

SUMMARY

S.1 Introduction

The proposed project is a joint project by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under NEPA and CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried-out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (USC) 327. Caltrans in cooperation with OCTA (responsible agency pursuant to CEQA §15381 and sponsoring agency) proposes to improve the mainline freeway and interchanges on I-405 in Orange and Los Angeles counties. The proposed project would relieve congestion and improve operational efficiency on I-405 between State Route (SR)-73 and Interstate 605 (I-605). The approximately 16-mile-long project corridor is primarily located in Orange County on I-405 and traverses the cities of Costa Mesa, Fountain Valley, Huntington Beach, Westminster, Garden Grove, Seal Beach, Los Alamitos, Long Beach, and the community of Rossmoor.

This Final EIR/EIS is based on the Draft EIR/EIS circulated in May 2012 and the Supplemental Draft EIR/EIS circulated in June 2013. The Draft EIR/EIS presented the project in its entirety and the Supplemental Draft EIR/EIS was prepared in response to the City of Long Beach's comments on the Draft EIR/EIS. Locations in this Final EIR/EIS where changes were made to the document following publication of the Draft EIR/EIS and Supplemental Draft EIR/EIS are highlighted through the use of vertical lines in the left-hand margin.

S.2 Purpose and Need

The project purpose is a set of objectives the project is intended to meet. The project need is the range of transportation deficiencies that the project was initiated to address.

Purpose of the Project

The purpose of the proposed action is to:

- Reduce congestion;
- Enhance operations;

- Increase mobility, improve trip reliability, maximize throughput, and optimize operations; and
- Minimize environmental impacts and right-of-way (ROW) acquisition.

In furtherance of the project's purpose, the following objective is established:

- To be consistent with regional plans and find a cost-effective early project solution for delivery.

Need for the Project

Current deficiencies of Interstate 405 (I-405) within the project limits are summarized below:

- The I-405 mainline general purpose (GP) lanes peak-period traffic demand exceeds available capacity;
- The I-405 mainline high-occupancy vehicle (HOV) lanes peak-period traffic demand exceeds available capacity;
- The I-405 mainline GP traffic lanes have operational and geometric deficiencies;
- The interchanges along I-405 within the study area have geometric, storage, and operational capacity deficiencies; and
- I-405 currently has limitations in detecting traffic incidents and providing rapid response and clearance due to lack of capacity and technological infrastructure.

As described in further detail below, Alternatives 1, 2, and 3 are considered reasonable and prudent project alternatives because they would achieve the project's purpose and need; however, the Transportation System Management (TSM)/Transportation Demand Management (TDM) Alternative and No Build Alternative are not considered viable project alternatives because they fail to meet the project's purpose and need.

S.3 Project Description

The project proposes to improve the mainline freeway and interchanges on I-405 in Orange and Los Angeles counties. The proposed project would relieve congestion and improve operational efficiency on I-405 between State Route (SR)-73 and Interstate 605 (I-605). The approximately 16-mile-long project corridor is primarily located in Orange County on I-405 and traverses the cities of Costa Mesa, Fountain Valley, Huntington Beach, Westminster, Garden Grove, Seal Beach, Los Alamitos, Long Beach, and the community of Rossmoor. Post miles are the established method of consistently identifying locations along a roadway; on I-405 in Orange County, post miles are the distance from the I-405/I-5 interchange. The project limits extend from 0.2-mile south of Bristol Street (12-ORA-405 Post Mile [PM] 9.3) to the Orange County/Los Angeles county line (12-ORA-405 PM 24.2) and in Los Angeles County from the

county line (07-LA-405 PM 0.00) to 1.4 miles north of I-605 (07-LA-405 PM 1.2). Improvements are proposed on SR-22 West in Orange County from 0.2-mile west of I-605 (12-ORA-22 PM R0.5) to I-405 (12-ORA-22 PM R0.7) and on SR-22 East¹ in Orange County from I-405 (12-ORA-22 PM R0.7) to 0.2-mile east of the Beach Boulevard Undercrossing (12-ORA-22 PM R3.8). Improvements on SR-73 will be from the Bear Street Overcrossing (12-ORA-73 PM R27.2) to I-405 (12-ORA-73 PM R27.8). Improvements on I-605 in Orange County will be from I-405 (12-ORA-605 PM 3.5) to the county line (12-ORA-605 PM R1.6) and in Los Angeles County from the county line (07-LA-605 PM R0.0) to 0.9-mile north of the Spring Street Overcrossing (07-LA-605 PM R1.2). Encroachments into Los Angeles County and work on SR-22 are associated with signing and striping to accommodate the transition from the existing to the proposed facility. I-405 is currently a controlled-access highway facility, with 8 to 12 mixed-flow GP lanes and two HOV lanes, which are over capacity and subject to severe traffic congestion and travel delays.

I-405 is generally a north-south route with 24 miles in Orange County and 48 miles in Los Angeles County. I-405 is part of the National Highway System and is considered a bypass route to Interstate 5 (the Santa Ana/Golden State Freeway) providing intra-regional and inter-regional access between Orange and Los Angeles counties. I-405 also serves as a critical goods movement corridor connecting the San Diego and U.S./Mexico border region with the ports of Long Beach and Los Angeles; and interconnectivity with the Los Angeles International Airport. Within the project limits, I-405 connects with SR-73 at the southern end and with I-605 at the northern end, and for approximately 2 miles between Bolsa Chica Road and I-605, it overlaps with SR-22. Fifteen (15) local street interchanges and 3 freeway-to-freeway interchanges are within the limits of the project improvements.

The north and south termini of the project, at the I-605 and SR-73 respectively, are locations where multiple freeways converge, generating congestion and causing delay. The termini have been logically chosen based on geography and transportation needs to ensure adequate response to transportation deficiencies at and around these points of intersection. The northern terminus of the proposed project is at the interchange of I-405 and I-605. The proposed additional lanes on I-405 south of this interchange would terminate into and provide enhanced traffic service between SR-73 and SR-22 and I-605; and would also enhance lane continuity along I-405 and terminate new lanes into available lanes on these other freeways. The southern terminus of the proposed project is at the interchange of SR-73. The additional lanes provided on I-405 would terminate either at locations north of the SR-73 interchange where lanes are currently dropped/added, thereby removing the lane drop/add, or at SR-73, depending upon the alternative.

¹ SR-22 East - Refers to the portion of SR-22 east of its junction with I-405 near Valley View Street.

In addition to the No Build Alternative, three build alternatives are proposed: Alternative 1 – Add One GP Lane in Each Direction; Alternative 2 – Add Two GP Lanes in Each Direction; and Alternative 3 – Express Lanes² (Tolled) and Add One GP Lane in Each Direction. Alternative 3 has been identified as the Preferred Alternative (PA).

Alternative 1 – Add One GP Lane in Each Direction

Alternative 1 would add a single GP³ lane in each direction on I-405 from Euclid Street to the I-605 interchange. Preliminary cost estimates for this alternative are \$1.30 billion. Figures 2-1 and 2-2 display the I-405 lane configurations associated with the proposed Alternative 1. The construction duration for Alternative 1 is estimated to be 48 months.

The proposed improvements under Alternative 1 would take place on the following routes within the stated post miles (PM). (Post miles are the established method of consistently identifying locations along a roadway; on I-405 in Orange County, post miles are the distance from the I-405/I-5 interchange.)

- 12-Ora-405 PM 12.1/23.9
- 12-Ora-22 PM R0.6/R0.7 (SR-22 West)
- 12-Ora-22 PM R0.7/R1.0 (SR-22 East)

Alternative 1 would provide a full standard highway cross section, with 12-foot (ft)-wide mainline travel lanes. Right-side (outside) shoulders would be 10 ft wide, and left-side (inside) shoulders would have a maximum width of 10 ft. Alternative 1 would require design exceptions⁴. Nine mandatory and 18 advisory design standards would require design exceptions at one or more locations along the corridor. Alternative 1 would provide continuous access between the HOV and GP lanes. Transit vehicles and HOV2+ would continue to be eligible to utilize the HOV lanes.

Under Alternative 1, auxiliary lanes⁵ would be added at various locations to provide efficient merge and diverge operations. In the northbound direction, the existing auxiliary lane from the Magnolia Street on-ramp to the Beach Boulevard off-ramp would be retained. Additional northbound auxiliary lanes would be provided at the following locations:

² Express Lanes - The term “Express lanes” used in this document is intended for the managed lanes to be high occupancy toll (HOT) lanes. In no case is the intent for the lanes to be operated differently than HOT lanes.

³ General Purpose Lane - Lane(s) having a variety of uses; suitable for general lane use and used by all motor vehicles without differentiation.

⁴ Design Exception - Design features or elements which deviate from the mandatory and/or advisory design standards as provided for in the Highway Design Manual and that are approved by the Chief, Division of Design.

⁵ Auxiliary Lane - The portion of the roadway for weaving, truck climbing, speed change, or for other purposes supplementary to through movement.

- At the approach to the Euclid Street/Ellis Avenue off-ramp; and
- From the Seal Beach Boulevard on-ramp to the westbound SR-22/7th Street off-ramp.

In the southbound direction, the existing auxiliary lane from the Beach Boulevard on-ramp to the Magnolia Street off-ramp would not be retained. The existing auxiliary lane from the SR-22/7th Street on-ramp to Seal Beach Boulevard would be retained, as would the existing auxiliary lane from the Harbor Boulevard on-ramp to the Fairview Road off-ramp. The southbound auxiliary lane currently provided approaching the Harbor Boulevard off-ramp would be extended to start at the Euclid Street on-ramp.

Proposed improvements included in Alternative 1 and considered Common Features of all build alternatives are provided below:

In the northern segment of the project area where SR-22 and I-405 overlap, Alternative 1 would result in a freeway with 9 to 10 lanes in each direction. Signage would be provided far enough upstream to accommodate the required number of lane changes to exit the freeway for traffic in the left lanes, including the HOV lanes.

Alternative 2 – Add Two GP Lanes in Each Direction

Alternative 2 would add one GP lane in each direction on I-405 from Euclid Street to the I-605 interchange (as in Alternative 1), plus add a second GP lane in the northbound direction from Brookhurst Street to the SR-22/7th Street interchange and a second GP lane in the southbound direction from the Seal Beach Boulevard on-ramp to Brookhurst Street. Preliminary cost estimates for this alternative are \$1.4 billion. Figures 2-1 and 2-2 display the I-405 lane configurations associated with the proposed Alternative 2. The construction duration for Alternative 2 is estimated to be 51 months.

The proposed improvements under Alternative 2 would take place on the following routes within the stated post miles:

- 12-Ora-405 PM 12.1/23.9
- 12-Ora-22 PM R0.6/R0.7 (SR-22 West)
- 12-Ora-22 PM R0.7/R1.0 (SR-22 East)

Alternative 2 would provide a full standard highway cross section, with 12-ft-wide mainline travel lanes. Right-side (outside) shoulders would be 10 ft wide, and left-side (inside) shoulders would have a maximum width of 10 ft. This alternative would provide nonstandard highway cross sections with 11-ft-wide mainline travel lanes from Seal Beach Boulevard to SR-22 to

avoid Naval Weapons Station (NAVWPNSTA) Seal Beach. Alternative 2 would require design exceptions. Nine mandatory and 17 advisory design standards would require design exceptions at one or more locations along the corridor.

Alternative 2 would provide continuous access between the HOV and GP lanes. Transit vehicles and HOV2+ would continue to be eligible to utilize the HOV lanes.

Under Alternative 2, auxiliary lanes would be added at various locations to provide efficient merge and diverge operations. In the northbound direction, the existing auxiliary lane from the Magnolia Street on-ramp to the Beach Boulevard off-ramp would be retained. A northbound auxiliary lane would be provided at the northerly approach to the Euclid Street/Ellis Avenue off-ramp, as well as between the Euclid Street/Ellis Avenue on-ramp and the Brookhurst Street/Magnolia Street off-ramp.

In the southbound direction, the existing auxiliary lane from the Beach Boulevard on-ramp to the Magnolia Street off-ramp would not be retained. The existing auxiliary lane from the SR-22/7th Street on-ramp to Seal Beach Boulevard would be retained, as would the existing auxiliary lane from the Harbor Boulevard on-ramp to the Fairview Road off-ramp. The southbound auxiliary lane currently provided approaching the Harbor Boulevard off-ramp would be extended to start at the Euclid Street southbound on-ramp.

Descriptions of proposed improvements included in Alternative 2 and shared by all alternatives are provided below.

In the northern section of the project area where SR-22 and I-405 overlap, Alternative 2 would result in a freeway with 9 to 10 lanes in each direction. Signage would be provided far enough upstream to accommodate the required number of lane changes to exit the freeway for traffic in the left lanes, including the HOV lanes.

Alternative 3 (Preferred Alternative) – Express Lanes (Tolled) and Add One GP Lane in Each Direction

Alternative 3 would add one GP lane in each direction on I-405 from Euclid Street to the I-605 interchange (as in Alternatives 1 and 2), plus add a tolled Express Lane in each direction of I-405 from SR-73 to SR-22 East. The tolled Express Lane and the existing HOV lanes would be managed jointly as a single tolled Express Facility (described in further detail in Section 2.2.2) with two lanes in each direction from SR-73 to I-605.

The objective is to open the tolled Express Lanes with a HOV2+ occupancy free to encourage rideshare and transit usage. Operational adjustments to the tolled Express Lanes may be

implemented based on demand, rates of speed, traffic volumes, and to meet financial covenants, maintenance and operational obligations. Potential operational adjustments include, but are not limited to:

- adjusting to HOV3+ free with HOV2s discounted tolls
- adjusting to HOV3+ free with HOV2s full tolls
- adjusting to tolling HOV2s on individual tolling segments such as direct connectors to or from other freeways
- periodic adjustments of tolling rates to maintain operations on individual tolling segments

The Express Lanes would be available for carpools, California Highway Patrol (CHP) vehicles, Caltrans vehicles, emergency vehicles (e.g. police, fire, and ambulance), vanpools, and buses at no cost and would be available to SOV (s) for a fee when there is excess capacity. From SR-22 to I-605, the existing HOV lane and the second HOV lane part of the West County Connectors (WCC) Project would become part of the tolled Express Facility. In addition, the current plan is that the tolled Express Facility would provide discounts or free use to zero emission vehicles, motorcycles, vehicles with disabled license plates, and disabled veterans; these vehicles would use the I-405 Express Lanes free of charge except during the most congested hours when such vehicles would receive a toll discount. Preliminary cost estimates for this alternative are \$1.7 billion. Figures 2-1 and 2-2 display the proposed I-405 lane configurations associated with the proposed Alternative 3. The construction duration for Alternative 3 is estimated to be 54 months.

The proposed improvements under Alternative 3 would take place on the following routes within the stated post miles:

- 12-Ora-405 PM 9.3/24.2
- 07-LA-405 PM 0.0/1.2
- 12-Ora-22 PM R0.7/R3.8 (SR-22 East)
- 12-Ora-22 PM R0.5/R0.7 (SR-22 West)
- 12-Ora-73 PM R27.2/R27.8 12-Ora-605 PM 3.5/R1.6
- 07-LA-605 PM R0.0/R1.2

Alternative 3 would generally provide a full standard highway cross section, with 12-ft-wide mainline travel lanes. Right-side (outside) shoulders would be 10 ft wide, and left-side (inside) shoulders would have a maximum width of 10 ft. The Express Facility would be separated from the GP lanes by a 2-ft to 4-ft buffer. Alternative 3 would require design exceptions. Twelve mandatory and 17 advisory design standards would require design exceptions at one or more locations along the corridor.

Under Alternative 3, auxiliary lanes would be added at various locations to provide efficient merge and diverge operations. In the northbound direction, the existing auxiliary lane from the Magnolia Street on-ramp to the Beach Boulevard off-ramp would be retained. Additional northbound auxiliary lanes would be at the northerly approach to the Euclid Street/Ellis Avenue off-ramp, and between the Seal Beach Boulevard on-ramp and the SR-22/7th Street off-ramp.

In the southbound direction, the existing auxiliary lane from the Beach Boulevard on-ramp to the Magnolia Street off-ramp would not be retained. The existing auxiliary lane from the SR-22/7th Street on-ramp to Seal Beach Boulevard would be retained, as would the existing auxiliary lane from the Harbor Boulevard on-ramp to the Fairview Road off-ramp. The southbound auxiliary lane currently provided approaching the Harbor Boulevard off-ramp would be extended to start at the Euclid Street southbound on-ramp.

In the northern section of the project area where SR-22 and I-405 overlap, Alternative 3 would result in a freeway with seven GP lanes in each direction. For traffic in the left lanes to exit the freeway properly, signage would be provided far enough upstream to accommodate the required number of lane changes to exit the freeway.

Transportation System Management/Transportation Demand Management Alternative

The project does not include Transportation Systems Management (TSM), Traffic Demand Management (TDM), or multi-modal alternatives as a stand-alone alternative, but features of these measures (e.g., carpool, bus, and commuter rail) are provided by several local agencies such as OCTA. However, TSM, TDM, and multi-modal components were considered, and elements of these measures are incorporated into the Build Alternatives (e.g. ramp metering, auxiliary lanes, traffic signal coordination, turning lanes, and bicycle and pedestrian improvements).

A stand-alone TSM/TDM Alternative was identified for the corridor. The TSM/TDM Alternative consists primarily of operational investments, policies, and actions aimed at improving traffic flow, promoting travel safety, and increasing transit usage and rideshare participation.

TSM 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 automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Multimodal

alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled (VMT), 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 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 alternatives are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting.

The TSM/TDM components that have been included in the proposed build alternatives are described in Section 2.2.1, Common Design Features of the Build Alternatives.

No Build (No Action) Alternative

Under the No Build Alternative, no improvements would be made to the I-405 corridor within the project limits by the proposed project. No additional lanes or interchange improvements would be provided. The No Build Alternative configuration would not accommodate existing or future traffic demand, and existing nonstandard geometric features would not be corrected. Congestion along the corridor would not be alleviated, and the situation would deteriorate with time.

The No Build Alternative provides a condition for comparing impacts associated with the build alternatives because environmental review must consider the effects of not implementing the proposed project. This alternative is inconsistent with the Caltrans goal of providing an efficient and effective interregional mobility system. Other direct effects of the No Build Alternative would include continued deterioration of freeway and local interchange operations and increases of emissions and maintenance costs associated with inefficiencies. Indirect and cumulative effects of the No Build Alternative could include increased effects on the communities related to increased commute times and traffic diversion through adjacent neighborhoods. Additionally, the No Build Alternative could increase the total amount of time the corridor cities have to endure construction-related effects associated with addressing the corridor needs through many smaller projects completed over an extended period of time.

Compared to the existing condition, as recorded in the Notice of Preparation (NOP) (issued August 31, 2009) and the Notice of Intent (NOI) (issued September 1, 2009), the future No Build Alternative includes the future completion of the following two projects:

- The SR-22 West County Connectors (WCC) Project, which has received environmental document approval and is proceeding through the design and construction phases; and
- Project EA 0J440K, which would provide continuous ingress and egress from the HOV lanes on the entire length of I-405 in Orange County. This separate project has not yet been programmed or funded.

