5 To mitigate for areas temporarily affected by the proposed project, areas that are adjacent to native habitat will be replaced with native vegetation in-kind to the existing adjacent native habitat, including CSS. The habitat subject to this replacement will be determined at the discretion of the Caltrans biologist.</p> <p>BIO-6 Should it later be determined that Oso Creek was historically used by anadromous fish, a Detailed</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>This alternative would result in direct permanent impacts to riparian habitat through disturbance and/or removal of existing vegetation, primarily at Aliso and Oso Creeks. The discussion under "Wetlands and other Waters of the U.S. (Permanent)" shows the amount of riparian habitat that would be permanently affected by this alternative.</p> <p>Site Design, Source Control, and Treatment BMPs have been incorporated into the project design of this alternative to help avoid and/or minimize potential indirect adverse impacts to riparian communities associated with increased traffic, noise, and impervious surfaces.</p> <p>Implementation of this alternative is not expected to result in permanent impacts to wildlife utilizing Aliso and Oso Creeks.</p> <p>Measures BIO-1 through BIO-5 have been identified to avoid and/or minimize effects to CSS and riparian habitats associated with this alternative.</p> <p>Measures BIO-6 through BIO-9 avoid and/or minimize effects to riparian habitats associated with this alternative.</p>		<p>Fish Passage Assessment will be conducted on the Oso Creek Bridge Crossing and submitted to the California Department of Fish and Wildlife (CDFW) and interagency coordination among the California Department of Transportation (Caltrans), National Marine Fisheries Service (NMFS), and CDFW will be conducted to determine whether a barrier to anadromous fish passage is present. If it is determined that there are structures blocking fish passage, structures blocking anadromous fish passage will be designed by the project engineer to mitigate for fish passage.</p> <p>BIO-8 Weed control will be implemented to minimize the importation of nonnative plant material during and after construction. Eradication strategies will be implemented should an invasion of nonnative plant species occur.</p>
Wetlands or Other Waters of the U.S.	This alternative does not propose any construction or other disturbance in the	This alternative is not expected to temporarily affect any wetland waters during construction. However, this	This alternative is expected to temporarily affect 0.62 ac of wetland waters and 0.21 ac of nonwetland	BIO-10 Prior to clearing or construction (including any ground-disturbing activities), the California

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
(Temporary)	BSA. Therefore, this alternative would not result in temporary effects related to jurisdictional wetlands or other waters.	<p>alternative is expected to temporarily affect 0.05 ac of nonwetland waters during construction.</p> <p>This alternative is expected to temporarily impact 0.79 ac of areas under California Department of Fish and Wildlife (CDFW) jurisdiction.</p> <p>Measure BIO-10 would compensate for the temporary effects of this alternative to jurisdictional wetlands and waters.</p>	<p>waters during construction, for a total effect to 0.83 ac of United States Army Corps of Engineers (USACE) jurisdictional waters.</p> <p>This alternative is expected to temporarily impact 2.23 ac of areas under CDFW jurisdiction.</p> <p>Measure BIO-10 would compensate for the temporary effects of this alternative to jurisdictional wetlands and waters.</p>	<p>Department of Fish and Wildlife (CDFW) and United States Army Corps of Engineers (USACE) will be consulted and, if required, a Lake or Streambed Alteration Agreement with the CDFW, a Section 404 permit and/or Letter of Permission (LOP) from the USACE, and a Section 401 certification from the Regional Water Quality Control Board (RWQCB) will be obtained.</p>
Wetlands or Other Waters of the U.S. (Permanent)	The No Build Alternative proposes no construction or other disturbance in the BSA. Therefore, the No Build Alternative would not result in permanent effects related to jurisdictional wetlands or other waters.	<p>This alternative is expected to permanently affect 0.08 ac of nonwetland waters and 0.04 ac of wetland waters of the United States.</p> <p>This alternative is expected to permanently affect 0.23 ac of areas under CDFW jurisdiction.</p> <p>Measure BIO-11 would compensate for the permanent effects of this alternative to jurisdictional wetlands and waters.</p>	<p>This alternative is expected to permanently affect 0.10 ac of nonwetland waters and 0.10 ac of wetland waters of the United States.</p> <p>This alternative is expected to permanently affect 0.45 ac of areas under CDFW jurisdiction.</p> <p>Measure BIO-11 would compensate for the permanent effects of this alternative to jurisdictional wetlands and waters.</p>	<p>BIO-11 If required, compensatory mitigation will be provided through the Measure M2 Freeway Transportation Mitigation Program, which allocates funds to acquire land and fund habitat restoration by acquiring properties and permanently preserving them as open space. Restoration projects restore open space lands to their native habitat and include the removal of invasive plant species. Use of the program will be consistent with the United States Army Corps of Engineers (USACE) and California Department of Fish and Wildlife (CDFW) policies for no net loss of riparian/riverine habitat (e.g., wetlands) standards.