SUMMARY

Schuyler Heim Bridge Replacement and SR-47 Expressway Project

Draft Environmental Impact Statement/ Environmental Impact Report and Section 4(f) Evaluation

Commodore Schuyler Heim Bridge (Br. No. 53-2618) and SR-47 in the Ports of Long Beach and Los Angeles, Los Angeles County, California
07-LA-47-KP 4.4/9.3 (PM 2.7/5.8)
EA: 238500

August 2007

Caltrans

Summary

S.1 Introduction

This Summary provides an overview of information provided in the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Schuyler Heim Bridge Replacement and SR-47 Expressway project. This project would occur within the Ports of Long Beach and Los Angeles and the cities of Long Beach and Los Angeles and is planned to be completed in 2011. This Summary provides a condensed version of the technical information discussed in the EIS/EIR and includes references to the complete sections of the document for additional detailed analysis and discussion.

This EIS/EIR describes the purpose and need for the project, the alternatives being considered, and the potential environmental impacts of those alternatives pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Draft EIS/EIR consists of two volumes: Volume I contains the environmental analyses, and Volume II contains the technical appendices. Technical reports prepared in support of the EIS/EIR analyses are referenced in the appropriate section of the document and are available for review.

S.2 Joint NEPA/CEQA Document

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 CEQA and NEPA. Caltrans is the lead agency under 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 U.S.C. 327. Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA.

After comments are received from the public and reviewing agencies, Caltrans may undertake additional environmental and/or engineering studies. A Final EIS/EIR, will be circulated; the Final EIS/EIR will include responses to comments received on the Draft EIS/EIR and will identify the preferred alternative. Following circulation of the Final EIS/EIR, if the decision is made to approve the project, a Notice of Determination will be published for compliance with the California Environmental Quality Act, and a Record of Decision will be published for compliance with the National Environmental Policy Act.

S.3 Project Location

The project area addressed in the Draft EIS/EIR generally lies between Terminal Island on the south and SR-91 (Artesia Freeway) on the north, and between I-710 (Terminal Island

Freeway) on the east and I-110 (Harbor Freeway) on the west. This project area includes the Port of Long Beach, Port of Los Angeles, Wilmington District of the City of Los Angeles, southern part of the City of Carson, and western portion of the City of Long Beach. The southern portion of the project area consists primarily of industrial uses associated with the ports. To the north, the area is a mix of industrial, residential, and commercial uses. The project area is shown in Figure S-1.