The following improvements in the project area are part of the SR-22 WCC Project and are considered part of the future No Build Alternative:

- An additional HOV lane in each direction between SR-22 East and I-605;
- HOV lane direct connectors at the I-405/SR-22 East and I-405/I-605 interchanges;
- Relocation of the existing off-ramp to southbound Bolsa Chica Road, which currently exits from the eastbound SR-22 branch connector, to exit from the I-405 southbound mainline;
- Replacement of the Seal Beach Boulevard overcrossing;
- Replacement of the SR-22 separation bridge carrying westbound SR-22 over I-405 near 7th Street;
- Replacement of the SR-22 separation bridge carrying eastbound SR-22 over I-405 near Valley View Street;
- New bridge carrying the planned I-405/SR-22 HOV direct connectors over I-405 northbound; and
- New bridge carrying the planned I-405/I-605 HOV direct connector over I-405 northbound.

Each of the new and replacement bridges constructed as part of the SR-22 WCC Project has been designed to have a span and structural support positioning that would accommodate future I-405 widening proposed by Alternatives 1, 2, and 3 of the proposed project.

The future configuration under the No Build Alternative would also assume completion of the planned improvement on Seal Beach Boulevard north and south of I-405 currently underway by the City of Seal Beach. The proposed improvement north of I-405 principally involves the addition of a through lane on southbound Seal Beach Boulevard between Lampson Avenue and Old Ranch Parkway. The proposed improvements south of I-405 consist of the addition of a northbound right-turn lane on Seal Beach Boulevard to the southbound on-ramp and construction of a raised median between the northbound and southbound lanes of Seal Beach Boulevard.

Identification of the Preferred Alternative

This section identifies the Preferred Alternative (alternative preferred for construction), as well as the rationale and process used in its identification. The Preferred Alternative (PA)

recommended by the Project Development Team⁶ (PDT) on July 24, 2014 was Alternative 3 which proposes to add one GP lane plus one tolled Express lane in each direction, such that this tolled Express lane and the existing HOV lane would be managed jointly as a tolled Express Facility.

This PA identification was made after considering all information in the Draft EIS/EIR, Supplemental Draft EIS/EIR, and technical studies. It was also based on extensive input from the internal PDT members, public, stakeholders, interested citizens, cooperating agency (ACOE), participating agencies, federal, state, regional, and local agencies during the project development process. Extensive public outreach/ coordination resulted in comments from the public and agencies; all comments were carefully considered during the PA process. Consideration was given to all issues raised, including the complexity of the project, funding, public concerns, project purpose and need (described in Section 1.2) as well as the project's environmental/ economic/ social impacts (described in Section 3), and the PAs evaluation criteria which also included a balancing of the following factors:

- Reduce congestion on GP/HOV lanes
- Enhance & optimize Operations
- Increase Mobility
- Improve trip reliability
- Maximize throughput
- Minimize environmental impacts and ROW acquisition
- Address Peak-period traffic demand that exceeds capacity in GP & HOV lanes
- Address mainline operational & geometric deficiencies
- Address interchange deficiencies
- Address limitations in technological infrastructure

All three Build Alternatives would meet the project's purpose and need by reducing congestion; enhancing operations; increasing mobility; improving trip reliability, maximizing throughput, and optimizing operations; and by minimizing environmental impacts and right of way acquisitions. The No Build Alternative would not meet the project purpose and need.

The three Build Alternatives would generally have similar social and economic impacts with Alternative 3's impacts being slightly more than Alternative 2, and Alternative 2's being slightly more than Alternative 1's impacts. The avoidance, minimization, and mitigation measures would also be generally similar for most resource areas.

⁶ The PDT is an Interdisciplinary team (a mandate from NEPA) which utilized a systematic, interdisciplinary approach ensuring the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which could have impacted the environment.

During the PA identification process, it was noted that the cities within the corridor supported adding one General Purpose (GP) lane but had general opposition towards tolling as the Draft EIR/EIS proposed HOV2 + would need to pay a fee to use the toll facility. As a result, the OCTA Board in 2012 and 2013 selected Alternative 1, as the Locally Preferred Alternative.

The PDT concluded that although environmental/ social/ economic impacts were generally similar for all three Build Alternatives, benefits pertaining to people throughput of persons and vehicles; maximizing performance of existing system; trip reliability and long-term congestion relief were substantially different for the three build alternatives.

Increased vehicle throughput for build alternatives, mobility for 2040 by peak hour throughput, average daily traffic, and travel-time savings for all Alternatives is discussed in Table S-1 below.

It depicts that Alternative 3, the PA, is the most beneficial as compared to Alternative 1 and 2. Also, the PA best fulfills the purpose and need of the project; by providing managed lanes along an important travel corridor with free-flow conditions for future decades, access along the corridor will be greatly enhanced. This improvement, via managed lanes, would provide major benefits for the communities along the corridor by encouraging HOVs, transit bus services, and emergency vehicles. With free-flow conditions for such vehicles, livability along the corridor would be improved as lanes would be able to serve the community better. Also, air quality improvements associated with reduced congestion could improve health.

All build alternatives would result in operational improvements. However, Alternative 3 has lower travel times and higher travel speeds as compared to Alternatives 1 and 2. Alternatives 1 and 2 have higher travel times and lower travel speeds due to less capacity. General purpose lanes will not deliver service life for the design year as demand exceeds capacity. But managed lanes can preserve mobility beyond the design year.

Although, the construction costs would be higher for Alternative 3 as compared to Alternatives 1 and 2, the revenue generation from toll collection, the long-term operational benefits and transit/carpool encouragement would outweigh any increase in construction cost. Additionally, the trip reliability for transit/carpools would be enhanced because they would be able to utilize the Managed Lanes, as opposed to being forced to use the General Purpose lanes.

After comments were received from the public and reviewing agencies on the Draft EIR/EIS and Supplemental Draft EIR/EIS, Caltrans performed additional environmental and engineering analysis and are included in Appendix R1 and R2. Analysis that resulted in unacceptable conditions was not carried forward in the Final EIS/EIR. Those that resulted in acceptable

conditions are carried forward in the Final EIR/EIS, was part of the decision making process and are presented below:

Elimination of Braided Ramps: A large number of public comments were received regarding the southbound and northbound braided ramps. The southbound braided ramps would result in full acquisitions of the Sports Authority, Days Inn, and the Fountain Valley Skating Center. A design option was proposed that removed the braided ramps and would not impact the business properties. In lieu of the southbound braided ramp configuration, the Magnolia Street loop on-ramp would terminate at I-405 into a new auxiliary lane adjacent to the GP lanes, which would accommodate traffic exiting I-405 onto the Warner Avenue loop off-ramp. The auxiliary lane would terminate south of the off-ramp to Warner Avenue and avoid ROW impacts south of the Warner Avenue interchange. Provision of an auxiliary lane from the Magnolia Street on-ramp south beyond the Warner Avenue off-ramp represents an improvement over the existing condition. In the northbound direction it was concluded that a collector distributor road (C-D) instead of a braided ramp configuration would provide better performance than existing conditions. The Final EIR/EIS proposes to keep the C-D Road and Auxiliary lane to avoid impacts to the properties.

Open Toll Express Lanes with 2+ Free: There was general opposition from the public as well as from local agencies along the corridor regarding tolling and HOV 3+ policy. As a result, Caltrans intends to open the Express Lanes with HOV2+ free, retaining the flexibility to adjust to HOV3+ free with HOV2+ tolled or discounted based on consideration of various factors. These include but not limited to adjacent HOV/ HOT facility occupancy requirements, and available capacity after HOV2+ vehicles are allowed into the lanes.

Due to all of the reasons mentioned above, the PDT reached a consensus and Alternative 3 was identified as the Preferred Alternative, the alternative to move forward for design and construction.

Table S-1: Mobility by Alternatives (2040)

	No Build	Alt 1	Alt 2	Alt 3 (Preferred Alternative)
Increased vehicle throughput	N/A	<ul style="list-style-type: none"> • 0% SR - 73 to Brookhurst Street • 20% between Brookhurst Street and SR-22 East; & • 13% between 	<ul style="list-style-type: none"> • 0% SR - 73 to Brookhurst Street • 40% between Brookhurst Street and SR-22 East; & • 25% between 	<ul style="list-style-type: none"> • 24% SR - 73 to Brookhurst Street • 50% between Brookhurst Street and SR-22 East; & • 23% between

	No Build	Alt 1	Alt 2	Alt 3 (Preferred Alternative)
		SR-22 East and I-605.	SR-22 East and I 605.	SR-22 East and I-605.
Peak Hour Throughput (potential, one direction)	6,000 vehicles per hour	7,200 vehicles per hour	8,400 vehicles per hour	9,500 vehicles per hour
Average Daily Traffic	324,000 – 489,000	334,000 – 499,000	344,000-509,00	348,000 – 503,000
Travel Time SR-73 to I-605 (Northbound, PM Peak Period)	133 min GP 121 min HOV	57 min GP 54 min HOV	28 min GP 27 min HOV	29 min GP 13 min Express

Construction, Staging, and Phasing

The duration of construction for the build alternatives is 48 months for Alternative 1, 51 months for Alternative 2, and 54 months for Alternative 3. Alternative 3 could be designed and constructed in phases or segments. If constructed in more than one phase, separate design build contracts may be used. Construction of phases is likely to overlap, and collectively are anticipated to commence in 2016. Each design build phase could be more than one contract/contractor. Figure 2-7 has been created to schematically show how project staging occurs for larger projects to minimize impacts and maintain traffic flow during construction. Each design build procurement phase is envisioned to be constructed in four stages. Construction of interchange improvements, consisting of freeway ramp reconstruction, local arterial improvements, and overcrossing structure replacement, is envisioned to be staggered throughout stages to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. Arterials and overcrossing improvements that would add capacity over the existing condition are proposed in the earlier stages in efforts to ease traffic congestion during subsequent construction stages. Construction staging area locations will be finalized

during final design, but they are anticipated to generally be located within the existing ROW at interchange locations.

No material borrow sites have been identified for this project. Imported borrow material for the project construction ranges from 870,000 cubic yards for Alternative 1 up to 1,124,000 cubic yards for Alternative 3. The contractor will be responsible for ensuring that all import material comes from permitted commercial material providers and does not contain hazardous materials, in accordance with 2010 Caltrans Standard Special Specifications 19-7.

Construction operation would necessitate the closures of various facilities, such as the I-405 mainline, branch connectors, interchange ramps, and local arterials. Closures of these facilities may be overnight, short-term, during an extended weekend (i.e., 55-hour window from Friday night to Monday morning), or long-term, as discussed in Section 3.1.4, Community Impacts. Lane reductions and restrictions are also anticipated on mainline, connector, ramp, and arterial roadway facilities to accommodate construction activities. Long-term closure of arterial overcrossings may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service.

The project also requires material be imported to the project site from outside the project limits. Identification of off-site material source sites would be the responsibility of the design/build contractor. Imported material would come from environmentally cleared sites and be transported to the project on environmentally cleared access/haul routes and public roads. Once within the project limits, all construction vehicle access, materials staging and storage, and other construction activities would occur within the defined limits for the project.

S.4 Joint CEQA/NEPA Document

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, quite often a “lower level” document is prepared for NEPA.

After comments were received from the public and reviewing agencies, Caltrans continued additional environmental and engineering studies. The information from these studies has been incorporated into the design and environmental evaluations presented in this document. The Final EIR/EIS is now complete and includes responses to comments received on the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) and Supplemental Draft Environmental Impact Statement/Draft Environmental Impact Report (SDEIS/DEIR), as well as identification of a preferred alternative, as discussed in Section S.3 Project Description. Following circulation of this Final EIR/EIS, if the decision is made to

approve a build alternative, a Notice of Determination (NOD) will be published in compliance with CEQA and a Record of Decision (ROD) will be published in the Federal Register in compliance with NEPA.

S.5 Project Impacts

Table S-2 summarizes project impacts by alternative and identifies avoidance and minimization measures. Where applicable, some of these measures are sometimes also mitigation measures, as discussed in Chapter 4 of this Final EIR/EIS. For detailed information regarding the impacts of each alternative, see Chapters 3 and 4 of this Final EIR/EIS and the associated technical studies.

Each of the impacts identified as significant under CEQA, even after incorporation of mitigation measures (discussed in Section 4.2.5) as well as those that are potentially significant, but reduced to insignificance after incorporation of mitigation measures (as discussed in Section 4.2.3) are addressed in the CEQA Findings prepared in accordance with Public Resources Code Sections 21002, 21002.1, and 21081, as well as CEQA Guidelines Section 15091. With CEQA significant impacts for which mitigation was not enough to lower the impacts to less than significant levels; there are specific economic, legal, social, technological or other benefits of the project which outweigh the potentially significant effects. Similarly, in order to approve a build alternative, decision makers would also consider a Statement of Overriding Considerations, that explains the benefits that override the significant and unmitigated impacts (CEQA Guidelines Section 15093).

S.6 Coordination with Public and Other Agencies

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and level of analysis required, and to identify potential impacts, mitigation measures, and related environmental requirements. Agency consultation and public participation for this project has been accomplished through a variety of formal and informal methods, including Project Development Team (PDT) meetings, speakers bureau briefings, Policy Working Group meetings, Stakeholder Working Group meetings, meetings with corridor city staff, meetings with other organizations or groups as requested, interagency coordination meetings, public scoping meetings, and public announcements placed in local newspapers, the *Federal Register*, at the County Clerk's office, and in public libraries. Chapter 5 summarizes the results of Caltrans efforts to fully identify, address, and resolve project-related issues through early and continuing coordination. Table 5-1 includes a summary of coordination activities conducted to date.

In compliance with 23 U.S.C. 139, Caltrans undertook an extensive effort first to provide an opportunity for public and interagency involvement, followed by agency participation in the definition of the project's purpose and need and alternatives. Caltrans utilized 23 U.S.C. 139 guidance to establish a plan to continue providing opportunities for public involvement and working closely with participating and cooperating agencies.

Many means were used to announce the beginning of the environmental process and updates thereafter. Stakeholders in the Orange County area, as well as local, state, and federal agencies, were notified of the commencement of the environmental process for the project, invited to the four public scoping meetings, and given the opportunity to submit comments in a variety of formats.

To fulfill CEQA requirements, an NOP of an EIR was drafted announcing commencement of the EIR/EIS process for the project. The NOP was sent to the State Clearinghouse and Planning Unit of the Governor's Office of Planning and Research, distributed to agencies with potential interest in the project, sent for posting to local libraries in surrounding cities, and posted online on OCTA's and Caltrans' Web sites on August 31, 2009. Pursuant to PRC 21092.3 and 21152, the notice was officially submitted to the Orange County Clerk-Recorder, Tom Daly, to be posted for 30 days for public review. Additionally, the NOP was formally submitted to the California Transportation Commission (CTC), along with a memorandum and NOP summary providing further information. To fulfill NEPA requirements, an NOI of an EIS was drafted and submitted by FHWA to the Office of the Federal Register to be published in the Federal Register on August 26, 2009 (see Appendix I). The NOI was also posted on OCTA's and Caltrans's Web sites.

Between February 2009 and January 2012, a robust public outreach effort was undertaken. To date, 155 meetings have been held and fall within the general classifications provided below.

- Scoping Meetings – Formal Scoping Meeting, advertised for public input.
- Task Meetings
- Resource Agency Meetings – Meetings per the Section 6002 process to solicit input.
- City Council Meetings – Meetings to inform local decision makers about project. Input provided by members of the City Council.
- Policy Working Group – Regular meetings to inform OCTA and local decision makers about the project. Input provided by members of the group.

- Stakeholders Working Group – Regular meetings to inform local stakeholders, including business leaders and community members about the project. Input provided by members of the group.
- Stakeholder Meetings – Meetings held with interested groups that will be affected by the project, including NAVWPNSTA Seal Beach, businesses, and residential and community groups and individuals. Input was provided from these meeting regarding specific issues for the project.
- OCTA Board Meetings – Business matters and/or updates on the project at regularly scheduled OCTA Board and Committee meetings. Input provided by OCTA Board Members.
- OC Public Works and Local City Representatives – Meeting with County of Orange Public Works and affected local city staff members to receive input about project specific issues.
- PDT Meetings.
- Agency Coordination/Tech Workshops.

Native American and cultural resources coordination was also conducted as described in Chapter 5.

Draft EIR/EIS Public Review Period

The public review period for the Draft EIR/EIS was originally scheduled for May 18 to July 2, 2012, but it was extended to July 17, 2012, at the request of the City of Long Beach. Public notices to notify the public regarding the public review period were published in English in the *Orange County Register* and *Long Beach Press-Telegram*, in Vietnamese in *Nguoi-Viet*, and in Spanish in the *Excelsior*. The public notice was also provided on Caltrans' and OCTA's website.