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Plant Species (Temporary)	This alternative would not result in any disturbances to biological resources and therefore would not result in any adverse temporary effects to special-status plant species.	Botanical surveys to establish the presence/absence of these species in the BSA were conducted during the appropriate blooming period in 2011 and were negative. This alternative is not expected to affect any of special-status plant species because they are considered absent from the BSA.	See impact summary for Alternative 2.	None required.
Plant Species (Permanent)	The No Build Alternative would not result in any disturbances to biological resources and therefore would not result in any adverse temporary effects to special-status plant species.	Botanical surveys to establish the presence/absence of these species in the BSA were conducted during the appropriate blooming period in 2011 and were negative. This alternative is not expected to affect any of special-status plant species because they are considered absent from the BSA.	See impact summary for Alternative 2.	None required.
Animal Species (Temporary)	This alternative does not propose any construction or other disturbance in the BSA. Therefore, this alternative would not result in any effects related to animal species.	<p>Temporary effects to Yuma myotis and other bridge- and crevice-dwelling species would include temporary indirect disturbance (such as noise, dust, night lighting, and human encroachment) from construction. Construction could also temporarily impede access to roost sites (existing and future) in the crevices of bridges, culverts, and overhead structures. While this alternative is expected to have some effects, they are not expected to substantially affect temporary access to roost sites.</p> <p>This alternative is not expected to directly impact the remaining special-status animal species. However, indirect effects may occur through the temporary loss of potential habitat, including CSS and Riparian Natural Communities. Other indirect temporary effects may occur due to increased</p>	See impact summary for Alternative 2.	BIO-12 A qualified bat biologist will survey the project disturbance limits between June and August to assess the potential for the use of structures within the Biological Study Area's (BSA) use for maternity roosting, since maternity roosts are generally formed in the late spring. Surveys should be conducted no later than the summer at least one year prior to construction to allow adequate time for coordination and planning between biologists and engineers should a maternity colony be discovered, and to implement any appropriate mitigation that may be needed to minimize impacts to roosting bats. The qualified bat biologist will also perform preconstruction surveys because bat roosts can change seasonally. The surveys

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>traffic and noise while construction is being conducted.</p> <p>This alternative is not expected to result in direct temporary effects to migratory birds or their nests. Indirect temporary effects may occur through the temporary loss of nesting habitat.</p> <p>Measures BIO-1 through BIO-9 (identified above under “Natural Communities”) and BIO-12 through BIO-14 avoid and/or minimize effects to special-status animal species.</p>		<p>will occur at night and include a combination of structure inspection, sampling, exit counts, and acoustic surveys.</p> <p>BIO-13 To avoid direct mortality to bats roosting in areas subject to effects from construction activities, any structure with potential bat habitat will have temporary and humane bat exclusion devices installed under the supervision of a qualified bat biologist prior to the initiation of construction activities. Exclusion will be conducted during the fall (September or October) to avoid trapping flightless young inside during the summer months or hibernating individuals during the winter. Such exclusion efforts are dependent on weather conditions, take a minimum of two weeks, and will be continued to keep the structures free of bats until the completion of construction. These exclusion devices will be removed upon completion of construction. If the period in which bats are excluded includes the maternity season (May – August), alternate roosting habitat may need to be installed at these locations at the discretion of the qualified bat biologist. Alternate roosting habitat will be installed at least six months in advance of the humane exclusion. All bat</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>exclusion techniques will be coordinated between the California Department of Transportation (Caltrans) District Biologist and the resource agencies early in the construction planning process.</p> <p>Any existing structures or structural features used by bats for roosting would not be removed or altered. If major modifications such as removal or expansion of structures containing roosts are anticipated, impacts to bats would be mitigated by ensuring that the new or altered structures contain structural features suitable for roosting so that there is no loss of roosting habitat.