S.4 Project Purpose and Need

S.4.1 Project History and Need

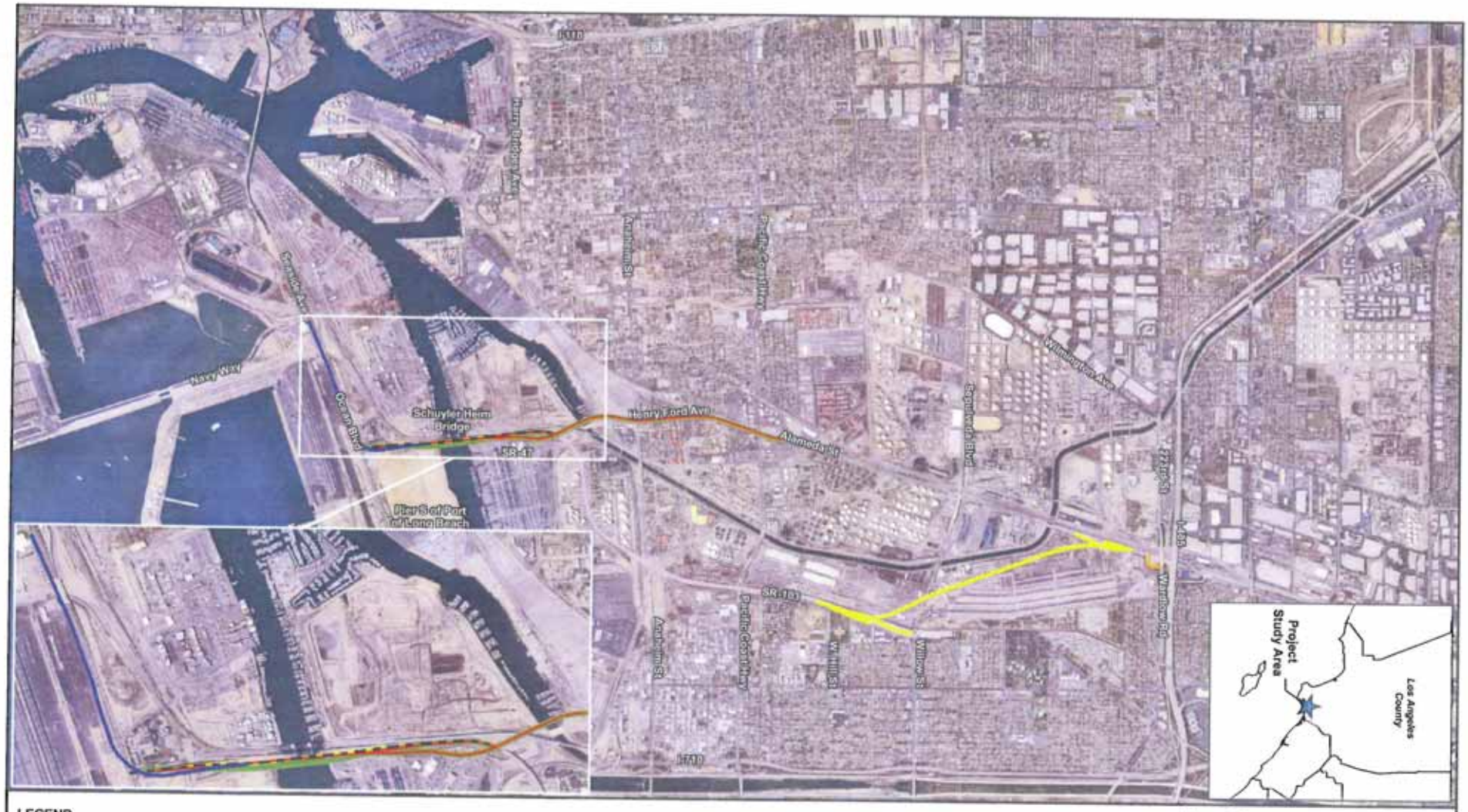
S.4.1.1 Schuyler Heim Bridge

The Commodore Schuyler F. Heim Bridge (Schuyler Heim Bridge) crosses the Cerritos Channel in the Port of Long Beach, was commissioned by the United States Navy between 1946 and 1948, and is one of three bridges that connect Terminal Island to the mainland. The bridge was named for Commodore Schuyler F. Heim, commanding officer of the Terminal Island Naval Base throughout World War II. The United States Navy completed construction of the bridge in 1948 and then turned it over to the City of Long Beach, which operated the bridge until 1974. The bridge is a vertical lift structure with a 73-meter (m) (240-foot [ft]) span. It has an 820-ton movable (lift) span that is supported by two cross-braced steel towers suspended by cables, and a pair of 400+-ton counterweights.

Historic records indicate that, by 1951, the Schuyler Heim Bridge showed significant settlement caused by oil extraction in Long Beach Harbor. In 1951, the towers were leaning approximately 3.8 centimeters (cm) (1.5 inches [in]) to the east, and the approach structures had settled as much as 10.2 cm (4.0 in). The combined effects of settlement and leaning created the potential to bind the moveable parts and cause the lift span to fail. Subsequently, the towers were straightened, and additional work was conducted on the approaches, truss bearings, guard rails, pier footings, and lift span guide rollers.

During the 1950s, the City of Long Beach pumped groundwater into depleted oil fields beneath the harbor, which mitigated the bridge's rate of subsidence. However, the harbor continued to sink, requiring bridge repairs. By the end of the decade, the shifting terrain beneath the bridge foundations had caused cracks in the reinforced concrete pillars beneath the bridge, requiring additional repairs. Throughout the 1960s, 1970s, and 1980s, bridge repairs continued for routine maintenance, as well as for damage caused by trucks and marine vessels. In 1987, the Whittier Narrows earthquake (Richter magnitude [M] 5.9) twisted a heavy girder in one of the towers. In 1988, Caltrans initiated a $2 million project to refurbish the bridge to accommodate increased vehicular and marine traffic in response to expansion of the ports.