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Project Cost	Not Applicable.	The full cost is \$1.3 billion. In addition to construction and engineering, the full cost includes inflation to 2014 dollars, program management, public awareness and outreach, and environmental process.	The full cost is \$1.4 billion. In addition to construction and engineering, the full cost includes inflation to 2014 dollars, program management, public awareness and outreach, and environmental process.	The full cost is \$1.7 billion. In addition to construction and engineering, the full cost includes inflation to 2014 dollars, program management, public awareness and outreach, and environmental process.	Not Applicable.
Construction Duration	Not Applicable.	48 Months	51 Months	54 Months	Not Applicable.
Land Use	Inconsistent with regional and local planning goals and policies.	<p>Permanent conversion, through acquisition, of approximately 3.62 acres of land designated as other land uses to transportation.</p> <p>Temporary and intermittent inconvenience for some current land use operations due to temporary traffic lane and ramp closures and temporary construction easements (TCEs) on 115 parcels to accommodate construction of the project.</p> <p>Consistent with the goals, objectives, and policies of all surrounding communities' General Plans.</p> <p>Alternative 1 is consistent with the 2012 Regional Transportation Plan (RTP) and 2015 Federal Transportation Improvement Program (FTIP).</p> <p>Parks and Recreational Effects and Section 4(f) Use:</p> <p>Pleasant View Park:</p> <ul style="list-style-type: none"> No Effect <p>Buckingham Park:</p> <ul style="list-style-type: none"> Permanent Use: 3,151 square ft (Direct 4(f) Use) Temporary Use: None <p>Cascade Park:</p> <ul style="list-style-type: none"> Permanent Use: 1 square ft (Direct 4(f) Use) Temporary Use: None <p>Santa Ana River Trail:</p> <ul style="list-style-type: none"> Permanent Use: 2,000 square ft (Direct 4(f) Use) Temporary Use: 1,700 square ft (Temporary 4(f) Use) 	<p>Permanent conversion, through acquisition, of approximately 4.06 acres of land designated as other land uses to transportation.</p> <p>Temporary and intermittent inconvenience for some current land use operations due to temporary traffic lane and ramp closures and TCEs on 227 parcels to accommodate construction of the project.</p> <p>Consistent with the goals, objectives, and policies of all surrounding communities' General Plans.</p> <p>Alternative 2 is not consistent with the current RTP or FTIP.</p> <p>Parks and Recreational Effects and Section 4(f) Use:</p> <p>Pleasant View Park:</p> <ul style="list-style-type: none"> Permanent Use: 1,210 square ft (Direct 4(f) Use) Temporary Use: None <p>Buckingham Park:</p> <ul style="list-style-type: none"> Permanent Use: 3,151 square ft (Direct 4(f) Use) Temporary Use: None <p>Cascade Park:</p> <ul style="list-style-type: none"> Permanent Use: 4,152 square ft (Direct 4(f) Use) Temporary Use: None <p>Santa Ana River Trail:</p> <ul style="list-style-type: none"> Permanent Use: 2,000 square ft (Direct 4(f) Use) Temporary Use: 1,700 square ft 	<p>Permanent conversion, through acquisition, of approximately 4.90 acres of land designated as other land uses to transportation.</p> <p>Temporary and intermittent inconvenience for some current land use operations due to temporary traffic lane and ramp closures and TCEs on 260 parcels to accommodate construction of the project.</p> <p>Consistent with the goals, objectives, and policies of all surrounding communities' General Plans.</p> <p>Alternative 3 is consistent with the current 2012 RTP and the 2015FTIP.</p> <p>Parks and Recreational Effects and Section 4(f) Use:</p> <p>Pleasant View Park:</p> <ul style="list-style-type: none"> Permanent Use: 1,210 square ft (Direct 4(f) Use) Temporary Use: None <p>Buckingham Park:</p> <ul style="list-style-type: none"> Permanent Use: 3,151 square ft (Direct 4(f) Use) Temporary Use: None <p>Cascade Park:</p> <ul style="list-style-type: none"> Permanent Use: 4,152 square ft (Direct 4(f) Use) Temporary Use: None <p>Santa Ana River Trail:</p> <ul style="list-style-type: none"> Permanent Use: 2,000 square ft (Direct 4(f) Use) Temporary Use: 1,700 square ft 	<p>LU-1: If a build alternative is identified for implementation, either Caltrans or OCTA shall request the County of Orange and the cities along the project corridor to amend their respective General Plans to reflect the identified build alternative and the modification of land use designations for properties that would be acquired for the project that are not currently designated for transportation uses.</p> <p>LU-2: Caltrans shall implement a TMP throughout the duration of the construction activities and make this document available to the public. A purpose of the TMP is to minimize project-related construction disruptions and would include traffic strategies designed in coordination with local jurisdictions.</p> <p>LU-3: Pedestrian access shall be maintained via detour at Pleasant View Park at all times during construction of the project.</p> <p>LU-4: Existing vegetation or landscaping at Buckingham Park that is damaged or removed during construction shall be replaced. Replacement plantings shall be consistent with any existing preserved vegetation. Replacement plantings shall be reviewed and approved by a Caltrans District 12 Landscape Architect.</p> <p>LU-5: Existing vegetation or landscaping at Cascade Park that is damaged or removed during construction shall be replaced. Replacement plantings shall be consistent with any existing preserved vegetation. Replacement plantings shall be reviewed and approved by a Caltrans District 12 Landscape Architect.</p> <p>LU-6: To avoid temporary closures of both riverbank trails of the Santa Ana River Trail, phased construction of the Euclid Street southbound I-405 on-ramp from Ellis Avenue shall provide access to at least one of the riverbank trails at all times during construction.</p> <p>COM-13: Where acquisition and relocation are unavoidable, the provisions of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended), Title 49 CFR Part 24 and, where applicable, the California Public Park Preservation Act of 1971 will be followed. An appraisal of the affected property will be obtained, and an offer for the full appraised value will be made</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		Boomers Parcels: Partial Acquisition (4 of 5 parcels occupied by Boomers)	(Temporary 4(f) Use) Boomers Parcels : Partial Acquisition (4 of 5 parcels occupied by Boomers)	(Temporary 4(f) Use) Boomers Parcels: Partial Acquisition (4 of 5 parcels occupied by Boomers)	
Growth	No impact.	No impact.	No impact.	No impact.	No measures required.
Farmlands/ Timberlands	No impact.	No impact.	No impact.	No impact.	No measures required.
Community Impacts	The quality of accessibility to and mobility within corridor communities within the project area would continue to deteriorate. This would potentially erode community cohesion-related activities over time.	<p>Community Character and Cohesion: Implementation of the proposed project is anticipated to result in a beneficial effect on neighborhoods and community cohesion by reducing cut-through traffic within the adjacent neighborhoods. At present, motorists traveling along I-405 often exit the freeway and seek less-congested alternative routes within the adjacent neighborhoods when freeway conditions deteriorate.</p> <p>However, the project would add approximately 18 percent additional hardscape/pavement; modified/new ramps; concrete barriers; new retaining, tieback, and sound walls; and new freeway appurtenances (e.g. changeable message signs, overhead traffic sensors, and video cameras). The improvements would generally extend to the ROW limits and, with the exception of areas within the interchanges, would reduce and/or eliminate mature vegetation, as well as potential areas for replacement landscaping. These changes would permanently modify the visual quality of the surrounding communities and, as a result, would affect the existing community character and cohesion.</p> <p>Subsequent to construction of build alternatives, views of and from I-405 would be affected. The build alternatives would bring I-405 in closer proximity to corridor communities and would eliminate the majority of mature</p>	<p>Community Character and Cohesion: Implementation of the proposed project is anticipated to result in a beneficial effect on neighborhoods and community cohesion by reducing cut-through traffic within the adjacent neighborhoods. At present, motorists traveling along I-405 often exit the freeway and seek less-congested alternative routes within the adjacent neighborhoods when freeway conditions deteriorate.</p> <p>However, the project would add approximately 21 percent additional hardscape/pavement; modified/new ramps; concrete barriers; new retaining, tieback, and sound walls; and new freeway appurtenances (e.g. changeable message signs, overhead traffic sensors, and video cameras). The improvements would generally extend to the ROW limits and, with the exception of areas within the interchanges, would reduce and/or eliminate mature vegetation, as well as potential areas for replacement landscaping. These changes would permanently modify the visual quality of the surrounding communities and, as a result, would affect the existing community character and cohesion.</p> <p>Subsequent to construction of build alternatives, views of and from I-405 would be affected. The build alternatives would bring I-405 in closer proximity to corridor communities and would eliminate the majority of mature</p>	<p>Community Character and Cohesion: Implementation of the proposed project is anticipated to result in a beneficial effect on neighborhoods and community cohesion by reducing cut-through traffic within the adjacent neighborhoods. At present, motorists traveling along I-405 often exit the freeway and seek less-congested alternative routes within the adjacent neighborhoods when freeway conditions deteriorate.</p> <p>However, the project would add approximately 18 percent additional hardscape/pavement; modified/new ramps; concrete barriers; new retaining, tieback, and sound walls; and new freeway appurtenances (e.g. changeable message signs, overhead traffic sensors, and video cameras). Additional features included in Alternative 3 include congestion pricing signage, and I-405/SR-73 HOV direct connector ramp.</p> <p>The improvements would generally extend to the ROW limits and, with the exception of areas within the interchanges, would reduce and/or eliminate mature vegetation, as well as potential areas for replacement landscaping. These changes would permanently modify the visual quality of the surrounding communities and, as a result, would affect the existing community character and cohesion.</p> <p>Subsequent to construction of build alternatives, views of and from I-405</p>	<p>COM-1: No two consecutive/adjacent off-ramps or two consecutive/adjacent on-ramps in the same direction will be closed concurrently.</p> <p>COM-2: Business access will be maintained at all times during construction, consistent with Section 7-1.03 Public Convenience of Standard Specifications (2010).</p> <p>COM-3: Ramps that provide access immediately adjacent to South Coast Plaza (South Coast Drive northbound off-ramp), Bella Terra (Beach Boulevard off-ramps), or Westminster Mall (Bolsa Avenue northbound and Goldenwest Street southbound off-ramps) will not be closed from November 1 to January 31.</p> <p>COM-4: Provision of motorist information (i.e., existing changeable message signs, portable changeable message signs, stationary ground-mounted signs, traffic radio announcements, and the Caltrans Highway Information Network [CHIN]).</p> <p>COM-5: Incorporation of traffic circulation construction strategies (i.e., lane closure restrictions during holidays and special local events, closure of secondary streets during construction to allow quick construction and reopening, lane modifications [lane reductions, shifts] to maintain the number of lanes needed, allowing night work and extended weekend work, maintaining business access, and maintaining pedestrian and bicycle access). In addition, see Traffic Measure T-1 for public information regarding the TMP. Upon completion, the final TMP can be obtained by request from OCTA.</p> <p>COM-6: Implementation of alternate and detour routes strategies; street/intersection improvements (e.g., widening, pavement rehabilitation, removal of median, restriping) to provide added capacity to handle detour traffic; signal improvements; adjustment of signal timing and/or signal coordination to increase vehicle throughput, improve traffic flow and optimize intersection capacity; turn restrictions at intersections and roadways necessary to reduce congestion and improve safety; and parking restrictions on alternate and detour routes during work hours to increase capacity, reduce traffic conflicts, and improve access.</p> <p>COM-7:Coordination with the relevant parks and recreation departments of affected parks shall occur during construction to ensure the access and safety of users in the parks and trails adjacent to</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>vegetation located within the ROW, which currently softens the urban nature of the roadway. Changes in the views of and from the I-405 would have a particularly noticeable effect on residents whose homes are located adjacent to and/or those who travel on the I-405 and contributing to the project adverse effects on community character and cohesion</p> <p>Construction of the proposed project would create typical construction-related temporary and intermittent inconveniences for local and regional users and adjacent residents and business owners within and adjacent to the project corridor (i.e., sometimes lengthy detours, construction delays, equipment operations, temporary traffic lane, arterial, and ramp closures) to accommodate construction activities. Construction activities will also temporarily disrupt local traffic patterns, access to residence and businesses, increase traffic congestion, and increased noise, vibration and dust. Construction at major interchanges could disrupt local business operations. Periodic freeway arterial and ramp lane closures would impede traffic mobility. Considering the construction duration of 48 months, construction impacts could result in adverse impacts to the community character within the corridor cities located adjacent to the construction zone</p> <p>Temporary Construction Easements (TCEs): 115 TCEs</p> <p>Ramp Closures:</p> <p>The project would result in the following types and locations of local ramp closures:</p> <p>Permanent: None</p> <p>Temporary long-term (10 to 30 days):</p>	<p>vegetation located within the ROW, which currently softens the urban nature of the roadway. Changes in the views of and from the I-405 would have a particularly noticeable effect on residents whose homes are located adjacent to and/or those who travel on the I-405 and contributing to the project adverse effects on community character and cohesion</p> <p>Construction of the proposed project would create typical construction-related temporary and intermittent inconveniences for local and regional users and adjacent residents and business owners within and adjacent to the project corridor (i.e., sometimes lengthy detours, construction delays, equipment operations, temporary traffic lane, arterial, and ramp closures) to accommodate construction activities. Construction activities will also temporarily disrupt local traffic patterns, access to residence and businesses, increase traffic congestion, and increased noise, vibration and dust. Construction at major interchanges could disrupt local business operations. Periodic freeway arterial and ramp lane closures would impede traffic mobility. Considering the construction duration of 51 months, construction impacts could result in adverse impacts to the community character within the corridor cities located adjacent to the construction zone</p> <p>TCEs: 227 TCEs</p> <p>Ramp Closures:</p> <p>The project would result in the following types and locations of local ramp closures:</p> <p>Permanent: None</p> <p>Temporary long-term (10 to 30 days):</p>	<p>would be affected. The build alternatives would bring I-405 in closer proximity to corridor communities and would eliminate the majority of mature vegetation located within the ROW, which currently softens the urban nature of the roadway. Changes in the views of and from the I-405 would have a particularly noticeable effect on residents whose homes are located adjacent to and/or those who travel on the I-405 and contributing to the project adverse effects on community character and cohesion</p> <p>Construction of the proposed project would create typical construction-related temporary and intermittent inconveniences for local and regional users and adjacent residents and business owners within and adjacent to the project corridor (i.e., sometimes lengthy detours, construction delays, equipment operations, temporary traffic lane, arterial, and ramp closures) to accommodate construction activities. Construction activities will also temporarily disrupt local traffic patterns, access to residence and businesses, increase traffic congestion, and increased noise, vibration and dust. Construction at major interchanges could disrupt local business operations. Periodic freeway arterial and ramp lane closures would impede traffic mobility. Considering the construction duration of 54 months, construction impacts could result in adverse impacts to the community character within the corridor cities located adjacent to the construction zone</p> <p>TCEs: 260 TCEs</p> <p>Ramp Closures:</p> <p>The project would result in the following types and locations of local ramp closures:</p>	<p>the proposed project</p> <p>COM-8: Close coordination with utility service providers and the implementation of a public outreach program will be conducted to minimize impacts to surrounding communities</p> <p>COM-9: Close coordination with railroad owners and operators will be conducted during final design and construction phases to minimize impacts to railroad operations.</p> <p>COM-10: During design and construction, OCTA shall work closely with affected property owners and occupants to identify means to avoid and minimize parking impacts, including space management such as restriping of parking areas and identifying parking replacement options. When required, property owners and occupants shall receive compensation for the partial loss of property through the ROW acquisition process.</p> <p>COM-11: Maintain good public relations with the community to minimize objections to the unavoidable construction impacts. OCTA will implement a community information plan to maintain good community relations with the public by providing timely information about anticipated construction activities to affected citizens and adjacent property owners. Notification methods could include, but are not limited to, website, fliers, mailers, e-mail blasts, and electronic messaging on the freeway.</p> <p>COM-12: The existing Heil Avenue pedestrian crossing will remain open for use until the replacement crossing has been completed.</p> <p>COM-13: Where acquisition and relocation are unavoidable, the provisions of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended), Title 49 CFR Part 24 and, where applicable, the California Public Park Preservation Act of 1971 will be followed.</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<ul style="list-style-type: none"> • Talbert Avenue southbound on-ramp • Warner Avenue southbound on-ramp • Magnolia Street southbound off-ramp • Bolsa Avenue southbound on-ramp • Westminster Avenue southbound on-ramp • Bolsa Chica Road southbound off-ramp <p>Arterial Closures: Permanent: None Temporary long-term: Reconstruction of local arterials and overcrossing structures to accommodate the I-405 widening and interchange improvements. Long-term closure of arterial overcrossing lasting up to 12 months may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service. The potential locations for long-term closures include the following:</p> <ul style="list-style-type: none"> • Ward Street OC – 8 to 12 months • Talbert Avenue OC – 8 to 12 months • Slater Avenue OC – 8 to 12 months • Bushard Street OC – 8 to 12 months • Newland Street OC – 8 to 12 months • Edinger Avenue OC – 8 to 12 months • McFadden Avenue OC – 8 to 12 months • Edwards Street OC – 8 to 12 months <p>Parking: Permanent:</p>	<ul style="list-style-type: none"> • Talbert Avenue southbound on-ramp • Warner Avenue southbound on-ramp • Magnolia Street southbound off-ramp • Bolsa Avenue southbound on-ramp • Westminster Avenue southbound on-ramp • Bolsa Chica Road southbound off-ramp <p>Arterial Closures: Permanent: None Temporary long-term: Reconstruction of local arterials and overcrossing structures to accommodate the I-405 widening and interchange improvements. Long-term closure of arterial overcrossing lasting up to 12 months may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service. The potential locations for long-term closures include the following:</p> <ul style="list-style-type: none"> • Ward Street OC – 8 to 12 months • Talbert Avenue OC – 8 to 12 months • Slater Avenue OC – 8 to 12 months • Bushard Street OC – 8 to 12 months • Newland Street OC – 8 to 12 months • Edinger Avenue OC – 8 to 12 months • McFadden Avenue OC – 8 to 12 months • Edwards Street OC – 8 to 12 months <p>Parking: Permanent:</p>	<p>Permanent: None Temporary long-term (10 to 30 days):</p> <ul style="list-style-type: none"> • South Coast Drive northbound off-ramp • Fairview Road northbound off-ramp • Fairview Road northbound on-ramp • Fairview Road southbound off-ramp • Harbor Boulevard northbound loop on-ramp • Harbor Boulevard southbound on-ramp • Talbert Avenue southbound on-ramp • Warner Avenue southbound on-ramp • Magnolia Street southbound off-ramp • Bolsa Avenue southbound on-ramp • Westminster Avenue southbound on-ramp • Bolsa Chica Road southbound off-ramp <p>Arterial Closures: Permanent: None Temporary long-term: Reconstruction of local arterials and overcrossing structures to accommodate the I-405 widening and interchange improvements. Long-term closure of arterial overcrossing lasting up to 12 months may be employed during construction to expedite construction and shorten the duration that the overcrossing is out of service. The potential locations for long-term closures include the following:</p> <ul style="list-style-type: none"> • Ward Street OC – 8 to 12 months 	

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>Approximately 46 parking spaces out of the current inventory of 1,489 spaces on 10 properties would be potentially lost as part of the right of way acquisition required for the project. Approximately 13 on-street parking spaces on NB Beach Boulevard approaching McFadden Avenue could be lost under the proposed improvement. Temporary: During construction some parking may be temporarily impacted as a result of the detour routes.</p> <p>Business and Economic Effects: Permanent: <ul style="list-style-type: none"> • None Temporary: <ul style="list-style-type: none"> • The project construction would result in a benefit, creating approximately 32,000 direct/indirect/induced jobs (http://www.fhwa.dot.gov/policy/otps/pubs/impacts/index.htm). Construction and closures will temporarily affect access to businesses, requiring extra out-of-direction travel in some cases. Relocation: No homes displaced and no full acquisition of residential or commercial properties. Up to 91 partial acquisitions from public and privately owned parcels ranging from less than 1 square foot to 30,000 square feet (approximately 0.7-acre).</p> <p>Environmental Justice: The proposed project alternatives would not cause disproportionately high and adverse effects on minority or low-income populations within the context and intent of EO 12898.</p>	<p>Approximately 46 parking spaces out of the current inventory of 1,489 spaces on 10 properties would be potentially lost as part of the right of way acquisition required for the project. Approximately 13 on-street parking spaces on NB Beach Boulevard approaching McFadden Avenue could be lost under the proposed improvement. Temporary: During construction some parking may be temporarily impacted as a result of the detour routes.</p> <p>Business and Economic Effects: Permanent: <ul style="list-style-type: none"> • None Temporary: <ul style="list-style-type: none"> • The project construction would result in a benefit, creating approximately 34,000 direct/indirect/induced jobs (http://www.fhwa.dot.gov/policy/otps/pubs/impacts/index.htm). Construction and closures will temporarily affect access to businesses, requiring extra out-of-direction travel in some cases. Relocation: No homes displaced and no full acquisition of residential or commercial properties. Up to 92 partial acquisitions from public and privately owned parcels ranging from less than 1 square foot to 30,000 square feet (approximately 0.7-acre).</p> <p>Environmental Justice: The proposed project alternatives would not cause disproportionately high and adverse effects on minority or low-income populations within the context and intent of EO 12898.</p>	<ul style="list-style-type: none"> • Talbert Avenue OC – 8 to 12 months • Slater Avenue OC – 8 to 12 months • Bushard Street OC – 8 to 12 months • Newland Street OC – 8 to 12 months • Edinger Avenue OC – 8 to 12 months • McFadden Avenue OC – 8 to 12 months • Edwards Street OC – 8 to 12 months <p>Parking: Permanent: Approximately 46 parking spaces out of the current inventory of 1,489 spaces on 10 properties would be potentially lost as part of the right of way acquisition required for the project. Approximately 13 on-street parking spaces on NB Beach Boulevard approaching McFadden Avenue could be lost under the proposed improvement. Temporary: During construction some parking may be temporarily impacted as a result of the detour routes.</p> <p>Business and Economic Effects: Permanent: <ul style="list-style-type: none"> • None Temporary: <ul style="list-style-type: none"> • The project construction would result in a benefit, creating approximately 42,000 direct/indirect/induced jobs (http://www.fhwa.dot.gov/policy/otps/pubs/impacts/index.htm). Construction and closures will temporarily affect access to businesses, requiring extra out-of-direction travel in some cases. Relocation: No homes displaced and no full acquisition of residential or commercial</p>	