</p> <p>BIO-14 All work conducted on bridges will take place during the day to the extent feasible. If this is not feasible, effects will be minimized by directing lighting and noise away from night roosting areas as much as possible. At structures where maternity colonies of bats are observed, construction activities should be performed outside of the maternity season (May – August), if feasible. If this is not feasible, effects will be minimized by conducting a humane exclusion and installing alternate bat roosting habitat at those</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Animal Species (Permanent)	This alternative proposes no construction or other disturbance in the BSA. Therefore, this alternative would not affect animal species.	<p>Only a small part of bat roosting habitat (existing and future) may be permanently altered by this alternative if the existing expansion joint crevices are filled in (i.e., rubberized). As a result, this alternative is not expected to substantially affect the long-term use of the structures by bats. Additionally, this alternative is expected to have some, but not substantial, indirect effects on bridge- and crevice-dwelling animal species.</p> <p>This alternative is not expected to directly affect the remaining special-status animal species. However, indirect effects may occur through the permanent loss of potential habitat. Additionally, this alternative is not expected to result in direct permanent effects to migratory birds or their nests. Indirect temporary effects may occur through the permanent loss of nesting habitat.</p>	See impact summary for Alternative 2.	None required.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
Threatened and Endangered Species (Temporary)	This alternative would not result in any disturbances to biological resources and therefore would not result in any temporary effects to threatened and endangered species.	<p>This alternative may indirectly temporarily affect southern steelhead-designated critical habitat due to changes to water quality temporarily during construction. Additionally, this alternative is expected to have indirect and temporary effects to the white-tailed kite and least Bell's vireo (LBV) through the loss of potential future habitat.</p> <p>Measures BIO-16 through BIO-33 would avoid and/or minimize the temporary effects of this alternative to threatened and endangered species.</p>	See impact summary for Alternative 2.	<p>BIO-16 A biologist (Project Biologist) approved by the Carlsbad Fish and Wildlife Office (CFWO) will be on site during: a) initial clearing and grubbing; and b) weekly during project construction within 61 meters (200 ft) of offsite gnatcatcher and vireo habitat to ensure compliance with all conservation measures. The Project Biologist will be familiar with gnatcatchers, vireos, and their habitat and will have experience monitoring these species. Caltrans will submit the biologist's name, address, telephone number, and work schedule on the project to the CFWO prior to initiating project impacts. The biologist will be provided with a copy of this consultation.</p> <p>BIO-17 Under the supervision of the Project Biologist, the limits of project impacts (including construction staging areas and access routes) will be clearly delineated with bright orange plastic fencing, stakes, flags, or markers that will be installed in a manner that does not impact habitats to be avoided and such that they are clearly visible to personnel on foot and operating heavy equipment. If work occurs beyond the fenced or demarcated limits of impact, all work will cease until the problem has been</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>remedied to the satisfaction of the CFWO. Temporary construction fencing and markers will be removed upon project completion.</p> <p>BIO-18 The clearing and grubbing of native habitats for the project will be conducted between September 1 and February 14 to avoid the gnatcatcher and vireo breeding season (or sooner than September 1 if the Project Biologist demonstrates to the satisfaction of the CFWO that all nesting is complete). If vegetation clearing must be conducted during the breeding season, Caltrans will reinitiate consultation with the CFWO to address unanticipated effects to these species.</p> <p>BIO-19 The Project Biologist will submit a final report to the CFWO within 120 days of project completion including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers, locations, and sex of gnatcatchers and vireos (if observed), observed gnatcatcher and vireo behavior (especially in relation to project activities), and</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>remedial measures employed to avoid and minimize impacts to gnatcatchers and vireos. Raw field notes should be available upon request by the CFWO.</p> <p>BIO-20 Protocol surveys will be conducted for the vireo within 1 year prior to the commencement of vegetation clearing and construction activities for the project. If vireos are observed within or adjacent to the project impact area, consultation will be reinitiated with the CFWO to address potential direct and/or indirect effects to this species.