After the 1994 Northridge earthquake, the Schuyler Heim Bridge was determined to be in need of seismic retrofit improvements. A Project Scope Summary Report (PSSR) was completed in 1998 to program the retrofit project and included the plans, specifications, and engineering estimate (PS&E) for the retrofit. During the PS&E phase, it was determined that replacement of the bridge would be more cost-effective and practical than retrofitting the existing bridge to meet seismic requirements for a major earthquake. Therefore, the retrofit design was halted.



LEGEND

- Alternative 1: Bridge Replacement and SR-47 Expressway
- Alternative 2: SR-103 Extension
- Alternative 3: Bridge Demolition Avoidance
- Alternative 4: Bridge Replacement Only
- Wardlow Road/223rd Street Ramp
- Ocean Boulevard/SR-47 Flyover
- Existing SR-103

Aerial Date: May 2002, AirPhotoUSA

Note: Project components not to scale

0 2,800 Feet

0 1,000 Meters

Figure S-1
Project Location and Build Alternatives
Schuyler Heim Bridge Replacement and SR-47 Expressway

Subsequently, in consultation with the U.S. Coast Guard, Caltrans developed several fixed-span bridge alternatives. These alternatives met the project purpose of complying with the 1994 state mandate for Caltrans to strengthen its bridges, and met the need to comply with seismic requirements, reduce potential safety hazards to vehicular and marine traffic, and provide a cost-effective solution to the ongoing deterioration of the bridge.

S.4.1.2 Expressway

Independent of considerations related to the Schuyler Heim Bridge, an expressway was envisioned as part of a series of regional transportation improvements at the southern end of the Alameda Corridor to provide improved transportation, circulation, and goods movement to and from the Ports of Long Beach and Los Angeles. The SR-47 Expressway is cited in the Southern California Association of Governments Regional Transportation Plan. It would build upon a network of local streets by constructing a high-capacity expressway connecting the Ocean Boulevard/SR-47 Interchange with Alameda Street at Pacific Coast Highway, thereby providing a missing link in the local transportation system.

The existing SR-47 extends east from the southern terminus of the Harbor Freeway (I-110) in San Pedro, over the Vincent Thomas Bridge, along Seaside Avenue and Ocean Boulevard, then north across the Cerritos Channel on the Schuyler Heim Bridge, continuing north on Henry Ford Avenue, then onto Alameda Street until its terminus at I-10 in downtown Los Angeles.

The SR-103 Expressway is an alternative to the SR-47 Expressway. It also would build upon a network of local streets by constructing a high-capacity expressway that connects existing SR-103, beginning about 0.8 kilometer (km) (0.5 mile [mi]) north of Pacific Coast Highway, to Alameda Street at a point about 0.8 km (0.5 mi) south of the San Diego Freeway (I-405).

Currently, to connect from Terminal Island to Alameda Street, vehicles must travel 1.5 km (0.9 mi) north from Ocean Boulevard, then exit at the Henry Ford Avenue off-ramp and travel north through local streets, signalized intersections, and railroad crossings for about 2.0 km (1.2 mi) before joining Alameda Street just south of Pacific Coast Highway. Alameda Street continues north of Pacific Coast Highway for 4.0 km (2.5 mi) and connects to the I-405. About 5.5 km (3.4 mi) north of I-405, Alameda Street connects to the Artesia Freeway (SR-91).

The existing SR-103 begins north of the Schuyler Heim Bridge at the Terminal Island Freeway, where SR-47 exits at Henry Ford Avenue. SR-103 continues north to Pacific Coast Highway, where it ends. The Terminal Island Freeway continues past the terminus of SR-103 and ends at Willow Street/Sepulveda Boulevard.

S.4.2 Project Purpose

The purpose of the proposed project is to:

- Provide a structurally and seismically safe vehicular connection along the critical north-south corridor between Terminal Island and the mainland that can remain in service following a major earthquake to ensure that ground and vessel transportation are maintained.

- Improve operational and safety design features of the crossing to facilitate the movement of people, freight, and goods, while meeting current design standards to the maximum extent feasible.

The purpose of the proposed project also is to provide a high-capacity alternative route for traffic between Terminal Island and I-405 that would:

- Reduce traffic congestion on local surface streets (between Terminal Island and Pacific Coast Highway), as well as on I-110 and I-710.
- Improve safety by providing a limited-access route between Terminal Island and I-405 that would:
  - Eliminate at-grade railroad crossings and signalized intersections.
  - Connect the Schuyler Heim Bridge with an emergency service route that would facilitate movement to and from the ports following a major earthquake.