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
				<p>properties.</p> <p>Up to 109 partial acquisitions from public and privately owned parcels ranging from less than 1 square foot to 30,000 square feet (approximately 0.7-acre).</p> <p>Environmental Justice:</p> <p>The proposed project alternatives would not cause disproportionately high and adverse effects on minority or low-income populations within the context and intent of EO 12898.</p>	
Utilities/ Emergency Services	No impact.	<p>Permanent Impacts: Utility relocations are considered routinely handled via design engineering and are not anticipated to result in any long-term or permanent disruptions in service as a result of relocation or replacement of utilities.</p> <p>Temporary Impacts: The project is anticipated to result in 107 utility conflicts. 69 of the utilities would be relocated, 37 require encasement/protection/minor work/extension, and 1 gas line would be abandoned. The types and number of utility conflicts are as follows:</p> <p>Electric: 32 Gas/Petroleum: 16 Communication: 19 Sewer: 10 Water: 30</p> <p>Five (5) parallel relocations within State ROW requiring an exception to the utility longitudinal encroachment policy.</p> <p>Relocation of one 14-inch high-pressure transmission gas line and one 16-inch high-pressure distribution gas line outside of State ROW.</p> <p>Three high-voltage transmission line relocations requiring compliance with CPUC General Order 131-D and can sometimes require a long lead time</p>	<p>Permanent Impacts: Utility relocations are considered routinely handled via design engineering and are not anticipated to result in any long-term or permanent disruptions in service as a result of relocation or replacement of utilities.</p> <p>Temporary Impacts: The project is anticipated to result in 114 utility conflicts. 75 of the utilities would be relocated, 38 require encasement/protection/minor work/extension, and 1 gas line would be abandoned. The types and number of utility conflicts are as follows:</p> <p>Electric: 36 Gas/Petroleum: 16 Communication: 19 Sewer: 10 Water: 33</p> <p>Nine (9) parallel relocations within State ROW requiring an exception to the utility longitudinal encroachment policy.</p> <p>Relocation of one 14-inch high-pressure transmission gas line and one 16-inch high-pressure distribution gas line outside of State ROW.</p> <p>Three high-voltage transmission line relocations requiring compliance with CPUC General Order 131-D and can sometimes require a long lead time</p>	<p>Permanent Impacts: Utility relocations are considered routinely handled via design engineering and are not anticipated to result in any long-term or permanent disruptions in service as a result of relocation or replacement of utilities.</p> <p>Temporary Impacts: The project is anticipated to result in 115 utility conflicts. 75 of the utilities would be relocated, 39 require encasement/protection/minor work/extension, and 1 gas line would be abandoned. The types and number of utility conflicts are as follows:</p> <p>Electric: 36 Gas/Petroleum: 16 Communication: 20 Sewer: 10 Water: 33</p> <p>Nine (9) parallel relocations within State ROW requiring an exception to the utility longitudinal encroachment policy.</p> <p>Relocation of one 14-inch high-pressure transmission gas line and one 16-inch high-pressure distribution gas line outside of State ROW.</p> <p>Three high-voltage transmission line relocations requiring compliance with CPUC General Order 131-D and can sometimes require a long lead time</p>	<p>UT-1: During design, utility providers will be made aware of project developments and be involved in the planning of utility rerouting, identification of potential conflicts, and the formulation of strategies to deal with unanticipated problems that may arise during construction.</p> <p>UT-2: During construction, emergency service providers will be alerted in advance of any temporary road closures and delays so that they have adequate time to make appropriate accommodations to ensure prompt emergency response times that fulfill their responsibilities and defined service objectives.</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Traffic and Transportation/ Pedestrian and Bicycle Facilities	The quality of accessibility to and mobility within area communities would continue to deteriorate.	<p>Traffic and Transportation: Permanent: The proposed improvements in Alternative 1 are expected to increase vehicle throughput on the freeway by:</p> <ul style="list-style-type: none"> • 0% between SR-73 and Brookhurst Street; • 20% between Brookhurst Street and SR-22 East; and • 13% between SR-22 East and I-605. <p>No increase in throughput is anticipated between SR-73 and Brookhurst Street.</p> <p>Temporary: During the 48-month construction period, construction-related delays along the I-405, I-605, and SR-22 freeways and interchanges, as well as on the surrounding local arterials, are anticipated.</p> <p>Temporary and short-term closures would likely be required and would occur intermittently throughout the construction duration. Full freeway lane, ramp, and arterial street closures could also be required and would likely occur during the nighttime and on weekends during various roadway and structure construction activities. Some prolonged closure, ranging from 10 days to 12 months, is also anticipated to facilitate construction of certain interchange ramps, arterials, and overcrossing structures.</p> <p>Pedestrian Facilities: Permanent: Pedestrian facilities (i.e. pedestrian sidewalk and crosswalks) along both sides of the street are proposed for 13 of the 17 arterials, which do not currently have pedestrian facilities on both sides along their approaches to and crossing of I-405. Two crosswalks</p>	<p>Traffic and Transportation: Permanent: The proposed improvements in Alternative 2 are expected to increase vehicle throughput on the freeway by:</p> <ul style="list-style-type: none"> • 0% between SR-73 and Brookhurst Street; • 40% between Brookhurst Street and SR-22 East; and • 25% between SR-22 East and I-605. <p>No increase in throughput is anticipated between SR-73 and Brookhurst Street.</p> <p>Temporary: During the 51- month construction period, construction-related delays along the I-405, I-605, and SR-22 freeways and interchanges, as well as on the surrounding local arterials, are anticipated.</p> <p>Temporary and short-term closures would likely be required and would occur intermittently throughout the construction duration. Full freeway lane, ramp, and arterial street closures could also be required and would likely occur during the nighttime and on weekends during various roadway and structure construction activities. Some prolonged closure, ranging from 10 days to 12 months, is also anticipated to facilitate construction of certain interchange ramps, arterials, and overcrossing structures.</p> <p>Pedestrian Facilities: Permanent: Pedestrian facilities (i.e. pedestrian sidewalk and crosswalks) along both sides of the street are proposed for 13 of the 17 arterials, which do not currently have pedestrian facilities on both sides along their approaches to and crossing</p>	<p>Traffic and Transportation: Permanent: The proposed improvements in Alternative 3 are expected to increase vehicle throughput on the freeway by:</p> <ul style="list-style-type: none"> • 24% between SR-73 and Brookhurst Street; • 50% between Brookhurst Street and SR-22 East; and • 23% between SR-22 East and I-605. <p>Temporary: During the 54-month construction period, construction-related delays along the I-405, I-605, SR-22, and SR-73 freeways and interchanges, as well as on the surrounding local arterials, are anticipated.</p> <p>Temporary and short-term closures would likely be required and would occur intermittently throughout the construction duration. Full freeway lane, ramp, and arterial street closures could also be required and would likely occur during the nighttime and on weekends during various roadway and structure construction activities. Some prolonged closure, ranging from 10 days to 12 months, is also anticipated to facilitate construction of certain interchange ramps, arterials, and overcrossing structures.</p> <p>Pedestrian Facilities: Permanent: Pedestrian facilities (i.e. pedestrian sidewalk and crosswalks) along both sides of the street are proposed for 13 of the 17 arterials, which do not currently have pedestrian facilities on both sides along their approaches to and crossing of I-405. Two crosswalks across the east and north legs of the Bolsa Avenue/ Westminster Boulevard intersection in the City of Westminster</p>	<p>T-1: A Final TMP will be prepared prior to project construction that identifies methods to avoid and minimize construction-related traffic and circulation effects and minimize impacts to pedestrian and bicycle access, including ADA-compliant features as a result of the proposed project. During construction, the contractor shall implement the methods identified in the Final TMP.</p> <p>T-2: During final design, plans shall be prepared to incorporate the following improvements at the Slater Avenue/Brookhurst Street intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Convert the southbound right-turn lane on Brookhurst Street to a fourth through lane (with right turns shared). • Convert the existing second eastbound through lane on Slater Avenue at Brookhurst Street to a shared through/right-turn lane. Retain the existing eastbound exclusive right-turn lane. • Provide increased queue storage areas for northbound right-turn, northbound left-turn, eastbound right-turn, and westbound left-turn movements. <p>T-3: During final design, plans shall be prepared to incorporate the following improvements at the Talbert Avenue/Brookhurst Street intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Add a third westbound through lane on Talbert Avenue. Retain the existing westbound exclusive right-turn lane. • Convert the southbound right-turn lane on Brookhurst Street to a fourth through lane (with right turns shared). • Convert the eastbound right-turn lane on Talbert Avenue to a fourth through lane (with right turns shared). • Convert the existing third northbound through lane on Brookhurst Street to a shared through/right-turn lane. Retain the existing northbound exclusive right-turn lane. <p>T-4: During final design, plans shall be prepared to incorporate the following improvements at the Warner Avenue/Magnolia Street intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Convert the southbound right-turn lane on Magnolia Street at Warner Avenue to a shared through/right-turn lane. Extend the third southbound through lane on Magnolia Street south of the intersection. • Provide dual northbound left-turn lanes on Magnolia Street at Warner Avenue. • Extend the southbound dual left-turn pocket from the existing 200 ft to approximately 440 ft of queue storage.

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>across the east and north legs of the Bolsa Avenue/ Westminster Boulevard intersection in the City of Westminster will not meet Americans with Disabilities Act (ADA) standards due to nonstandard cross slopes. Design exceptions are currently being sought with the City of Westminster for these locations. The existing pedestrian crossing of I-405 at Heil Avenue would be replaced by the proposed project with a longer pedestrian bridge meeting current ADA standards. The current pedestrian crossing would remain open for use until the new bridge is constructed.</p> <p>Temporary: Closure of pedestrian facilities, including facilities with ADA-compliant features on bridges crossing the freeway, will be closed concurrently with the closures of the arterial roadways.</p> <p>Bicycle Facilities: Permanent: The existing Class 1 bicycle facilities along the east bank of the Santa Ana River and along the San Gabriel River and the six existing Class 2 bicycle facilities would be retained under all of the build alternatives. Bicycle facilities in the project corridor planned by municipalities, but not currently existing, include Class 2 bikeways along the following arterials crossing I-405:</p> <ul style="list-style-type: none"> • McFadden Avenue; • Edinger Avenue; • Newland Street; • Westminster Avenue; and • Bolsa Chica Road <p>All three build alternatives would provide pavement to accommodate standard Class 2 bikeways on all of the</p>	<p>of I-405. Two crosswalks across the east and north legs of the Bolsa Avenue/ Westminster Boulevard intersection in the City of Westminster will not meet ADA standards due to nonstandard cross slopes. Design exceptions are currently being sought with the City of Westminster for these locations. The existing pedestrian crossing of I-405 at Heil Avenue would be replaced by the proposed project with a longer pedestrian bridge meeting current ADA standards. The current pedestrian crossing would remain open for use until the new bridge is constructed.</p> <p>Temporary: Closure of pedestrian facilities, including facilities with ADA-compliant features, on bridges crossing the freeway, will be closed concurrently with the closures of the arterial roadways.</p> <p>Bicycle Facilities: Permanent: The existing Class 1 bicycle facilities along the east bank of the Santa Ana River and the San Gabriel River, and the six existing Class 2 bicycle facilities would be retained under all of the build alternatives. Bicycle facilities in the project corridor planned by municipalities, but not currently existing, include Class 2 bikeways along the following arterials crossing I-405:</p> <ul style="list-style-type: none"> • McFadden Avenue; • Edinger Avenue; • Newland Street; • Westminster Avenue; and • Bolsa Chica Road. <p>All three build alternatives would provide pavement to accommodate standard Class 2 bikeways on all of the</p>	<p>will not meet ADA standards due to nonstandard cross slopes. Design exceptions are currently being sought with the City of Westminster for these locations. The existing pedestrian crossing of I-405 at Heil Avenue would be replaced by the proposed project with a longer pedestrian bridge meeting current ADA standards. The current pedestrian crossing would remain open for use until the new bridge is constructed.</p> <p>Temporary: Closure of pedestrian facilities, including facilities with ADA-compliant features, on bridges crossing the freeway, will be closed concurrently with the closures of the arterial roadways.</p> <p>Bicycle Facilities: Permanent: The existing Class 1 bicycle facilities along the east bank of the Santa Ana River and the San Gabriel River, and the six existing Class 2 bicycle facilities would be retained under all of the build alternatives. Bicycle facilities in the project corridor planned by municipalities, but not currently existing, include Class 2 bikeways along the following arterials crossing I-405:</p> <ul style="list-style-type: none"> • McFadden Avenue; • Edinger Avenue; • Newland Street; • Westminster Avenue; and • Bolsa Chica Road. <p>All three build alternatives would provide pavement to accommodate standard Class 2 bikeways on all of the above-mentioned arterials.</p> <p>Temporary: Alternative 3 would require temporary closure of the Santa Ana River Trail</p>	<p>T-5: During final design, plans shall be prepared to incorporate the following improvements at the McFadden Avenue/Beach Boulevard intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Provide an exclusive northbound right-turn lane on Beach Boulevard. • Provide increased queue storage areas for eastbound right-turn and westbound left-turn movements. <p>T-6: During final design, plans shall be prepared to incorporate the following improvements at the Center Avenue/Beach Boulevard intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Provide an exclusive right-turn lane and a shared through/right-turn lane on southbound Beach Boulevard. • Add a third eastbound right-turn lane on Center Avenue at Beach Boulevard. Increase the eastbound Center Avenue left-turn queue storage to 270 ft per lane and right-turn queue storage to 450 ft per lane. • Provide a fifth northbound through lane on Beach Boulevard. <p>T-7: During final design, plans shall be prepared to incorporate the following improvements at the Edinger Avenue/Beach Boulevard intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> • Add a fourth northbound through lane on Beach Boulevard at Edinger Avenue. • Convert the existing eastbound right-turn only lane on Edinger Avenue at Beach Boulevard to a fourth through lane (with a shared right turn) and extend the lane to Parkside Lane to increase vehicle queue storage. Sign and stripe to allow two curb lanes on eastbound Edinger Avenue at Beach Boulevard as freeway access lanes (to the southbound on-ramp at Edinger Avenue). • Extend the existing southbound dual left-turn lanes on Beach Boulevard from the existing queue storage of 240 ft to an average of 300 ft per lane. • Widen the Edinger Avenue overcrossing to provide two westbound through lanes and two eastbound through lanes. The third eastbound through lane on Edinger Avenue from Beach Boulevard is dropped at the bridge overcrossing. • At the intersection of eastbound Edinger Avenue and the I-405 southbound on-ramp, provide an exclusive right-turn and a shared through/right-turn lane on eastbound Edinger Avenue, thereby allowing two lanes onto the southbound

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>above-mentioned arterials.</p> <p>Temporary:</p> <p>Alternative 1 would require temporary closure of the Santa Ana River Trail and the Class I bicycle facility during construction of the Euclid Street southbound I-405 on-ramp from Ellis Avenue. During construction, the trail on one riverbank will remain open at all times. Bikeways along arterial streets will be closed consistent with the closures of the arterial roadways.</p>	<p>above-mentioned arterials.</p> <p>Temporary:</p> <p>Alternative 2 would require temporary closure of the Santa Ana River Trail and the Class I bicycle facility during construction of the Euclid Street southbound I-405 on-ramp from Ellis Avenue. During construction, the trail on one riverbank will remain open at all times. Bikeways along arterial streets will be closed consistent with the closures of the arterial roadways.</p>	<p>and the Class I bicycle facility during construction of the Euclid Street southbound I-405 on-ramp from Ellis Avenue. During construction, the trail on one riverbank will remain open at all times. Bikeways along arterial streets will be closed consistent with the closures of the arterial roadways.</p>	<p>ramp.</p> <ul style="list-style-type: none"> Provide increased queue storage areas for southbound left-turn, eastbound left-turn, and westbound left-turn movements. <p>T-8: During final design, plans shall be prepared to incorporate the following improvements at the Bolsa Avenue/Goldenwest Street intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> Widen the southbound approach on Goldenwest Street to provide an exclusive right-turn lane and a second left-turn lane. The southbound left-turn pocket is extended past the Goldenwest Street/Westminster Mall Road intersection. Widen the northbound approach on Goldenwest Street at Bolsa Avenue to provide an exclusive right-turn lane with queue storage of approximately 430 ft. Convert the eastbound right-turn lane on Bolsa Avenue to a fourth through lane (with right turns shared). Widen the south side of Bolsa Avenue between Goldenwest Street and the I-405 southbound on-ramp. Sign and stripe to allow two curb lanes on eastbound Bolsa Avenue at Goldenwest Street as freeway access lanes (to the I-405 southbound on-ramp from Bolsa Avenue). Widen the westbound approach to provide extended queue storage of 750 ft for the right-turn lane and increased queue storage of 280 ft for the left-turn lanes. <p>T-9: During final design, plans shall be prepared to incorporate the following improvements at the Garden Grove Boulevard and Bolsa Chica Road/Valley View Street intersection, which the contractor shall implement during construction:</p> <ul style="list-style-type: none"> Add a third westbound right-turn lane on Garden Grove Boulevard. Add a third through lane on northbound Bolsa Chica Road/Valley View Street. Extend the northbound right-turn lane on Bolsa Chica Road/Valley View Street and increase the existing queue storage of 400 ft to approximately 800 ft. <p>T-10: A payment shall be made by OCTA (Phase 1) and Caltrans (Phase 2) to the City of Long Beach based on a Cooperative Agreement to be negotiated and executed between OCTA/Caltrans and the City of Long Beach. The Cooperative Agreement shall identify the project's fair share of the costs for the improvements at intersections owned by the City of Long Beach based on the Preferred Alternative (PA) and in accordance with the fair share percentages for each location identified below. The Cooperative Agreement shall provide:</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<ul style="list-style-type: none"> • That the City of Long Beach’s Transportation Mitigation Program will be revised to include the locations listed below under A, B, or C for the PA; • That the payment made by OCTA shall be placed into the City of Long Beach Transportation Mitigation Program and shall only be used to provide improvements to remedy impacts of the PA at the intersections listed below under A, B, or C for the PA; • The amount of the total payment to be applied to each location; and • That the proposed improvements shall be implemented by the City of Long Beach, with the City of Long Beach bearing responsibility for necessary clearances and permits. • If the implementing agency of this measure decides not to move forward with these improvements, these cumulative impacts would remain adverse. <p>A. If PA is Alternative 1:</p> <ul style="list-style-type: none"> • Los Coyotes Diagonal and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach. ○ Fair Share Percentage: 4.45%. (estimated total construction cost in 2013 dollars is \$250,000) <p>B. If PA is Alternative 2:</p> <ul style="list-style-type: none"> • Willow Street and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add an exclusive right-turn lane to eastbound approach; ○ Add a second left-turn lane to westbound approach; and ○ Add a second left-turn lane to southbound approach. ○ Fair Share Percentage: 10.41%. (estimated total construction cost in 2013 dollars is \$810,000) • Willow Street and Los Coyotes Diagonal intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach; and ○ Add a second left-turn lane to southbound approach. ○ Fair Share Percentage: 31.57%. (estimated total construction cost in 2013 dollars is \$440,000) • Willow Street and Woodruff Avenue intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to northbound approach. ○ Fair Share Percentage: 10.40%. (estimated total construction cost in 2013 dollars is \$240,000) <p>C. If PA is Alternative 3:</p> <ul style="list-style-type: none"> • Willow Street and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add an exclusive right-turn lane to eastbound approach;