</p> <p>BIO-21 An employee education program will be developed. Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the program will include the following topics: occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, penalties for violations of Federal and State laws, reporting requirements, and project</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>features designed to reduce the impacts to these species and promote continued successful occupation of the project area.</p> <p>BIO-22 The 0.70 acre riparian temporary impact area will be revegetated with native riparian species. In addition, other temporary impact areas that are adjacent to areas of native vegetation (including coastal sage scrub and riparian habitats) will be restored with native vegetation in-kind, and at the discretion of the Cal trans biologist. The proposed seed palettes will be provided to the CFWO for review and approval prior to application in the field. A 3-year plant establishment period is proposed that will include exotic species removal and reapplication of seed as necessary.</p> <p>BIO-23 If maintenance of a wetland restoration area potentially occupied by vireos is necessary between March 15 and September 15, a qualified biologist will survey for vireos within the restoration area, access paths to it, and other areas susceptible to disturbances by restoration site maintenance. Surveys will consist of three visits separated by 2 weeks starting April 10 of each maintenance/monitoring year.</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>Restoration work will be allowed to continue on the site during the survey period. However, if vireos are found during any of the visits, the project proponents will notify and coordinate with the CFWO to identify measures to avoid and/or minimize effects to the vireo (e.g., nests and an appropriate buffer will be flagged by the biologist and avoided by the maintenance work).</p> <p>BIO-24 Caltrans will ensure that project landscaping does not include exotic plant species listed on the California Invasive Plant Council's (Cal-IPC) "Invasive Plant Inventory" list. A copy of the complete list can be obtained from Cal-IPC's web site at http://www.cal-ipc.org.</p> <p>BIO-25 If invasive weed species are already growing within the project area, special care will be taken during transport, use, and disposal of soils containing invasive weed seeds to ensure that invasive weeds are not spread into new areas by the project. All heavy equipment will be washed and cleaned of debris prior to entering a new area to minimize the spread of invasive weeds. Eradication strategies will be implemented should an invasion of nonnative plant species be observed in the</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>project work area by the Project Biologist.</p> <p>BIO-26 If nighttime construction is necessary, all project lighting will be selectively placed and directed onto the roadway or construction site and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats.</p> <p>BIO-27 All construction equipment, fixed or mobile, will be equipped with properly operating and maintained mufflers to reduce construction noise.</p> <p>BIO-28 All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated disturbed/developed areas. These designated areas will be located in such a manner as to prevent run-off from entering existing native vegetation areas.</p> <p>BIO-29 Appropriate erosion and siltation controls will be installed prior to the onset of vegetation clearing and be maintained in good repair until the completion of project construction. Erosion and sediment control devices used for the proposed project, including fiber rolls and bonded fiber</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>matrix, will be made from biodegradable materials such as jute, with no plastic mesh, to avoid creating a wildlife entanglement hazard.</p> <p>BIO-30 Cut and fill will be balanced within the project or the construction contractor will identify the source or disposal location. All spoils and material disposal will be disposed of properly.</p> <p>BIO-31 The project site will be kept as clean of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site.</p> <p>BIO-32 Impacts from fugitive dust will be avoided and minimized through watering and other appropriate measures.</p> <p>BIO-33 Project personnel will be prohibited from bringing domestic pets to the construction site to ensure that domestic pets do not disturb or depredate wildlife in the adjacent native habitat.</p>
Threatened and Endangered Species (Permanent)	This alternative would not result in any disturbances to biological resources and therefore would not result in any permanent effects to threatened and endangered species.	This alternative is expected to have indirect permanent effects to white-tailed kite through the loss of potential future habitat. Additionally, this alternative would result in permanent and indirect effects to LBV by affecting a small quantity of riparian habitat in the BSA that may potentially be used	See impact summary for Alternative 2.	BIO-15 Should the United States Fish and Wildlife Service (USFWS) require additional avoidance and minimization effects, those measures will be implemented as part of the Build Alternatives.