This high-capacity link would allow traffic to continue northward along Alameda Street, or SR-103, and provide essential north-south connectivity with the regional freeway system (I-405 and SR-91) for the movement of people and goods to and from the ports.

S.4.3 Project Need

Overall, there is a need to provide for uninterrupted transport of people, freight, and goods between Terminal Island and the mainland after a major earthquake. Currently, structural and operational deficiencies with the Schuyler Heim Bridge and transportation route in the project area that interfere with that need. These deficiencies are summarized below.

Schuyler Heim Bridge:

- Seismically and structurally deficient and functionally obsolete
- Substandard safety design standards. Lane widths, bridge rails, and shoulder widths do not meet Caltrans standards
- Delays to movement of people, freight, and goods caused by raising the bridge to allow marine traffic to pass underneath
- Safety issues related to traffic congestion caused by raising the bridge to allow marine traffic to pass underneath
- Bridge is near the end of its useful and functional life cycle.

Transportation route in the project area:

- Shortage of north-south freeway capacity
- Congestion on local surface streets
- Potential for incidents related to cross-traffic at intersections and railroad crossings.

S.5 Summary Description of the Project Alternatives

This section provides a summary description of the proposed project alternatives. More detailed descriptions are provided in Chapter 2.0 – Project Alternatives.

S.5.1 Alternatives Evaluated in the Draft EIS/EIR

As addressed in the Draft EIS/EIR, the project consists of six alternatives:

- Alternative 1/1A: Bridge Replacement and SR-47 Expressway
- Alternative 2: SR-103 Extension to Alameda Street
- Alternative 3: Bridge Demolition Avoidance
- Alternative 4: Bridge Replacement Only
- Alternative 5: Transportation System Management
- Alternative 6: No Build

Alternatives 1 through 4 are considered the "build" alternatives, as shown in Figure S-1.

S.5.1.1 Alternatives 1 and 1A: Bridge Replacement and SR-47 Expressway

S.5.1.1.1 Alternative 1

This alternative involves replacement of the existing Schuyler Heim Bridge, construction of a new SR-47 Expressway to provide a high-capacity alternative route along the Alameda Corridor for traffic between Terminal Island and Alameda Street at Pacific Coast Highway, and construction of a flyover that would divert eastbound Ocean Boulevard traffic directly onto northbound SR-47 and across the new bridge. Construction activities for the replacement bridge and SR-47 Expressway are planned to begin in 2009 and be completed in 2011. Construction of the flyover is planned to begin in 2015 and be completed in 2017.

With this alternative, a new fixed-span bridge would be constructed, primarily within the existing bridge right-of-way (ROW) (Caltrans Highway Easement), but toward the east to avoid impacts to the railroad on the Badger Bridge, immediately to the west; the existing Schuyler Heim Bridge (lift bridge) would be demolished. The replacement bridge would be 13 m (43 ft) wider than the existing bridge due to the addition of standard shoulders, which are not present on the existing bridge. The replacement bridge would include three 3.6-m (12-ft) lanes (two through-lanes and one auxiliary lane), with 3-m (10-ft) shoulders in the northbound direction, and four 3.6-m (12-ft) lanes (three through-lanes and one auxiliary lane), with 3-m (10-ft) shoulders in the southbound direction. Bridge construction would include a southbound off-ramp and northbound on-ramp at New Dock Street on Terminal Island, as well as a northbound off-ramp and southbound on-ramp at Henry Ford Avenue on the mainland side of the bridge. With this alternative, the new bridge would be supported by four piers in the channel, with a minimum vertical clearance of 14.3 m (47 ft) over the mean high water level (MHWL). This clearance would be maintained for the width of the navigable channel, which would be 54.9 m (180 ft), the same as under existing conditions.

The new SR-47 Expressway would begin on Terminal Island, at the intersection of SR-47 and Ocean Boulevard, extending north over New Dock Street and onto the new fixed-span bridge. The expressway would extend northward to Alameda Street, south of the intersection with Pacific Coast Highway, a distance of approximately 2.7 km (1.5 mi).

The expressway would grade-separate five at-grade railroad crossings and three signalized intersections along its length. A segment of the expressway would be constructed as a viaduct over Henry Ford Avenue and Alameda Street and return to grade at Alameda Street, just south of Pacific Coast Highway. Under this alternative, connectivity to SR-103 would be maintained.