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Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<ul style="list-style-type: none"> ○ Add a second left-turn lane to westbound approach; and ○ Add a second left-turn lane to southbound approach. ○ Fair Share Percentage: 10.41%. (estimated total construction cost in 2013 dollars is \$810,000) ● Los Coyotes Diagonal and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach. ○ Fair Share Percentage: 8.32%. (estimated total construction cost in 2013 dollars is \$250,000) ● Willow Street and Los Coyotes Diagonal intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach; and ○ Add a second left-turn lane to southbound approach. ○ Fair Share Percentage: 30.03%. (estimated total construction cost in 2013 dollars is \$440,000) <p>T-11: A payment shall be made by OCTA to Caltrans based on a Traffic Mitigation Agreement Fair Share Deferment to be negotiated and executed between OCTA and Caltrans. The Traffic Mitigation Agreement Fair Share Deferment shall identify the project's fair share of the costs for the improvements at intersections owned by the State of California based on the PA and in accordance with the fair share percentages for each location identified below. The Traffic Mitigation Agreement Fair Share Deferment shall provide:</p> <ul style="list-style-type: none"> ● That Caltrans will establish separate accounts for each of the locations listed below under A, B, or C for the PA; ● That the payment made by OCTA shall be held by Caltrans and shall only be used to provide improvements to remedy impacts of the PA at the intersections listed below under A, B, or C for the PA; ● The amount of the total payment to be applied to each location; ● That the amounts for different locations shall not be commingled; and ● That the proposed improvements shall be implemented by Caltrans, with Caltrans bearing responsibility for necessary clearances and permits. ● If the implementing agency of this measure decides not to move forward with these improvements, these cumulative impacts would remain adverse. <p>It should be noted that the State of California would implement a project only when enough funds have been collectively received for that specific mitigation measure.</p> <p>A. If PA is Alternative 1:</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<ul style="list-style-type: none"> • SR-22 westbound on-/off-ramp and College Park Drive intersection: <ul style="list-style-type: none"> ○ Add a second northbound through lane to the off-ramp approach to College Park Drive starting approximately 300 ft south of their intersection; and ○ Replace existing traffic control with a traffic signal. ○ Fair Share Percentage: 12.11%. (estimated total construction cost in 2013 dollars is \$1,570,000) • 7th Street and Pacific Coast Highway intersection: <ul style="list-style-type: none"> ○ Add protected/permitted signal phasing to the eastbound and westbound approaches of Pacific Coast Highway to Bellflower Boulevard. ○ Fair Share Percentage: 11.70%. (estimated total construction cost in 2013 dollars is \$450,000) • 7th Street and West Campus Drive intersection: <ul style="list-style-type: none"> ○ Add an exclusive right-turn lane to westbound approach, modifying traffic signals as needed. ○ Fair Share Percentage: 9.16%. (estimated total construction cost in 2013 dollars is \$300,000) • 7th Street and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach, modifying signals and adjusting sidewalk as necessary. ○ Fair Share Percentage: 11.70%. (estimated total construction cost in 2013 dollars is \$640,000) <p>B. If PA is Alternative 2:</p> <ul style="list-style-type: none"> • SR-22 westbound on-/off-ramp and College Park Drive intersection: <ul style="list-style-type: none"> ○ Add a second northbound through lane to the off-ramp approach to College Park Drive starting approximately 300 ft south of their intersection; and ○ Replace existing traffic control with a traffic signal. ○ Fair Share Percentage: 33.25%. (estimated total construction cost in 2013 dollars is \$1,570,000) • 7th Street and Pacific Coast Highway intersection: <ul style="list-style-type: none"> ○ Add protected/permitted signal phasing to the eastbound and westbound approaches of Pacific Coast Highway to Bellflower Boulevard. ○ Fair Share Percentage: 7.84%. (estimated total construction cost in 2013 dollars is \$450,000) • 7th Street and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach, modifying signals and adjusting sidewalk as necessary. ○ Fair Share Percentage: 16.92%. (estimated total construction cost in 2013 dollars is \$640,000)

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Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<ul style="list-style-type: none"> • 7th Street and Channel Drive intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to westbound approach, modifying signals as necessary; and ○ Provide dual southbound exclusive left-turn lanes. ○ Fair Share Percentage: 13.59%. (estimated total construction cost in 2013 dollars is \$240,000) • 7th Street and West Campus Drive intersection: <ul style="list-style-type: none"> ○ Add an exclusive right-turn lane to westbound approach, modifying traffic signals as necessary. ○ Fair Share Percentage: 27.34%. (estimated total construction cost in 2013 dollars is \$300,000) • 7th Street and East Campus Drive intersection: <ul style="list-style-type: none"> ○ Add a right-turn lane to westbound approach, modifying traffic signals as necessary and maximizing eastbound and westbound left-turn pocket lengths. ○ Fair Share Percentage: 21.30%. (estimated total construction cost in 2013 dollars is \$450,000) <p>C. If PA is Alternative 3:</p> <ul style="list-style-type: none"> • 7th Street and Pacific Coast Highway intersection: <ul style="list-style-type: none"> ○ Add protected/permitted signal phasing to the eastbound and westbound approaches of Pacific Coast Highway to Bellflower Boulevard. ○ Fair Share Percentage: 8.08%. (estimated total construction cost in 2013 dollars is \$450,000) • 7th Street and Bellflower Boulevard intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to eastbound approach, modifying signals and adjusting sidewalk as necessary. ○ Fair Share Percentage: 17.64%. (estimated total construction cost in 2013 dollars is \$640,000) • 7th Street and Channel Drive intersection: <ul style="list-style-type: none"> ○ Add a second left-turn lane to westbound approach, modifying signals as necessary; and ○ Provide dual southbound exclusive left-turn lanes. ○ Fair Share Percentage: 14.01%. (estimated total construction cost in 2013 dollars is \$240,000) • 7th Street and West Campus Drive intersection: <ul style="list-style-type: none"> ○ Add an exclusive right-turn lane to westbound approach, modifying traffic signals as necessary. ○ Fair Share Percentage: 25.02%. (estimated total construction cost in 2013 dollars is \$300,000) • 7th Street and East Campus Drive intersection: <ul style="list-style-type: none"> ○ Add a right-turn lane to westbound approach, modifying traffic signals as necessary and maximizing eastbound and westbound left-turn