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
		<p>by LBV in the future.</p> <p>Measures BIO-15 through BIO-33 would avoid and/or minimize the effects of this alternative to threatened and endangered species.</p>		
Invasive Species (Temporary)	This alternative would not result in any disturbances to biological resources and therefore would not result in any temporary effects from invasive species.	<p>Implementation of this alternative would have the potential to spread invasive species by the ingress and egress of construction equipment contaminated by invasives, the inclusion of invasive species in seed mixtures and mulch, and the improper removal and disposal of invasive species so that seed is spread along the highway.</p> <p>Measure BIO-37 avoids and/or minimizes the temporary effects of the Build Alternatives related to invasive species during construction.</p>	See impact summary for Alternative 2.	BIO-37 Inspection and cleaning of construction equipment would be performed to minimize the importation of nonnative plant material. Eradication strategies (i.e., weed control) would be implemented should an invasion of nonnative plant species occur.
Invasive Species (Permanent)	This alternative would not result in any disturbances to biological resources and therefore would not result in any permanent adverse effects from invasive species.	<p>There is a potential for this alternative to inadvertently introduce additional invasive species into the corridor by seeds being transported by vehicles or through the use of a contaminated landscape palette.</p> <p>Measures BIO-34 through BIO-38 avoid and/or minimize the permanent effects of the Build Alternatives related to invasive species during construction.</p>	See impact summary for Alternative 2.	<p>BIO-34 After construction, affected areas adjacent to native vegetation will be revegetated with plant species approved by the California Department of Transportation District Biologist.</p> <p>BIO-35 After construction, species listed as having a high or moderate rating on the California Invasive Plant Council's (Cal-IPC) "Invasive Plant Inventory" will not be planted in any revegetated areas. A copy of the complete list can be obtained from Cal-IPC's web site at http://www.cal-ipc.org.</p> <p>BIO-36 A plant establishment period will be developed for revegetated</p>

Table 1.9-2 Summary of Impacts

Potential Impact	No Build Alternative	Build Alternative 2 (Preferred Alternative)	Build Alternative 3	Avoidance, Minimization, and/or Mitigation Measures
				<p>areas during final design. A plant establishment period is a duration of time that allows newly installed plant material to reach a state of maturity, requiring minimal ongoing maintenance for survival. A plant establishment period typically includes the removal of litter and trash, weeding, water application, irrigation repair, replacement of plant material that dies, and other activities required to ensure the long-term survival of plant material.</p> <p>BIO-37 Inspection and cleaning of construction equipment will be performed to minimize the importation of nonnative plant material. Eradication strategies (i.e., weed control) will be implemented should an invasion of nonnative plant species occur.</p> <p>BIO-38 In compliance with EO 13112, weed control would be performed to minimize the importation of nonnative plant material during and after construction.</p>