The Ocean Boulevard/SR-47 Flyover (flyover) would begin on Terminal Island, about 1,200 m (3,900 ft) west of the Ocean Boulevard/SR-47 intersection, extend eastward along the south side of Ocean Boulevard, and then turn north, cross over Ocean Boulevard and onto the new bridge. The west end of the flyover would be at grade, then rise to a maximum elevation of 21 m (69 ft) to join the new bridge. The elevated portions of the flyover would be supported by fourteen single-column bents, one 2-column outrigger bent, with a total of 15 spans. The flyover would have an overall length of 830 m (2,723 ft), ending at the northerly end point (gore point) of the northbound New Dock Street on-ramp onto the bridge. The left lane of the flyover would converge with the SR-47 through lane to the left; the right lane of the flyover would continue as a northbound SR-47 through lane and would have the option to continue to SR-47 or SR-103. The flyover would be located entirely within the City and Port of Long Beach.

S.5.1.1.2 Alternative 1A: Haunch Bridge Design

Alternative 1A is a structural variation of Alternative 1. The main purpose of this alternative is to improve the aesthetics of the replacement bridge over the Cerritos Channel and span a greater horizontal distance across the channel between columns. This is accomplished by increasing the span lengths over the channel and arching the superstructure soffits (the bottom of the bridge structure). Under this alternative, the new bridge would be supported by two piers (four columns) in the Cerritos Channel, compared to four piers (eight columns) under Alternative 1. As with Alternative 1, the minimum vertical clearance between the piers would be 14.3 m (47 ft). This clearance would be maintained for the width of the navigable channel, which would be 54.9 m (180 ft).

Other aspects of this alternative, the SR-47 Expressway and Ocean Boulevard/SR-47 Flyover, would be the same as described for Alternative 1.

S.5.1.2 Alternative 2: SR-103 Extension to Alameda Street

With this alternative, the existing Schuyler Heim Bridge would be replaced by a fixed-span bridge, and the flyover described under Alternative 1 would be constructed.

This alternative also would extend SR-103 to the northwest on a four-lane viaduct to join Alameda Street between Sepulveda Boulevard and I-405. Improvements to SR-103 would begin approximately 3.2 km (2 mi) north of the Schuyler Heim Bridge and extend a distance of approximately 2.6 km (1.6 mi). The viaduct would cross over the Union Pacific Railroad manual yard and San Pedro Branch, through the Southern California Edison (SCE) utility corridor, across the Los Angeles Harbor Department Warehouse 16/17 area, over Sepulveda Boulevard, then parallel the western boundary of the Intermodal Container Transfer Facility (ICTF) to the centerline of Alameda Street. The viaduct would slope to grade south of the Wardlow Road ramps to I-405. Improvements would be made to the existing SR-103 to accommodate the southerly and northerly end connections of the viaduct.

S.5.1.3 Alternative 3: Bridge Demolition Avoidance

This alternative would preserve the existing Schuyler Heim Bridge and construct a new fixed-span bridge on an alignment east of the existing bridge. Under this alternative, the new bridge would have the same lane configuration as the replacement bridge for Alternative 1. Additionally, the SR-47 Expressway and Ocean Boulevard/SR-47 Flyover described under Alternative 1 would be constructed, and connectivity with SR-103 would be maintained.

S.5.1.4 Alternative 4: Bridge Replacement Only

This alternative is provided as a means of constructing a new bridge over the Cerritos Channel and, at the same time, preserving the existing bridge. The Schuyler Heim Bridge has been determined to be a historic property and is eligible for listing in the National Register of Historic Places. With Alternative 3, the existing bridge would be retrofitted and left in place, but would not be used. However, according to the U.S. Coast Guard, when a bridge is no longer used for its permitted purpose of providing land transportation, the bridge shall be removed from the waterway. Therefore, removal of the existing Schuyler Heim Bridge would be included as a condition of the federal permit for the replacement bridge.

This alternative would replace the existing Schuyler Heim Bridge (lift bridge) with a fixed-span bridge, largely along the existing bridge alignment, generally as described under Alternative 1. Also with this alternative, connectivity with the SR-103 would be maintained. The existing Schuyler Heim Bridge would be demolished, as would occur under Alternative 1.