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<p>pocket lengths.</p> <ul style="list-style-type: none"> ○ Fair Share Percentage: 7.39%. (estimated total construction cost in 2013 dollars is \$450,000) <p>T-12: To address the potential operational challenge north of SR-22 on the express lanes (under the HOV2+ free policy), a process will be developed to address the issue by considering HOV occupancy policy which may include, but not limited to:</p> <ul style="list-style-type: none"> • adjusting to HOV3+ free with HOV2s discounted tolls • adjusting to HOV3+ free with HOV2s full tolls • adjusting to tolling HOV2s on individual tolling segments such as direct connectors to or from other freeways • periodic adjustments of tolling rates to maintain operations on individual tolling segments
Visual/Aesthetics	No impact.	<p>Permanent Impacts: Alternative 1 would result in a permanent change in both the visual quality and character of the project area associated with the follow:</p> <ul style="list-style-type: none"> • The addition of lanes would result in the permanent removal of most of the vegetation along the I-405 mainline (i.e., areas along the freeway between interchanges) where the roadway would be widened to extend from ROW to ROW. • A new GP lane would be added in both directions, new auxiliary lanes would be added in certain stretches of the corridor and standard shoulders where ever feasible. The percentage of pavement/hardscape within the ROW would increase by approximately 18 percent. • Alternative 1 includes 6 new structures, 17 structure replacements* and 5 structure widening/ modifications*. Replacement bridges within the corridor would be wider to accommodate a widened paving section and have a deeper girder and appear 	<p>Permanent Impacts: Alternative 2 would result in a permanent change in both the visual quality and character of the project area associated with the follow:</p> <ul style="list-style-type: none"> • The addition of lanes would result in the permanent removal of most of the vegetation along the I-405 mainline (i.e., areas along the freeway between interchanges) where the roadway would be widened to extend from ROW to ROW. • Two GP lanes would be added in both directions, new auxiliary lanes would be added in certain stretches of the corridor and standard shoulders where ever feasible. The percentage of pavement/hardscape within the ROW would increase by approximately 21 percent. • Alternative 2 includes 6 new structures, 17 structure replacements* and 5 structure widening/ modifications*. Replacement bridges within the corridor would be wider to accommodate a widened paving section and have a deeper girder and appear 	<p>Permanent Impacts: Alternative 3 would result in a permanent change in both the visual quality and character of the project area associated with the follow:</p> <ul style="list-style-type: none"> • The addition of lanes would result in the permanent removal of most of the vegetation along the I-405 mainline (i.e., areas along the freeway between interchanges) where the roadway would be widened to extend from ROW to ROW. • A new GP lane and one tolled Express Lane would be added in each direction, new auxiliary lanes would be added in certain stretches of the corridor and standard shoulders where ever feasible. The percentage of pavement/hardscape within the ROW would increase by approximately 18 percent. • Alternative 3 includes 8 new structures, 18 structure replacements and 6 structure widening/ modifications. Replacement bridges within the corridor would be wider to accommodate a widened paving section and have a deeper girder and appear 	<p>VIS-1: Beginning with preliminary design and continuing through final design and construction, plan, save, and protect as much existing vegetation in the corridor, especially eucalyptus and other skyline trees, as feasible.</p> <p>VIS-2: Survey exact locations for existing trees and include in plans.</p> <p>VIS-3: Protect with temporary fencing large infield areas of existing plantings to be preserved.</p> <p>VIS-4: Transplant, relocate, protect, and maintain existing trees that are in conflict with the proposed improvements, replacement vegetation, and mesh fencing per Caltrans' District Landscape Architect approval.</p> <p>VIS-5: Beginning with preliminary design, and continuing through final design and construction, develop construction plans that apply architectural detailing to the proposed soundwalls, retaining walls, and bridges, including textures, colors, and patterns. Include elements such as caps, columns, pier caps, parapets, fencing, and abutment and wing walls as shown in the Aesthetics and Landscape Master Plan. In addition, bridge or architectural elements on ramps, bridges, and soundwalls will include forms and lines to match the existing built-environment features.</p> <p>VIS-6: Beginning with preliminary design, and continuing through final design and construction, landscape and revegetate disturbed areas to the greatest extent feasible.</p> <p>VIS-7: Include skyline trees in the planting palette to bring down the scale of the new freeway elements.</p> <p>VIS-8: Fund from this parent project and accomplish by separate contract a 3-year extended plant establishment project to assure a well-established highway planting. This separate contract must begin as soon as possible upon completion of the 1-year plant establishment period that may be accomplished with the roadway contract.</p> <p>VIS-9: Design basins so that they appear to be a natural landscape</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>thicker to the freeway traveler. These bridges would also be slightly higher than the existing bridge elevations.</p> <ul style="list-style-type: none"> Large retaining walls (i.e., those over 5 ft in height) would be located within the Magnolia Street, Euclid Street, and Warner Avenue interchanges. The height of these walls would vary, from nothing to up to 30 ft in some locations. The higher walls would be closest to the associated bridge crossing. Other smaller walls (i.e., less than 5 ft in height) would be found in the corridor, with the exact location to be determined during final design. Alternative 1 would also include 20 new soundwalls, 7 existing soundwalls that would be replaced at a greater height, 13 existing soundwalls that would be replaced in-kind, and 5 soundwalls that would be provided for gap closure (i.e., to account for removal of embankment). Alternative 1 would increase the slope of the local streets as they approach the bridge crossing. This would be due to the raised height of the bridge over I-405, but would not likely change the overall visual appearance of the local street. Side slopes along the approach may also be longer or steeper than the current. All of the existing lighting at the freeway on-ramps, off-ramps, connector ramps, and along local streets and overcrossing structures, including the Heil Avenue 	<p>thicker to the freeway traveler. These bridges would also be slightly higher than the existing bridge elevations.</p> <ul style="list-style-type: none"> Large retaining walls (i.e., those over 5 ft in height) would be located within the Magnolia Street, Euclid Street, and Warner Avenue interchanges. The height of these walls would vary, from nothing to up to 30 ft in some locations. The higher walls would be closest to the associated bridge crossing. Other smaller walls (i.e., less than 5 ft in height) would be found in the corridor, with the exact location to be determined during final design. Alternative 2 would also include 18 new soundwalls, 6 existing soundwalls that would be replaced at a greater height, 19 existing soundwalls that would be replaced in-kind, and 6 soundwalls that would be provided for gap closure (i.e., to account for removal of embankment). Alternative 2 would increase the slope of the local streets as they approach the bridge crossing. This would be due to the raised height of the bridge over I-405, but would not likely change the overall visual appearance of the local street. Side slopes along the approach may also be longer or steeper than the existing. All of the existing lighting at the freeway on-ramps, off-ramps, connector ramps, and along local streets and overcrossing structures, 	<p>thicker to the freeway traveler. These bridges would also be slightly higher than the existing bridge elevations.</p> <ul style="list-style-type: none"> Large retaining walls (i.e., those over 5 ft in height) would be located within the Magnolia Street, Euclid Street, and Warner Avenue interchanges. The height of these walls would vary, from nothing to up to 30 ft in some locations. The higher walls would be closest to the associated bridge crossing. Other smaller walls (i.e., less than 5 ft in height) would be found in the corridor, with the exact location to be determined during final design. Alternative 3 would also include 20 new soundwalls, 7 existing soundwalls that would be replaced at a greater height, 22 existing soundwalls that would be replaced in-kind, and 6 soundwalls that would be provided for gap closure (i.e., to account for removal of embankment). Alternative 3 would increase the slope of the local streets as they approach the bridge crossing. This would be due to the raised height of the bridge over I-405, but would not likely change the overall visual appearance of the local street. Side slopes along the approach may also be longer or steeper than the current. All of the existing lighting at the freeway on-ramps, off-ramps, connector ramps, and along local streets and overcrossing structures including the Heil Avenue 	<p>feature, such as a dry streambed or a riparian pool. They shall be shaped in an informal, curvilinear manner.</p> <p>VIS-10: Basin slope grading will incorporate slope rounding, variable gradients, and be similar to the surrounding topography to de-emphasize the edge. If a wall or hard feature is necessary, it shall be worked into the overall design concept.</p> <p>VIS-11: Employ grading design of any ponds or swales, wherever possible, to be sympathetic to the Aesthetic and Landscape Master Plan.</p> <p>VIS-12: Locate maintenance access drives in unobtrusive areas away from local streets. Such drives must consist of inert materials or herbaceous groundcover that is visually compatible with the surrounding landscape.</p> <p>VIS-13: Design all basins so that chain-link perimeter fencing is not required.</p> <p>VIS-14: Design all visible concrete structures and surfaces to adhere to the Aesthetic and Landscape Master Plan when developed.</p> <p>VIS-15: Design rock slope protection to consist of aesthetically pleasing material with a variety of sizes.</p> <p>VIS-16: Limit the use of bioswales within corridor landscape areas. If they must be used, locate them in nonobtrusive areas and design to appear as natural features.</p> <p>VIS-17: Caltrans has existing ongoing maintenance programs for the control and removal of graffiti, which would apply to all new and modified structures on public and private property, as appropriate. Key components of those programs are:</p> <ul style="list-style-type: none"> Chapter D1, Litter, Debris, and Graffiti (July 2006), in the Caltrans Maintenance Manual (Volume I, January 2011) describes Caltrans maintenance program for the control and removal of graffiti. Key program components applicable to the project features are: <ul style="list-style-type: none"> Use of recycled paint for various structures and matching paint used to cover graffiti with the original paint color on the structure. Use of physical devices, such as rat guards, sign hoods, razor wire, and glare screen patches, to limit access to facilities targeted by taggers. Replacement of ground-mounted signs with signs that have protective coatings or application of protective coatings to signs. <p>VIS-18: Provide vine planting on sound walls and retaining walls where feasible and appropriate. Per Highway Design Manual, Index 902.3(5), vine planting should be included with all sound barrier projects to reduce the potential for graffiti and to soften the</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>pedestrian overcrossing bridge, would be replaced in-kind within the project improvement limits.</p> <ul style="list-style-type: none"> New lighting would be provided on the new Euclid Street Southbound I-405 on-ramp at Ellis Avenue, and new or widened undercrossing structures to illuminate the roadway or pedestrian paths. Additional lighting would be installed under the existing I-405/SR-39 grade-separated structure to illuminate the sidewalks along Beach Boulevard, where the pedestrian paths would be relocated to exclusive paths behind the bent columns underneath freeway structure. Lighting would be provided at action/decision points at local interchanges, enforcement areas, ingress and egress points, collector distributor roads, intersections, overhead signs and some overcrossing structures in accordance with current Caltrans lighting policies. Additional lighting may be added, to address the infrastructure and operating conditions outlined in the Traffic Manual (Chapter 9) and AASHTO. The type and size of the lighting standards to be installed on the State highways would be in accordance with lighting types shown in the Caltrans Standard Plans. Lighting standards for local facilities may be different depending on local agency standards and requests.” Visual impacts related to utility 	<p>including the Heil Avenue pedestrian overcrossing bridge, would be replaced in-kind within the project improvement limits.</p> <ul style="list-style-type: none"> New lighting would be provided on the new Euclid Street Southbound I-405 on-ramp at Ellis Avenue, and new or widened undercrossing structures to illuminate the roadway or pedestrian paths. Additional lighting would be installed under the existing I-405/SR-39 grade-separated structure to illuminate the sidewalks along Beach Boulevard, where the pedestrian paths would be relocated to exclusive paths behind the bent columns underneath freeway structure. Lighting would be provided at action/decision points at local interchanges, enforcement areas, ingress and egress points, collector distributor roads, intersections, overhead signs and some overcrossing structures in accordance with current Caltrans lighting policies. Additional lighting may be added, to address the infrastructure and operating conditions outlined in the Traffic Manual (Chapter 9) and AASHTO. The type and size of the lighting standards to be installed on the State highways would be in accordance with lighting types shown in the Caltrans Standard Plans. Lighting standards for local facilities may be different depending on local agency standards and requests.” 	<p>pedestrian overcrossing bridge, would be replaced in-kind within the project improvement limits.</p> <ul style="list-style-type: none"> New lighting would be provided on the new I-405/SR-73 HOT Connector, Toll Gantries (Alternative 3 only), the new Euclid Street Southbound I-405 on-ramp at Ellis Avenue, and new or widened undercrossing structures to illuminate the roadway or pedestrian paths. Additional lighting would be installed under the existing I-405/SR-39 grade-separated structure to illuminate the sidewalks along Beach Boulevard, where the pedestrian paths would be relocated to exclusive paths behind the bent columns underneath freeway structure. Lighting would be provided at action/decision points at local interchanges, enforcement areas, ingress and egress points, collector distributor roads, intersections, overhead signs and some overcrossing structures in accordance with current Caltrans lighting policies. Additional lighting may be added, to address the infrastructure and operating conditions outlined in the Traffic Manual (Chapter 9) and AASHTO. The type and size of the lighting standards to be installed on the State highways would be in accordance with lighting types shown in the Caltrans Standard Plans. Lighting standards for local facilities may be different depending on local agency 	<p>appearance of the wall.</p> <p>VIS-19: Protect with temporary fencing the drip line of existing isolated trees identified on plans as to remain.</p> <p>VIS-20: Plant biostrips and bioswales with vegetative cover that includes a combination of low-growing shrubs and groundcover per the NPDES Construction General Permit, A.9 Definitions: 1) Vegetative Cover.</p> <p>VIS-21: Glare shields shall be used wherever possible to reduce lighting impacts, and to redirect light onto the facility and away from adjacent homes and areas of wildlife habitat.</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>relocations would be minor, and in some areas would improve because some utilities would be relocated within bridge structures or underground and overall other views would, for the most part, remain unchanged.</p> <ul style="list-style-type: none"> Public structures are often targets of graffiti; however, Caltrans has existing ongoing maintenance programs for the control and removal of graffiti. <p>Temporary Impacts: The construction of the build alternatives would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures. For the I-405 project area, removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this would be a temporary effect because, as the replacement vegetation grows, the overall impact would be expected to diminish.</p>	<ul style="list-style-type: none"> Visual impacts related to utility relocations would be minor, and in some areas would improve because some utilities would be relocated within bridge structures or underground and overall other views would, for the most part, remain unchanged. Public structures are often targets of graffiti; however, Caltrans has existing ongoing maintenance programs for the control and removal of graffiti. <p>Temporary Impacts: The construction of the build alternatives would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures. For the I-405 project area, removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this would be a temporary effect because, as the replacement vegetation grows, the overall impact would be expected to diminish.</p>	<p>standards and requests.”</p> <ul style="list-style-type: none"> Visual impacts related to utility relocations would be minor, and in some areas would improve because some utilities would be relocated within bridge structures or underground and overall other views would, for the most part, remain unchanged. Public structures are often targets of graffiti; however, Caltrans has existing ongoing maintenance programs for the control and removal of graffiti. <p>Temporary Impacts: The construction of the build alternatives would result in changes to the visual quality and/or character associated with vegetation removal, construction activities, and the introduction of new and modified permanent structures. For the I-405 project area, removal of the eucalyptus trees and other vegetation within the interchange areas would likely have the greatest impact on the visual quality; however, this would be a temporary effect because, as the replacement vegetation grows, the overall impact would be expected to diminish.</p>	
Cultural Resources	No impact.	No historic properties/resources would be affected with implementation of the proposed minimization measures.	No historic properties/resources would be affected with implementation of the proposed minimization measures.	No historic properties/resources would be affected with implementation of the proposed minimization measures.	<p>CUL-1: Work shall be halted in the vicinity of any previously known or unknown buried cultural materials unearthed during construction until a qualified archaeologist can assess the significance of the materials. Any further mitigation measures required will be developed in accordance with the requirements of Caltrans Section 106 PA – Stipulation XV in accordance with 36 CFR 800.13. Any mitigation measures required by the archaeologist will be implemented, including, if necessary, supplemental environmental documentation.</p> <p>CUL-2: If human remains and associated artifacts are encountered during ground-disturbing activities, then the provisions of Public Law 101-601, Section 5097.98 and .99 of the PRC, and Section 7050 of the Health and Safety Code, will be followed. Any further mitigation measures required shall be developed in accordance with the requirements of 36 CFR 800.13, the post review discovery provision</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<p>of the regulations implementing Section 106 of the NHPA.</p> <p>CUL-3: If any buildings and/or structures in the project APE are determined eligible for listing in the NRHP subsequent to finalizing the Final EIR/EIS, then such buildings and/or structures shall not be destroyed or significantly altered as part of construction of this project. Proper coordination shall be undertaken with the entity responsible for such listing.</p> <p>CUL-4: Navy requirement that a qualified Native American and qualified Archaeologist monitor earthmoving activities associated with project construction in the vicinity of the NAVWPNSTA Seal Beach, located along the south of I-405 within the project limits. The areas along the southern I-405 and the northern boundary of the NAVWPNSTA property that require monitoring, will be designated as an Archaeological Monitoring Area (AMA) on the final plans and included in the specifications and estimates for the project. The Native American and Archaeologist will prepare daily monitoring logs and a final report summarizing findings will be submitted to both Caltrans and the Navy following construction completion.</p>
<p>Hydrology and Floodplains</p>	<p>No impact.</p>	<p>Alternative 1 would impact channels and drains and their related floodplains at varying degrees; however, this alternative would not:</p> <ul style="list-style-type: none"> • Result in a significant floodplain encroachment; • Substantially affect life and property; • Result in an interruption or termination of a transportation facility; or • Negatively affect natural and beneficial floodplain values. <p>Drainage Improvements include:</p> <ul style="list-style-type: none"> • Extension of Fountain Valley Channel box culvert • Extension of Ocean View Channel box culvert • Extension of Heil Avenue Drain box culvert • Extension of Milan Storm Drain box culvert • Extension of Montecito Storm Channel box culvert • Construction of new Bixby Channel Bypass structure 	<p>Alternative 2 would impact channels and drains and their floodplains at varying degrees; however, this alternative would not:</p> <ul style="list-style-type: none"> • Result in a significant floodplain encroachment; • Substantially affect life and property; • Result in an interruption or termination of a transportation facility; or • Negatively affect natural and beneficial floodplain values. <p>Drainage Improvements include:</p> <ul style="list-style-type: none"> • Extension of Fountain Valley Channel box culvert • Extension of Ocean View Channel box culvert • Extension of Heil Avenue Drain box culvert • Extension of Milan Storm Drain box culvert • Extension of Montecito Storm Channel box culvert • Construction of new Bixby Channel Bypass structure 	<p>Alternative 3 would impact channels and drains and their floodplains at varying degrees; however, this alternative would not:</p> <ul style="list-style-type: none"> • Result in a significant floodplain encroachment; • Substantially affect life and property; • Result in an interruption or termination of a transportation facility; or • Negatively affect natural and beneficial floodplain values. <p>Drainage Improvements include:</p> <ul style="list-style-type: none"> • Extension of Greenville-Banning Channel reinforced concrete pipe (RCP) • Extension of Hyland Storm Drain box culvert and inlet modification • Extension of Fountain Valley Channel box culvert • Extension of Ocean View Channel box culvert • Extension of Heil Avenue Drain box culvert 	<p>HYD-1: Project design elements will include bridge pier alignment paralleling the direction of flow to minimize flow obstruction;</p> <p>HYD-2: Bridges will be designed with sufficient freeboard above the 100-year water surface elevation to prevent the bridge deck from impacting flood flows;</p> <p>HYD-3: Positive drainage will be provided during construction and refrain from diverting flows;</p> <p>HYD-4: Recommended BMPs will be implemented;</p> <p>HYD-5: In-river construction and post construction shall include erosion control and water quality protection;</p> <p>HYD-6: A contingency plan shall be developed for unforeseen discovery of underground contaminants;</p> <p>HYD-7: Construction activities between October and May shall be limited to those actions that can adequately withstand high flows and entrainment of construction materials; and</p> <p>HYD-8: Adequate conveyance capacity will be provided at bridge crossings to ensure no net increase in velocity.</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
				<ul style="list-style-type: none"> • Extension of Milan Storm Drain box culvert • Extension of Montecito Storm Channel box culvert • Construction of new Bixby Channel Bypass structure 	
Water Quality and Stormwater Runoff	Zero treatment of impervious surface runoff.	<p>Permanent Impacts: Alternative 1 will increase impervious surface area by 86 acres (18 percent more impervious surface than existing). However, the proposed treatment BMP strategy (up to 34 permanent treatment BMPs) will not only treat 100 percent of the net new impervious surface area proposed by this project, but will also be treating additional runoff from approximately 60 acres of impervious surface.</p> <p>Temporary Impacts: Project construction will disturb 355 acres (graded soil disturbance area).</p>	<p>Permanent Impacts: Alternative 2 will increase impervious surface area by 99 acres (21 percent more impervious surface than existing). However, the proposed treatment BMP strategy (up to 34 permanent treatment BMPs) will not only treat 100 percent of the net new impervious surface area proposed by this project, but will also be treating additional runoff from approximately 60 acres of impervious surface.</p> <p>Temporary Impacts: Project construction will disturb 384 acres (graded soil disturbance area).</p>	<p>Permanent Impacts: Alternative 3 will increase impervious surface area by 104 acres (18 percent more impervious surface than existing). However, the proposed treatment BMP strategy (up to 34 permanent treatment BMPs) will not only treat 100 percent of the net new impervious surface area proposed by this project, but will also be treating additional runoff from approximately 60 acres of impervious surface.</p> <p>Temporary Impacts: Project construction will disturb 432 acres (graded soil disturbance area).</p>	<p>WQ-1: Conforming to the requirements of the Caltrans Statewide NPDES Storm Water Permit, Order No. 2012-0011-DWQ, NPDES No. CAS000003, adopted by the SWRCB on September 19, 2012 in addition to the BMPs specified in the Caltrans SWMP (Caltrans 2003a). The Contractor shall also conform to the requirements of the General NPDES Permit for Construction Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 and any subsequent permit in effect at the time of construction.</p> <p>WQ-2: Preparing and implementing the SWPPP. The SWPPP shall address all State and federal water control requirements and regulations. The SWPPP shall address all construction-related activities, equipment, and materials that have the potential to impact water quality. All Construction Site BMPs will follow the latest edition of the Storm Water Quality Handbooks, Construction Site BMP Manual to control and minimize the impacts of construction-related pollutants. The SWPPP shall include BMPs to control pollutants, sediment from erosion, stormwater runoff, and other construction-related impacts. In addition, the SWPPP shall include implementation of specific stormwater effluent monitoring requirements based on the project's risk level to ensure that the implemented BMPs are effective in preventing the exceedance of any water quality standards.</p> <p>All work will conform to the Construction Site BMP (Category II) requirements specified in the latest edition of the Caltrans SWMP to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed(s). These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other nonstormwater BMPs. For a complete list, refer to Section 4.5 of the Caltrans SWMP (2003a).</p> <p>WQ-3: Dewatering is anticipated for the proposed project; therefore, this project will fully conform to Order No. R8-2009-0003 NPDES No. CAG998001, <i>General Waste Discharge Requirements for Discharges to Surface Water which Pose an Insignificant (De Minimis) Threat to Water Quality, from the Santa Ana RWQCB</i>. Dewatering BMPs will be used to control sediments and pollutants. A laboratory, certified under either the Environmental Laboratory Accreditation Program or the National Environmental Laboratory Accreditation Program, will test and monitor any discharge for</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
					<p>compliance with RWQCB requirements.</p> <p>WQ-4: Maintenance BMPs – Maintenance BMPs will be adhered to in accordance with Caltrans policies, including routine maintenance work, such as litter pickup, toxics control, street sweeping, drainage, and channel cleaning.</p> <p>WQ-5: Design Pollution Prevention BMPs – Permanent soil stabilization systems will be incorporated into project design, such as preservation of existing vegetation, concentrated flow conveyance systems (e.g., drainage ditches, dikes, berms, swales), and slope/surface protection systems that utilize either vegetated or hard surfaces. Identification of Design Pollution Prevention BMPs will occur during final design.</p> <p>WQ-6: Treatment BMPs – All Caltrans-approved Treatment BMPs will be implemented to the MEP. Treatment BMPs may include traction sand traps, infiltration devices, detention devices, biofiltration strips/swales, dry weather flow diversion, media filters, multi-chamber treatment trains, wet basins, and gross solids removal devices.</p>
Geology/Soils/ Seismic/ Topography	No impact.	<p>Permanent: The proposed project site is located in seismically active southern California; it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration.</p> <p>Temporary: The site is in a State of California mapped Liquefaction Hazard Zone and has relatively shallow groundwater, layers of loose to medium dense saturated granular soils, and moderate to high earthquake accelerations; therefore, liquefaction</p>	<p>Permanent: The proposed project site is located in seismically active southern California; it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration.</p> <p>Temporary: The site is in a State of California mapped Liquefaction Hazard Zone and has relatively shallow groundwater, layers of loose to medium dense saturated granular soils, and moderate to high earthquake accelerations; therefore, liquefaction</p>	<p>Permanent: The proposed project site is located in seismically active southern California; it is within an existing transportation corridor. The project would be designed to meet current corridor cities' and Caltrans' design standards to minimize geologic and seismic hazards. No structures would be constructed that would increase the current risk of loss, injury, or death as a result of ground shaking or other seismically induced effects. The proposed project would not increase the risk of exposing people or structures to potential substantial adverse effects because of seismic activities or seismic-related ground failure beyond the existing level already present with the current freeway configuration.</p> <p>Temporary: The site is in a State of California mapped Liquefaction Hazard Zone and has relatively shallow groundwater, layers of loose to medium dense saturated granular soils, and moderate to high earthquake accelerations; therefore, liquefaction</p>	<p>GEO-1: In accordance with standard Caltrans requirements, detailed geotechnical studies shall be conducted during the project's future PS&E phase. If results of these studies find high potential for seismic slope instability or lateral spreading, additional measures will need to be incorporated for new structures associated with the project, including bridges, embankments, and retaining walls. Resulting recommendations from the detailed studies shall be incorporated into the project's final design plans to address seismic safety, liquefaction, and load-bearing concerns present in the project area.</p> <p>GEO-2 Selection of earth-retaining system types should be based on consideration of foundation bearing capacity, anticipated settlement and ability of the system to tolerate settlements, overall slope stability, constructability, and cost.</p> <p>GEO-3: Depending on locations, drilled piles (for sign foundations or soundwalls) may extend below the groundwater and will require appropriate construction methods.</p> <p>GEO-4: Corrosion mitigation for steel and concrete structures should generally follow Caltrans Corrosion Guidelines (2003 or latest). The latest Caltrans Highway Design Manual (Section 855) provides corrosion requirements for roadway structures (e.g., culverts, signs) for a 50-year design life (Caltrans, 2010).</p> <p>GEO-5: The project engineer shall request a Materials Report in the early stage of PS&E. The report shall include the results of field tests and sampling for corrosion (i.e., pH, sulfate, chloride, and minimum resistivity) for use in recommending culvert materials and concrete mix designs. Sampling and testing shall be performed in accordance</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<p>potential should be considered high. Potential for seismic-induced slope failures in the project area would be limited to lateral spreading of fill embankments due to ground shaking. Deeper open excavations will require dewatering.</p> <p>In the SR-22 WCC Project near the SR-22 interchange, soils were determined to be corrosive due to high chlorides and sulfates. Corrosive conditions are likely to be present in the remainder of the alignment.</p>	<p>potential should be considered high. Potential for seismic-induced slope failures in the project area would be limited to lateral spreading of fill embankments due to ground shaking. Deeper open excavations will require dewatering.</p> <p>In the SR-22 WCC Project near the SR-22 interchange, soils were determined to be corrosive due to high chlorides and sulfates. Corrosive conditions are likely to be present in the remainder of the alignment.</p>	<p>potential should be considered high. Potential for seismic-induced slope failures in the project area would be limited to lateral spreading of fill embankments due to ground shaking. Deeper open excavations will require dewatering.</p> <p>In the SR-22 WCC Project near the SR-22 interchange, soils were determined to be corrosive due to high chlorides and sulfates. Corrosive conditions are likely to be present in the remainder of the alignment.</p>	<p>with Caltrans Corrosion Guidelines (2003 or latest).</p> <p>GEO-6: In general, earthwork should be performed in accordance with Sections 6 and 19 of the Caltrans Standard Specifications. The new construction will have to be carefully planned to protect the many existing utilities in the area.</p> <p>GEO-7: Monitoring during construction shall be done by a licensed geologist and engineer to ensure that the construction site was properly characterized by the geotechnical studies and that the project design is in compliance with geotechnical and seismic safety standards and practices included in the final design package.</p>
Paleontology	No impact.	<p>Permanent: The proposed project would include earth-moving activities resulting in ground disturbance and modification to existing freeway and local street structures. Vertebrate fossils have been located within the project study area; however, their locations were outside of the project disturbance area. The highest potential for fossils occur at locations where auguring would occur for overhead signage and where the overcrossings and railroad overheads are replaced.</p> <p>Temporary: Any impacts would be considered permanent, and a discussion for temporary impacts is not applicable. No temporary impacts would occur as a result of this project. Ground-disturbing activities have the potential to destroy fossils and associated location data, which is a permanent impact.</p>	<p>Permanent: The proposed project would include earth-moving activities resulting in ground disturbance and modification to existing freeway and local street structures. Vertebrate fossils have been located within the project study area; however, their locations were outside of the project disturbance area. The highest potential for fossils occur at locations where auguring would occur for overhead signage and where the overcrossings and railroad overheads are replaced.</p> <p>Temporary: Any impacts would be considered permanent, and a discussion for temporary impacts is not applicable. No temporary impacts would occur as a result of this project. Ground-disturbing activities have the potential to destroy fossils and associated location data, which is a permanent impact.</p>	<p>Permanent: The proposed project would include earth-moving activities resulting in ground disturbance and modification to existing freeway and local street structures. Vertebrate fossils have been located within the project study area; however, their locations were outside of the project disturbance area. The highest potential for fossils occur at locations where auguring would occur for overhead signage and where the overcrossings and railroad overheads are replaced.</p> <p>Temporary: Any impacts would be considered permanent, and a discussion for temporary impacts is not applicable. No temporary impacts would occur as a result of this project. Ground-disturbing activities have the potential to destroy fossils and associated location data, which is a permanent impact.</p>	<p>PAL-1: If auguring or foundation construction will penetrate 5 ft or more into undisturbed sediment, Caltrans shall ensure that a PMP is prepared and adhered to during construction of the portions that are identified as having high paleontological sensitivity. The PMP shall include, but not be limited to, the following instructions:</p> <ul style="list-style-type: none"> • A qualified principal paleontologist (MS or PhD in paleontology or geology familiar with paleontological procedures and techniques) will be retained to prepare a Paleontological Mitigation Plan (PMP) following the Caltrans Standard Environmental Reference (SER) if auguring or foundation construction will penetrate 5 ft or more into undisturbed sediment. • The paleontologist will be present to consult with construction contractors at pre-grading meetings. • Paleontological monitoring under the direction of the qualified principal paleontologist will be performed for subsurface construction activities involving sensitive geologic formations. • When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner. • Fossil remains collected during the monitoring and salvage portion of the mitigation program will be prepared and cataloged. • Prepared fossils, along with copies of all pertinent field notes, photos, and maps will then be deposited in a scientific institution with paleontological collections. • A final report will be completed that outlines the results of the mitigation program.
Hazardous Waste/	No impact.	Permanent:	Permanent:	Permanent:	HAZ-1: Prior to completion of the Final Design, sampling for ADL shall be conducted by OCTA within unpaved