With this alternative, however, no roadway improvements would occur, and the flyover would not be constructed. Additionally, the SR-47 Expressway described in Alternative 1 would not be constructed, and the SR-103 Extension to Alameda Street described in Alternative 2 would not be constructed.

S.5.1.5 Alternative 5: Transportation System Management

This alternative is designed to identify low-cost, easily implementable improvements to the local roadway system as an alternative to constructing more expensive improvements. This Transportation System Management (TSM) alternative focuses on improvements to routes that parallel the proposed SR-47 Expressway, and that serve the same trips. These trips include trucking drayage trips to and from the ICTF, and trips destined to and from the ports via Alameda Street, Henry Ford Avenue, and SR-47. The TSM alternative would include measures to improve capacity and traffic circulation at the Port of Long Beach and Port of Los Angeles through policy changes and use of the latest technologies. With this alternative, capital investment would be minimal compared to Alternatives 1 through 4.

The TSM alternative for this project includes the following key elements:

- **Intelligent Transportation Systems (ITS):** Systems applications in and around the ports area, with special emphasis on truck movements. These include measures to improve traffic circulation through traffic control, incident management, traffic surveillance, and traffic information dissemination with the aid of intelligent transportation system devices and systems.

- **Lower-cost roadway and intersection improvements:** Measures include restriping to provide additional turn lanes and acceleration lanes and traffic signalization improvements, primarily within existing rights-of-way.
- **Minor roadway widening:** There also could be peak-hour parking prohibitions to remove mid-block bottlenecks along selected roadways.

S.5.1.6 Alternative 6: No Build

Under this alternative, there would be no change to the existing Schuyler Heim Bridge or local roadway system. The existing Schuyler Heim Bridge would continue to be seismically inadequate and subject to damage or collapse under strong seismic conditions. Maintenance activities would continue and would include application of protective coatings; lift mechanism repairs; deck resurfacing; and other, similar, maintenance activities. The bridge is expected to continue to deteriorate over time as its useful life is eroded further and as various magnitude earthquakes are experienced. At some point in the future, the bridge may need to be demolished and replaced, solely to avoid safety hazards.

This No Build alternative also would not provide any facilities to deal with the projected increase in vehicular traffic in the ports area.

S.5.2 Alternatives Considered and Withdrawn

Three alternatives were considered and then eliminated from further consideration:

- Retrofit of the existing Schuyler Heim Bridge
- Extension of SR-103 to I-710
- Extension of SR-103 to I-405

S.5.2.1 Retrofit of Existing Schuyler Heim Bridge

The seismic retrofit project for the Schuyler Heim Bridge identified by Caltrans in 1998 involved retrofit of the approach structures and truss portions of the lift bridge, which would maintain the existence of the historic structure. The bridge could continue to be used, pending structural damage, such as from a major earthquake.

This alternative was eliminated. Based on cost comparisons of repairing the Schuyler Heim Bridge, Caltrans confirmed that constructing a new fixed-span bridge was more cost-effective than rehabilitating the existing bridge (Caltrans, 1999a). In addition, Caltrans has determined that the seismic retrofit alternative would not provide an emergency service facility that would be able to withstand a major earthquake and be serviceable immediately following a major earthquake (Caltrans, 1998).In addition, if a retrofit project were redesigned such that the bridge could be put into service immediately following a major earthquake, the foundations and pilings of the existing structure would have to be demolished and reconstructed. This alternative was eliminated from further consideration primarily because of the expense. It was determined that the cost to rehabilitate the bridge would be $213 million, while the cost to replace it with a new lift bridge would be $196 million, and the cost of building a new fixed-span bridge would be $86 million (Caltrans, 1999a).

S.5.2.2 SR-103 Extensions

The two alternatives to extend SR-103 would provide for a north/south expressway by extending the existing SR-103 corridor rather than constructing a facility on the SR-47 alignment. SR-103 is a 2.6-km (1.6-mi) state highway starting at SR-47 near Henry Ford Boulevard, and ending at Pacific Coast Highway. SR-103 is located north of Terminal Island in the cities of Los Angeles and Long Beach. It provides a direct link, via the Schuyler Heim Bridge, from major shipping terminals on Terminal Island to areas directly north, on the mainland.