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Materials		No permanent impacts are anticipated and routine maintenance activities during operation of the proposed project would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials Temporary: Alternative 1 would require 4 partial acquisitions of properties considered as a Recognized Environmental Conditions. Alternative 1 could involve disturbance of hazardous soil and groundwater contaminants and structural materials during construction.	No permanent impacts are anticipated and routine maintenance activities during operation of the proposed project would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials Temporary: Alternative 2 would require 4 partial acquisitions of properties considered as a Recognized Environmental Conditions. Alternative 2 could involve disturbance of hazardous soil and groundwater contaminants and structural materials during construction.	No permanent impacts are anticipated and routine maintenance activities during operation of the proposed project would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials Temporary: Alternative 3 would require 4 partial acquisitions of properties considered as a Recognized Environmental Conditions. Alternative 3 could involve disturbance of hazardous soil and groundwater contaminants and structural materials during construction.	locations adjacent to the existing roadway ROW within the study area if such locations have not been tested. HAZ-2: Prior to construction, if still present, two 30-gallon open trash bins and two 5 gallon buckets that were dumped in the I-405 northbound shoulder just south of the I-605 interchange shall be removed and properly disposed of by the contractor. HAZ-3: During the construction phase, the upper 2 ft of soil excavated along the I-405 northbound shoulder from the I-605/I-405 connector to approximately 1,000 ft south of the I-605/I-405 connector shall be set aside and tested for TPH (gasoline and diesel) by the contractor before being disposed of or reused at the site. HAZ-4: If signs of potential impacts (e.g., odors, discolored soil, and any hazardous waste) are observed during construction activity, construction shall cease and the California Department of Transportation’s Unknown Procedures for Construction shall be followed. If groundwater is encountered during construction activities, or if construction dewatering is necessary, then sampling and analysis of groundwater shall be conducted to identify the appropriate management and disposal of the groundwater.
Air Quality	Congestion within the project corridor would continue to increase and contribute to decreased air quality within the project corridor and region.	Permanent: Alternative 1 future emissions (2020 and 2040) would be less than existing for VOC, NOx, and CO and higher than existing for SOx, PM _{2.5} , and PM ₁₀ . All Alternative 1 emissions would be less than the future no build emissions. Temporary: Construction of the proposed project is anticipated to last 48 months. As a result, project construction would not last more than 5 years and is considered temporary. Construction emission would be associated with the following Stationary or mobile-powered onsite construction equipment: trucks, tractors, signal boards, excavators, backhoes, concrete saws, crushing and/or processing equipment, graders, trenchers, pavers, and other paving equipment.	Permanent: Alternative 2 future emissions (2020 and 2040) would be less than existing for VOC, NOx, and CO and higher than existing for SOx, PM _{2.5} , and PM ₁₀ . All Alternative 2 emissions would be less than the future no build emissions, and they would generally be slightly less than Alternative 1 emissions (i.e., no greater than 3 percent). Temporary: Construction of the proposed project is anticipated to last 51 months. As a result, project construction would not last more than 5 years and is considered temporary. Construction emission would be associated with the following Stationary or mobile-powered onsite construction equipment: trucks, tractors, signal boards, excavators, backhoes, concrete saws, crushing and/or processing	Permanent: Alternative 3 future emissions (2020 and 2040) would be less than existing for VOC, NOx, and CO and higher than existing for SOx, PM _{2.5} , and PM ₁₀ . All Alternative 3 emissions would be less than the future no build emissions, and they would generally be less than Alternative 1 emissions (i.e., no greater than 4 percent). Temporary: Construction of the proposed project is anticipated to last 54 months. As a result, project construction would not last more than 5 years and is considered temporary. Construction emission would be associated with the following Stationary or mobile-powered onsite construction equipment: trucks, tractors, signal boards, excavators, backhoes, concrete saws, crushing and/or processing	AQ-1: The construction contractor shall comply with Caltrans’ Standard Specifications in Section 14(2010). <ul style="list-style-type: none">Section 14-9.01 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.Section 14-9.02 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are contained in Section 18. AQ-2: The construction contractor shall apply water or dust palliative to the site and equipment as frequently as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a “no visible dust” criterion either at the point of emission or at the ROW line, depending on local regulations. AQ-3: The construction contractor shall spread soil binder on any unpaved roads used for construction purposes, and all project construction parking areas. AQ-4: The construction contractor shall wash off trucks as they leave the ROW, as necessary, to control fugitive dust emissions. AQ-5: The construction contractor shall properly tune and maintain construction equipment and vehicles.

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
			equipment, graders, trenchers, pavers, and other paving equipment.	equipment, graders, trenchers, pavers, and other paving equipment.	<p>AQ-6: The construction contractor shall use low-sulfur fuel in all construction equipment as provided in CCR Title 17, Section 93114.</p> <p>AQ-7: The construction contractor shall develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.</p> <p>AQ-8: The construction contractor shall locate equipment and materials storage sites as far away from residential and park uses as practical. Construction areas shall be kept clean and orderly.</p> <p>AQ-9: The construction contractor shall establish Environmentally Sensitive Areas (ESAs) or their equivalent near sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited, to the extent that is feasible.</p> <p>AQ-10: The construction contractor shall use track-out reduction measures, such as gravel pads, at project access points to minimize dust and mud deposits on roads affected by construction traffic.</p> <p>AQ-11: The construction contractor shall cover all transported loads of soils and wet materials prior to transport, or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM10 and deposition of PM during transportation.</p> <p>AQ-12: The construction contractor shall remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease PM.</p> <p>AQ-13: The construction contractor shall route and schedule construction traffic to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.</p> <p>AQ-14: The construction contractor shall install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.</p>
Noise	Noise conditions within the corridor projected to experience a 1- to 3-decibel (dB) increase under the 2040 no-build conditions.	<p>Permanent:</p> <p>Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below. Project future noise conditions, when compared to the future no build noise conditions, generally increase or decrease slightly when compared to the future no build noise condition. With incorporation of the abatement, maximum changes in future build noise range from a 3-dBA increase to a 6-dBA decrease.</p> <p>Recommended Soundwalls :</p>	<p>Permanent:</p> <p>Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below. Project future noise conditions, when compared to the future no build noise conditions, generally increase or decrease slightly when compared to the future no build noise condition. With incorporation of the abatement, maximum changes in future build noise range from a 4-dBA increase to a 10-dBA decrease.</p> <p>Recommended Soundwalls:</p>	<p>Permanent:</p> <p>Increases in operational noise at all receptors are considered minor with implementation of the recommended soundwalls summarized below. Project future noise conditions, when compared to the future no build noise conditions, generally increase or decrease slightly when compared to the future no build noise condition. With incorporation of the abatement, maximum changes in future build noise range from a 4-dBA increase to an 11-dBA decrease.</p> <p>Recommended Soundwalls:</p>	<p>NOI-1: Design and install noise barriers at the locations as recommended in the NADR, as shown for the build alternatives in Appendix N, Sections N2, N3, and N4.</p> <p>NOI-2: Sound control shall conform to the provisions in Section 14-8.02, "Noise Control," of the Standard Specifications. According to requirements of this specification, construction noise cannot exceed 86 dBA at 50 ft from the jobsite activities from 9:00 p.m. to 6:00 a.m.</p> <p>NOI-3: All internal combustion engines shall be equipped with the manufacturer-recommended muffler. An internal combustion engine cannot be operated on the jobsite without the appropriate muffler.</p> <p>NOI-4: The contractor shall prepare a Noise and Vibration Monitoring and Mitigation Plan by a qualified Acoustical Engineer and submit it for approval. The Plan must outline noise and vibration monitoring procedures at predetermined noise and vibration sensitive</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		<ul style="list-style-type: none"> • 20 New • 13 Replace In-kind • 7 Replace In-Kind (higher) • 5 Gap Closure <p>Temporary Impacts: Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.</p>	<ul style="list-style-type: none"> • 18 New • 19 Replace In-kind • 6 Replace In-Kind (higher) • 6 Gap Closure <p>Temporary Impacts: Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.</p>	<ul style="list-style-type: none"> • 18 New • 22 Replace In-kind • 7 Replace In-Kind (higher) • 6 Gap Closure <p>Temporary Impacts: Construction noise varies greatly depending on the construction process, type, and condition of the equipment used, and layout of the construction site. Projections of potential construction noise levels may vary from actual noise experienced during construction due to these factors. In general, construction activities conducted during daytime hours would have a lesser impact on sensitive receptors than nighttime construction; however, nighttime construction is expected to be necessary to avoid unacceptable disruptions to traffic during daytime hours.</p>	<p>sites as well as historic properties. The Noise and Vibration Monitoring and Mitigation Plan also must include calculated noise and vibration levels for various construction phases and mitigation measures that would be needed to meet the project specifications. The contractor shall not start any construction work or operate any noise-generating construction equipment at the construction site before approval of the Noise and Vibration Monitoring and Mitigation Plan. The Noise and Vibration Monitoring and Mitigation Plan must be updated every 3 months or sooner if there are any changes to the construction activities.</p> <p>NOI-5: It is predicted that construction activities that use vibratory compaction rollers and pile drivers could cause some human annoyance impacts. There are cases where it may be necessary to use this type of equipment in close proximity to residential and commercial buildings. The following procedures could be used to minimize the potential for human annoyance from construction vibration:</p> <ul style="list-style-type: none"> • Conduct vibration monitoring during vibration-intensive activities. • Properly maintain all motorized equipment in a state of good repair to limit wear-induced vibration. • Where feasible, avoid the use of impact-type pile driving near residences; instead use drilled piles or the use of a sonic or vibratory pile driver, which cause lower vibration levels (where geological conditions permit their use). • When there is a possibility of human annoyance from construction activities, such as the operation of vibratory rollers, absent urgent and unexpected circumstances, conduct such activity only during weekday daytime hours when the ambient background noise and vibration is higher and many residents are away from their homes at work. • Develop a phasing plan so that high vibration-generating activities do not occur within the same time period in close proximity to each other, to the maximum extent practicable. • Avoid the use of large vibratory rollers and packers near sensitive areas, when possible, and use smaller equipment with smaller lifts.

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Energy	No impact.	<p>Energy impacts would be minimized with incorporation of energy conservation measures. Energy conservation measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> Selecting energy-efficient project features (e.g., lighting, pavement surface); using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel; traffic flow improvements; ramp metering and auxiliary lanes and other TSM/TDM measures, as well as, bicycle and pedestrian facilities to further offset increased fuel consumption associated with the projected increase in vehicle miles traveled (VMT). 	<p>Energy impacts would be minimized with incorporation of energy conservation measures. Energy conservation measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> Selecting energy-efficient project features (e.g., lighting, pavement surface); using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel; traffic flow improvements; ramp metering and auxiliary lanes and other TSM/TDM measures, as well as, bicycle and pedestrian facilities to further offset increased fuel consumption associated with the projected increase in VMT. 	<p>Energy impacts would be minimized with incorporation of energy conservation measures. Energy conservation measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> Selecting energy-efficient project features (e.g., lighting, pavement surface); using energy-efficient design (i.e., reduced grades, decrease in out-of-direction travel; traffic flow improvements; ramp metering and auxiliary lanes and other TSM/TDM measures, as well as, bicycle and pedestrian facilities to further offset increased fuel consumption associated with the projected increase in VMT. 	No measures required.
Natural Communities	No impact.	<p>There are no high-quality native habitats within the Biological Study Area (BSA); however, this alternative would have the following effects on vegetation within the project corridor:</p> <p>Permanent Impacts:</p> <ul style="list-style-type: none"> Agriculture: 0.0 Developed: 79.3 Riparian: 0.0 Drainage: 1.6 <p>Temporary Impacts:</p> <ul style="list-style-type: none"> Agriculture: 0.0 Developed: 189.1 Riparian: 0.0 Drainage: 5.7 	<p>There are no high-quality native habitats within the BSA; however, this alternative would have the following effects on vegetation within the project corridor:</p> <p>Permanent Impacts:</p> <ul style="list-style-type: none"> Agriculture: 0.0 Developed: /91.3 Riparian: 0.0 Drainage: 1.9 <p>Temporary Impacts:</p> <ul style="list-style-type: none"> Agriculture:0.0 Developed: 179.7 Riparian: 0.0 Drainage: 5.6 	<p>There are no high-quality native habitats within the BSA; however, this alternative would have the following effects on vegetation within the project corridor:</p> <p>Permanent Impacts:</p> <ul style="list-style-type: none"> Agriculture: 0.0 Developed: 101.2 Riparian: 0.0 Drainage:2.0 <p>Temporary Impacts:</p> <ul style="list-style-type: none"> Agriculture: 0.0 Developed: 202.1 Riparian: 0.0 Drainage: 6.8 	<p>BIO-1: Prior to clearing or construction, highly visible barriers (e.g., orange construction fencing) will be installed around riparian/riverine vegetation adjacent to the project footprint to designate Environmentally Sensitive Areas (ESA) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, will be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.</p>

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Wetlands and Other Waters	No impact.	<p>Wetlands – 0-acre</p> <p>Permanent Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.48-acre Anaheim Bay-Huntington Harbour Watershed – 0.44-acre Santa Ana River Watershed – 0.07-acre Newport Bay Watershed – 0.0-acre <p>Temporary Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.06-acre Anaheim Bay-Huntington Harbour Watershed – 0.96-acre Santa Ana River Watershed – 3.91 acres Newport Bay Watershed – 0.0-acre 	<p>Wetlands – 0-acre</p> <p>Permanent Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.48-acre Anaheim Bay-Huntington Harbour Watershed – 0.48-acre Santa Ana River Watershed – 0.07-acre Newport Bay Watershed – 0.0-acre <p>Temporary Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.06-acre Anaheim Bay-Huntington Harbour Watershed – 0.91-acre Santa Ana River Watershed – 3.91 acres Newport Bay Watershed – 0.0-acre 	<p>Wetlands – 0-acre</p> <p>Permanent Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.48-acre Anaheim Bay-Huntington Harbour Watershed – 0.48-acre Santa Ana River Watershed – 0.18-acre Newport Bay Watershed – 0.0-acre <p>Temporary Other Waters:</p> <ul style="list-style-type: none"> San Gabriel River-Coyote Creek Watershed – 0.06-acre Anaheim Bay-Huntington Harbour Watershed – 0.91-acre Santa Ana River Watershed – 4.38 acres Newport Bay Watershed – 0.0-acre 	<p>BIO-2: During Design, Caltrans/OCTA shall consult with the appropriate responsible resource agency (e.g., CDFG, USACE, and RWQCB) to verify delineation results, determine permanent losses and temporary impact areas, and identify compensatory mitigation, as applicable. Prior to undertaking ground-disturbing activities within or immediately adjacent to any aquatic resource areas, OCTA and/or their consultant shall obtain all obligatory discretionary permits/authorizations.</p> <p>BIO-3: Prior to clearing or construction, highly visible barriers (e.g., orange construction fencing) will be installed around jurisdictional areas and designated as Environmentally Sensitive Areas (ESA) to be preserved. ESAs will extend from the end of the permitted area to the edge of the construction footprint (within existing and proposed ROW and also within any temporary construction easements) to preserve all other waters of the U.S./State that are not otherwise permitted in accordance with BIO-3.</p>
Plant Species	No impact.	No impact.	No impact.	No impact.	BIO-4: Although no special status plant species were observed during preliminary surveys, pre-construction special status plant surveys will be conducted prior to any ground disturbing activities.
Animal Species	No impact.	<p>Permanent</p> <p>During construction, particularly vegetation clearing, some mortality of common animal species can be expected due to conflict with construction equipment.</p> <p>Temporary</p> <p>Raptors and other birds protected by the Migratory Bird Treaty Act (MBTA) may nest in existing trees and shrubs within and adjacent to the BSA. Direct temporary impacts to birds nesting within or adjacent to the BSA may occur if construction, particularly vegetation clearing, occurs during the nesting season. Indirect temporary impacts to nesting birds would include temporary indirect disturbance (e.g., noise, dust, night lighting, and human encroachment) from construction activities.</p> <p>Although no bats were observed within</p>	<p>Permanent</p> <p>During construction, particularly vegetation clearing, some mortality of common animal species can be expected due to conflict with construction equipment.</p> <p>Temporary</p> <p>Raptors and other birds protected by the MBTA may nest in existing trees and shrubs within and adjacent to the BSA. Direct temporary impacts to birds nesting within or adjacent to the BSA may occur if construction, particularly vegetation clearing, occurs during the nesting season. Indirect temporary impacts to nesting birds would include temporary indirect disturbance (e.g., noise, dust, night lighting, and human encroachment) from construction activities.</p> <p>Although no bats were observed within the BSA, there remains a potential for</p>	<p>Permanent</p> <p>During construction, particularly vegetation clearing, some mortality of common animal species can be expected due to conflict with construction equipment.</p> <p>Temporary</p> <p>Raptors and other birds protected by the MBTA may nest in existing trees and shrubs within and adjacent to the BSA. Direct temporary impacts to birds nesting within or adjacent to the BSA may occur if construction, particularly vegetation clearing, occurs during the nesting season. Indirect temporary impacts to nesting birds would include temporary indirect disturbance (e.g., noise, dust, night lighting, and human encroachment) from construction activities.</p> <p>Although no bats were observed within the BSA, there remains a potential for</p>	<p>BIO-5: To avoid impacts to nesting birds, any native vegetation removal or tree (i.e., native or exotic) trimming activities will occur outside of the nesting bird season (February 15 through August 31). If 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 shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active.</p> <p>BIO-6: To ensure that any owls that may occupy the site are not affected by construction activities, preconstruction burrowing owl surveys and potential owl relocation will be required prior to any phase of construction. These preconstruction surveys are also required to comply with the MBTA and the California Fish and Game Code. If any of the preconstruction surveys determine that the species is present, one or more of the following measures may be required: (1) avoidance of active nests and surrounding buffer area during construction activities; (2) passive relocation of individual owls; (3) active relocation of individual owls; and (4) preservation of onsite habitat with long-term conservation value for the owl.</p>

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Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
		the BSA, there remains a potential for bats to occur within bridges, culverts, and other structures that could support roosting. Temporary impacts during construction (e.g., noise, dust, night lighting, and human encroachment) may occur. Construction could also temporarily impede access to roost sites (i.e., existing and future) in the crevices of bridges, culverts, and overhead structures.	bats to occur within bridges, culverts, and other structures that could support roosting. Temporary impacts during construction (e.g., noise, dust, night lighting, and human encroachment) may occur. Construction could also temporarily impede access to roost sites (i.e., existing and future) in the crevices of bridges, culverts, and overhead structures.	bats to occur within bridges, culverts, and other structures that could support roosting. Temporary impacts during construction (e.g., noise, dust, night lighting, and human encroachment) may occur. Construction could also temporarily impede access to roost sites (i.e., existing and future) in the crevices of bridges, culverts, and overhead structures.	<p>BIO-7: To avoid impacts to raptors, all new highway lighting adjacent to NAVWPNSTA Seal Beach shall not contain features that allow for raptor perches, as feasible.</p> <p>BIO-8: To avoid impacts to migratory birds at the Seal Beach National Wildlife Refuge, all new highway lighting adjacent to NAVWPNSTA Seal Beach shall be directed down towards the highway itself.</p> <p>BIO-9: A qualified bat biologist shall conduct a preconstruction bat habitat suitability assessment to determine if the construction area contains potential bat habitat within the project footprint or immediate surroundings, including roosting sites, foraging sites, and/or maternity colonies. The surveys shall include a combination of inspection, sampling, exit counts, and acoustic surveys. The survey shall be completed in June or at a time determined appropriate by a qualified bat biologist prior to construction, because maternity roosts are generally formed in late spring.</p> <p>If occupied or historic roosting sites, foraging sites, and/or maternity colonies are identified during the preconstruction bat habitat suitability assessment, construction activities shall not be initiated at the location until the bats have been excluded from the location, using CDFG-approved exclusion devices, and the qualified bat biologist certifies the location bat free. All exclusion activities will be coordinated with CDFG and completed under the supervision of a qualified bat biologist. Once installed, exclusion devices will be maintained throughout the duration of the construction activities or until construction at the location is deemed complete and bat use is again acceptable.</p> <p>If maternity sites are identified during the preconstruction bat habitat suitability assessment, no construction activities at the location containing the maternity roost will be allowed during the maternity season (April 1 through July 30), unless a qualified bat biologist has determined that young have been weaned. If present, and it is anticipated that construction activities cannot be completed outside of the maternity season, then bat exclusion at maternity roost sites shall be completed either as soon as allowed by the qualified bat biologist after the young have been weaned or outside of the maternity season, prior to initiating construction activities or as otherwise approved by the qualified bat biologist in coordination with CDFG..</p>
Threatened and Endangered Species	No impact.	No impact.	No impact.	No impact.	No measures required.