S.5.2.2.1 Extension of SR-103 to I-710

This alternative would extend SR-103 to the north via a four-lane elevated expressway to join I-710 between I-405 and Del Amo Boulevard. A "half" interchange at I-710 would connect northbound SR-103 to northbound I-710 and southbound I-710 to southbound SR-103. With this alternative, SR-103 would fly over I-405, with no interchange. This alternative would follow the SCE easement.

This alternative presented several positive attributes; it would provide a freeway-to-freeway connection for SR-103 traffic; it would utilize available capacity of SR-103; and it would not cross the Dominguez Channel. However, it was eliminated from further consideration due to its negative features, as follows:

- It would be significantly more costly than the SR-47 Expressway alternatives.
- It would require major right-of-way acquisition.
- There would be extensive utility impacts (SCE high-voltage lines) that could require a longitudinal encroachment agreement with Caltrans.
- It would require major reconstruction of the I-710/Del Amo Boulevard interchange.
- There would be potential traffic impacts to I-710.
- There is the potential for adverse environmental impacts to the Long Beach community, including residential neighborhoods, several public schools, a park, and a church.
- It could require safety enhancements and capacity improvements on SR-103 south of Anaheim Street, as the existing SR-103 main line curve at the Pier A Terminal has a design speed of only 56 km/hour (35 miles per hour [mph]), which would be too slow with this alternative.

S.5.2.2.2 Extension of SR-103 to I-405

This alternative would extend SR-103 to the northwest via a two- or four-lane elevated expressway to join I-405 between Alameda Street and Wilmington Avenue. A "half" interchange at I-405 would connect northbound SR-103 to westbound I-405 and would connect eastbound I-405 to southbound SR-103.

This alternative presented several positive attributes; it would provide a freeway-to-freeway connection for SR-103 traffic; it would utilize available capacity of SR-103; and it would not cross the Dominguez Channel. However, it was eliminated from further consideration due to its negative features, as follows:

- It would be significantly more costly than the SR-47 Expressway alternatives.

- It would require major right-of-way acquisition.
- There would be extensive utility impacts (SCE high-voltage lines).
- It would require major reconstruction of the I-405/Wilmington interchange.
- There would be potential traffic impacts to I-405.
- There is the potential for adverse environmental impacts to the Long Beach community, including residential neighborhoods, several public schools, and a park.
- It could require safety enhancements and capacity improvements on SR-103 south of Anaheim Street, as the existing SR-103 main line curve at the Pier A Terminal has a design speed of only 56 km/hour (35 mph), which would be too slow with this alternative.

S.6 Project Impacts

Potential impacts and avoidance, minimization, and/or mitigation measures for the proposed project are shown in Table S-1, which provides summaries of construction and/or operations impacts for each of the project alternatives. As shown in the table, measures are proposed that would avoid, minimize, or mitigate virtually all of the potential impacts. Exceptions include air quality impacts during construction and operation of Alternatives 1 through 4, and cultural resources impacts under Alternatives 1 through 4.

More extensive discussions of potential project impacts are provided under each environmental resource section in Chapter 3.0 of this Draft EIS/EIR. Based on information provided in Chapter 3.0, no avoidance, minimization, or mitigation measures are proposed for Land Use, Recreation, Coastal Zone; Growth; or Energy. For these three environmental resources, the effects of the project alternatives would not require that any additional measures be implemented.

S.7 Project Funding

For the proposed project, Caltrans has agreed to contribute $250 million from the State Highway Operation and Protection Program (SHOPP) for replacement of the Schuyler Heim Bridge. The Alameda Corridor Expressway portion of the project is intended to be funded primarily by Caltrans and the Alameda Corridor Transportation Authority (ACTA), with contributions from the Port of Long Beach and Port of Los Angeles. ACTA is in the process of evaluating alternatives from various funding sources.

Construction of a new expressway would require acquisition of right-of-way (primarily aerial and subsurface easements) from the Ports of Long Beach and Los Angeles, and from the City of Los Angeles. In most cases, the property would continue to be available for use by the ports and the city, but with some restrictions. The current right-of-way cost estimates for Alternatives 1 through 4 include approximately $19.0 million to $114.4 million for non-ports properties. Within the Ports of Long Beach and Los Angeles, the costs are estimated to be approximately $29 million.