Table S-2: Project Impact Summary Table

Resource Impacts	No Build Alternative	Alternative 1	Alternative 2	Alternative 3 (Preferred Alternative)	Avoidance, Minimization and/or Mitigation Measures
Invasive Species	No impact.	Approximately 70 to 80 percent of vegetated lands within the BSA are dominated by invasive species, mostly consisting of annual grasses and forbs. A total of 45 exotic plants occurring on California Invasive Plant Council's (Cal-IPC's) California Invasive Plant Inventory were identified in the BSA. Of these species, there are 6 with an overall high rating, 23 with a moderate rating, and 16 with a limited rating.	Approximately 70 to 80 percent of vegetated lands within the BSA are dominated by invasive species, mostly consisting of annual grasses and forbs. A total of 45 exotic plants occurring on Cal-IPC's California Invasive Plant Inventory were identified in the BSA. Of these species, there are 6 with an overall high rating, 23 with a moderate rating, and 16 with a limited rating.	Approximately 70 to 80 percent of vegetated lands within the BSA are dominated by invasive species, mostly consisting of annual grasses and forbs. A total of 45 exotic plants occurring on Cal-IPC's California Invasive Plant Inventory were identified in the BSA. Of these species, there are 6 with an overall high rating, 23 with a moderate rating, and 16 with a limited rating.	<p>BIO-10: In compliance with Executive Order (EO) 13112, weed control will be performed to minimize the importation of nonnative plant material during and after construction. Eradication strategies will be employed should an invasion occur. Measures addressing invasive species abatement and eradication will be included in the project design and contract specifications. These measures may include, but not be limited to:</p> <ul style="list-style-type: none"> • During design phase, the landscape pallet will be sent and reviewed by the Caltrans biologist. • All construction site BMPs from the SWPPP will be followed. • During construction, all construction equipment will be cleaned of mud or other debris that may contain invasive plants and/or seeds and will be inspected to reduce the potential of spreading noxious weeds before mobilizing to arrive at the site and before leaving the site. This will be included in project provisions. • After construction, affected areas adjacent to native vegetation will be revegetated with plant species native to the southern California region approved by the Caltrans District Biologist. • After construction, all revegetated areas will be prohibited from the use of species listed in the Cal-IPC California Invasive Plant Inventory that have a high or moderate rating.
Cumulative Impacts	Continued and increasing congestion, travel times, and related air emissions.	Alternative 1, when considered with other cumulative projects as stated in Table 3.6-1 would contribute incrementally to cumulatively considerable impacts related to: <ul style="list-style-type: none"> • Community Character • Short-term Temporary Construction Impacts • Visual Character and Quality 	Alternative 2, when considered with other cumulative projects as stated in Table 3.6-1 would contribute incrementally to cumulatively considerable impacts related to: <ul style="list-style-type: none"> • Community Character • Short-term Temporary Construction Impacts • Visual Character and Quality 	Alternative 3, when considered with other cumulative projects as stated in Table 3.6-1 would contribute incrementally to cumulatively considerable impacts related to: <ul style="list-style-type: none"> • Community Character • Short-term Temporary Construction Impacts • Visual Character and Quality 	Project specific measures described within this table would reduce and minimize potential cumulative impacts.

* Upon identification of the PA, design plans for Alternative 1 and Alternative 2 have not been updated, therefore does not include updated design information.

Four public hearings were held for the Draft EIR/EIS for the project at the following times and locations:

- Monday, June 4, 2012 – 6:00 to 8:00 p.m. at Orange Coast College Student Center, 2701 Fairview Road, Costa Mesa, CA 92626.
- Wednesday, June 6, 2012 – 6:00 to 8:00 p.m. at Westminster Community Center AB Room, 8200 Westminster Avenue, Westminster, CA 92683.
- Thursday, June 7, 2012 – 6:00 to 8:00 p.m. at Rush Park Auditorium, 3021 Blume Drive, Rossmore, CA 90720.
- Thursday, June 14, 2012 – 6:00 to 8:00 p.m., Fountain Valley Senior and Community Center, 17967 Bushard Street, Fountain Valley, CA 92708.

The public hearing format consisted of a combination of an open house session and a project presentation. During the open house session, participants had the opportunity to visit the various stations (e.g., noise, visual, design, environmental), view project exhibits, and direct questions to the project team members located at each station. Staff and consultants provided a brief presentation overview of the project, environmental impacts, and construction schedule. A certified court reporter was present during the open house to take verbal comments from participants. Participants also were encouraged to submit their comments in writing during the public hearing, via mail, or by e-mail by the public circulation end date.

Circulation of Supplemental Draft EIR/EIS

A Supplemental Draft EIR/EIS was prepared in response to the City of Long Beach's comments on the Draft EIR/EIS. A Supplemental Traffic Study Report – Long Beach Area (March 2013) provided new information on potential project-related traffic impacts within the City of Long Beach.

The public review period for the Supplemental Draft EIR/EIS was from June 28 to August 12, 2013. Public notices to notify the public regarding the public review period were published in English in the *Orange County Register* and *Long Beach Press-Telegram*, in Vietnamese in *Nguoi-Viet*, and in Spanish in the *Excelsior*. The public notice was also provided on Caltrans' and OCTA's Web sites.

The public hearing for the Supplemental Draft EIR/EIS was held on Wednesday, July 24, 2013, at Hill Middle School, 1100 Iroquois Avenue, Long Beach, CA 90815 from 6:00 to 8:00 p.m.

Response to Comments

Due to the large volume of comments received during the public circulation periods for the Draft EIR/EIS and Supplemental Draft EIR/EIS, the comments received and responses to comments are provided in Appendices R1 and R2, respectively, which are bound separately.

Approximately 1,061 entities and individuals provided comments on the Draft EIR/EIS. General categories of comments included the following:

- Preferred alternative selection
- Compensation for property acquisition
- Air quality
- Health risks
- Property values
- Compensation for construction impacts
- Relocation of gas lines
- Relocating utilities underground
- Impacts to businesses
- Northbound braided ramps at the Magnolia Street/Warner Avenue interchange
- Noise/noise analysis
- Almond Avenue soundwall
- Replacement of Fairview Road overcrossing/truncation of tolled Express Lanes
- Opposition to tolling
- Measure M Funding
- Comparison of tolled Express Lane operation of SR-91 to I-405
- Substantiation of reported corridor travel times for build alternatives
- Insufficient environmental document/mitigation measures
- Coordination between Caltrans Districts 7 and 12, OCTA, Los Angeles Metro, Gateway City Council of Governments, and the City of Long Beach
- Shifting improvements away from residential properties onto NAVWPNSTA Seal Beach property
- Traffic flow at the Orange County/Los Angeles County line
- Elimination of light-rail transit and bus rapid transit alternatives
- Induced demand

Approximately 170 entities and individuals provided comments on the Supplemental Draft EIR/EIS. General categories included the following:

- Traffic mitigation agreement fair share versus full share
- Traffic data used in calculation of the traffic mitigation agreement fair share deferment
- Almond Avenue soundwall
- Fair share amount in mitigation
- Northbound braided ramps at the Magnolia Street/Warner Avenue interchange
- Impacts to businesses
- Traffic forecasting methodology
- Traffic flow at the Orange County/Los Angeles County line
- Noise/noise analysis
- Air quality
- Measure M
- Health risks

Unresolved Issues and Areas of Controversy

This section identifies the major unresolved issues or areas of controversy affecting all or some of the proposed alternatives.

1. Tolling: The toll component of the Express Lanes included in Alternative 3 has generated some controversy. Communities along the corridor expressed early concern with the Express Lanes if there were no intermediate access allowing motorists with origins and destinations along the corridor to utilize the Express Lanes. Intermediate access has been included in the proposed alternative. Controversy continues around the topic of tolling on an existing freeway.

Currently HOVs with only 2 occupants are permitted to utilize the existing HOV lanes. Information included in this Final EIR/EIS explains that, under the current HOV occupancy requirement, the HOV lane volumes are exceeding the capacity of the HOV lanes in the corridor and throughout southern California as explained in the *California HOV/Express Lane Business Plan* (Caltrans, March 31, 2009). The travel time advantage of the HOV lanes on I-405 within the project limits is anticipated to be completely lost by the time the proposed project is open to traffic, except along the northernmost 3 miles of the corridor. Under the preliminary operating policies for the Express Lanes, HOVs with 3 or more occupants, zero emission vehicles, motorcycles, vehicles with disabled license plates, and

disabled veterans would use the I-405 Express Lanes free of charge except during the most congested hours when such vehicles receive a toll discount. However, due to public comments received during the public review period, the objective is to open the tolled Express Lanes with a HOV2+ occupancy free to encourage rideshare and transit usage. Operational adjustments to the tolled Express Lanes may be implemented based on demand, rates of speed, traffic volumes, and to meet financial covenants, maintenance and operational obligations. Potential operational adjustments include, but are not limited to:

- adjusting to HOV3+ free with HOV2s discounted tolls
- adjusting to HOV3+ free with HOV2s full tolls
- adjusting to tolling HOV2s on individual tolling segments such as direct connectors to or from other freeways
- periodic adjustments of tolling rates to maintain operations on individual tolling segments

The Express Lanes would be available for carpools, California Highway Patrol (CHP) vehicles, Caltrans vehicles, emergency vehicles (e.g. police, fire, and ambulance), vanpools, and buses at no cost and would be available to SOV(s) for a fee when there is excess capacity. The preliminary operating policies for the Express Lanes proposed under Alternative 3 are discussed in further detail in Section 2.2, Project Alternatives.

With the intention of opening the Express Lanes with HOV2+, this controversy has been potentially reduced. As proposed at Open Year, all existing HOV users will be able to continue to use this new tolled facility at no cost.

2. **Local City Concern:** The City of Costa Mesa has expressed concern with the need for the Express Lanes included in Alternative 3 south of the Santa Ana River. The traffic analysis shows the need for additional capacity south of the Santa Ana River. The City has also expressed concern with the height of the direct connector between the proposed Express Lanes and the median of SR-73. Two design options were considered for the direct connector, a high option and a low option. The high option design would place the direct connector above the existing Fairview Road overcrossing bridge with the direct connector touching down and merging with the I-405 mainline north of the Fairview Road overcrossing. The high option design would retain the existing Fairview Road overcrossing of the I-405 mainline. The low option design would have the direct connector touching down and merging with the I-405 mainline south of the Fairview Road overcrossing and adding a travel lane in each direction to the I-405 beneath the Fairview Road overcrossing. The spans of the existing Fairview Road overcrossing are insufficiently long to accommodate the additional lanes that the low option would place beneath the overcrossing. Based on the concerns of the height and cost of the high option, it has been eliminated from consideration.

Consequently, the Fairview Road overcrossing must be replaced to accommodate the additional travel lanes beneath it. A direct connector has been planned for this location to serve HOV lanes planned for SR-73.

The southern terminus of the proposed project is at the interchange of SR-73. The additional lanes provided on I-405 would terminate either at locations north of the SR-73 interchange where lanes are currently dropped/added, thereby removing the lane drop/add, or at SR-73, depending upon the alternative. Additionally, SR-73 is a reasonable location to terminate the Express Lanes because it is tolled and SR-73 is a tolled facility approximately 3 miles south of I-405.

Through the public review process of the Draft and Supplemental EIR/EIS and continued coordination with the City of Costa Mesa, this issue has been discussed and Caltrans will continue to coordinate with the City of Costa Mesa to ensure impacts to the community are minimized.

3. Funding: Full funding has been secured for Alternative 1 but not for Alternative 2 or 3. Alternative 3, with its tolled Express Lanes, was included in the project development process because it has revenue-generating potential and because it provides a congestion management element not present in the other build alternatives. The Draft Initial Financial Plan will be completed prior to the award of construction contract.

Project Schedule

Table S-3 summarizes the general schedule for the project, subject to funding availability and obtaining all required approvals and permits.

Table S-3: Project Schedule

Milestone	Date
Circulation of Draft EIR/EIS (Completed)	May 2012
Circulation of the Supplemental Draft EIR/EIS (Completed)	June 2013
Identify Preferred Alternative and the level of design detail (Completed)	Summer 2014
Circulation of Final EIR/EIS	Early 2015
Issue ROD	Spring 2015
Completion of anticipated permits, licenses, and approvals after ROD	2016
Anticipated begin construction	2016

Permits and Approvals Needed

The permits and/or approvals listed in Table S-4 are anticipated to be required for project construction. Caltrans will work closely with all the agencies, utility companies, municipalities, and/or local jurisdictions to maintain communication and coordination throughout the project development process and receipt of the various permits.

The proposed project is a “Major Project” as defined by FHWA because it would cost in excess of \$500 million. Consequently, FHWA requires that a Project Management Plan and Financial Plan be prepared for the project. Additionally, the project is subject to federal Cost Estimate Reviews. A draft Project Management Plan must be submitted to FHWA prior to approval of the ROD. The Initial Financial Plan must be approved by FHWA prior to authorization of federal aid funds for construction.. The Financial Plan must be updated annually thereafter over the life of the project. The first Cost Estimate Review for Alternative 3 was completed February 2015 and the Final will be completed after the ROD.

Table S-4: Probable Permit Requirements and Approvals

Agency	Permit/Approval	Status
Federal Agency Permits/Approvals		
United States Army Corps of Engineers (USACE)	Section 404 Nationwide Permit for filling or dredging waters of the United States	Application for Section 404 Nationwide Permit anticipated after Final EIR/EIS distribution.
	Section 408 Permit for Approved Modification or Alteration of the Federal Project.	Section 408 Permit has been obtained from USACE.
FHWA	Approval for Modified Access Report to the Interstate System	The Draft modified access report has been submitted to FHWA for review and comment. Upon approval FHWA will issue a "Letter of Acceptability."
	Project-Level Air Quality Conformity Finding	FHWA concurrence February 9, 2015
	Draft Project Management Plan, Draft Initial Financial Plan, and first Cost Estimate Review	The Draft PMP will be completed prior to the ROD. The first Cost Estimate Review for Alternative 3 was completed February 2015 and the Final will be completed after the ROD. The Draft Initial Financial Plan will be completed prior to the award of construction contract.
U.S. Navy	Encroachment Permit for relocation of gas lines	Permit will be obtained prior to start of construction.
State Agency Permits/Approvals		
California State Legislature	Design-Build Authority (Alternative 3 only)	Legislative Authority exists.
	Authority to Operate Toll Facility (Alternative 3 Only)	Authority has been granted under a P3 Arrangement.
California Department of Fish and Wildlife (CDFW)	Section 1602 Streambed Alteration Agreement	Application for Section 1602 agreement anticipated after Final EIR/EIS distribution.
Regional Water Quality Control Board (RWQCB), Region 8 (Santa Ana)	Section 401 Water Quality Certification	Application for Section 401 certification anticipated after Final EIR/EIS distribution.
State Water Resources Control Board (SWRCB)	Construction General Stormwater and Caltrans' Statewide National Pollutant Discharge Elimination System (NPDES) Permits	Project design plans will comply with RWQCB General Orders No. 2009-0009-DWQ (NPDES Permit No. CAS000002) and 2012-0011-DWQ (NPDES Permit No. CAS000003).
California Public Utilities Commission (CPUC)	Compliance with CPUC General Order 131-D regarding relocation electrical lines 50 kV or greater	Prior to relocation of electrical lines 50 kV or greater, approval must be obtained from CPUC.
	Approval of the project, based on	Must be completed prior to

Table S-4: Probable Permit Requirements and Approvals

Agency	Permit/Approval	Status
	review of the GO 88B Application	construction within or above railroad ROW.
Union Pacific Railroad (UPRR)	Construction and Maintenance Agreement with the Railroad	Must be completed prior to construction within or above railroad ROW.
County Agency Permits/Approvals		
Orange County Flood Control District (OCFCD)	Encroachment Permit	Letter or permit will be obtained during final design or construction within OCFCD property.
Orange County Sanitation District (OCSD)	Special Purpose Discharge Permit	Must be obtained prior to any discharge to the sanitary sewer system. OCSD will review/approve water quality criteria of discharged water.
Orange County Health Care Agency	Well permit for wells and test borings	Letter or permit will be obtained prior to construction.
California Highway Patrol	Law Enforcement Agreements (Alternative 3 only)	Law enforcement agreements between CHP and Caltrans will be required prior to beginning operation of the Express Lanes.
Utility Company/County and Municipal Service Provider Permits/Approvals		
SCE, California Gas Company, Chevron, Paramount Petroleum, Plains All-American Pipeline, and Verizon Communications, XO Communications, Time Warner Cable, AT&T, Qwest Communications, and MCI World Com/Sprint, City of Seal Beach, City of Westminster, City of Long Beach Gas and Oil, Orange County Water District (OCWD), Mesa Consolidated Water District	Utility Agreements for Approval to relocate, protect in place, or remove utility facilities	Prior to any construction within utility conflict areas.

Table S-4: Probable Permit Requirements and Approvals

Agency	Permit/Approval	Status
Local Jurisdiction Permits/Approvals		
Cities of Costa Mesa, Fountain Valley, Huntington Beach, Westminster, Garden Grove, Seal Beach, and the community of Rossmoor	Freeway Agreements	Agreements will be concluded with each of the cities in which project construction will take place.
	Section 4(f) <i>De Minimis</i> Impact Finding	Concurrence on “ <i>De Minimis</i> Finding” to Section 4(f) resources have been obtained.
	Encroachment Permits for any encroachments into public ROW owned by these jurisdictions	Will be obtained prior to any encroachment.

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