Caltrans would provide quality assurance for the duration of the project. Caltrans and ACTA would provide the required staffing. Estimated staffing requirements have been

calculated as 545.52 person years (PY) for the total project, which includes 54.44 PY for Caltrans quality assurance within the Caltrans right-of-way. The Caltrans quality assurance project support cost is estimated at $4 million within the right-of-way.

The total cost estimates vary by alternative, as follows:

- Alternative 1 – $659.1 million
- Alternative 2 – $709.2 million
- Alternative 3 – $733.9 million
- Alternative 4 – $388.5 million
- Alternative 5 – $10.7 million
- Alternative 6 – $0 (no cost)

S.8 Public Involvement

S.8.1 Previous Public Involvement

In 2002, Caltrans and ACTA began formal public scoping and initiation of environmental studies for a previous project that included replacement of the Schuyler Heim Bridge and construction of an elevated SR-47 Expressway between Terminal Island and Alameda Street at Pacific Coast Highway. For the previously proposed project, the formal scoping and public involvement process began when a Notice of Preparation (NOP) to prepare an EIR/EA was sent to the State Clearinghouse on January 28, 2002. Notice letters were sent to federal, state, and local agencies, and notices were published in local newspapers. A scoping meeting for the previous project was held on February 13, 2002.

Subsequently, the FHWA determined that an EIS would be required, and a Notice of Intent (NOI) to prepare an EIS was published in the *Federal Register* on June 8, 2004, with notices sent to the appropriate local, state, and federal agencies. Then, an NOI to prepare an EIS for the project proposed in this document was published in the *Federal Register* on July 26, 2004, and notices were sent to the appropriate local, state, and federal agencies. In September 2004, a scoping notice to inform the general public of the proposed project was published in the following newspapers: *Los Angeles Times*, *Long Beach Press Telegram*, *Daily Breeze*, *La Opinion*, and *The California Journal* (see Appendix F for copies of these notices).

Scoping letters and briefings were provided to elected officials and staff including, but not limited to, U.S. senators and house members, the California governor's office, State senators and assembly members, and local officials from the County of Los Angeles, City of Los Angeles, City of Long Beach, City of Carson, and City of Compton. In addition, presentations were made to stakeholder groups, including the Wilmington Neighborhood Council, Port of Los Angeles Port Community Advisory Committee, and Wilmington Chamber of Commerce. Scoping letters also were sent to individuals who requested notice of projects in the community.

Two formal scoping meetings/open houses were held at the Wilmington Senior Citizens Center during the afternoon and evening of September 9, 2004. The meetings introduced the project to responsible and cooperating agencies and the public, and solicited comments and concerns pertinent to the project.

Public concerns included noise, air quality, health, and traffic impacts on the residential areas in the City of Carson, construction and operation effects on Leeward Bay Marina, conflicting use of property along Alternative 2 (SR-103), traffic impacts to Pacific Coast Highway, traffic connection to eastbound SR-91, and port growth. Based upon written comment letters received from Latham & Watkins, PCR Services Corporation, and representatives from Watson Land Company, additional public noticing and commenting opportunities were provided to clarify the project alternatives and study area. An additional display ad was advertised in the *California Crusader News*, from February 24, 2005, through March 2, 2005.

Various issues were raised in comments received in response to the NOI or in comments submitted to the project team during the course of the environmental evaluation. These issues are summarized in Section S.12 – Areas of Controversy.

S.8.2 Ongoing Public Involvement

Additional public involvement will occur during the circulation period, when this Draft EIS/EIR is provided to agencies and the public, comments on the document are received, and there is a public hearing on the Draft EIS/EIR. After the public circulation period, all comments will be considered, and the FHWA and Caltrans will select a preferred alternative and make the final determination of the project's effect on the environment. A Final EIS/EIR then will be prepared for the preferred alternative and will address public comments on the Draft EIS/EIR.

In accordance with CEQA, Caltrans will: certify that the project complies with CEQA; prepare findings for all significant impacts identified; prepare a Statement of Overriding Considerations for impacts that cannot be mitigated below a level of significance; and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans will then file a Notice of Determination with the State Clearinghouse that will identify whether or not: the selected project alternative will have significant impacts; mitigation measures were included as conditions of project approval; findings were made; and a Statement of Overriding Considerations was adopted.
In accordance with NEPA, it was determined that an EIS was required to evaluate the proposed project alternatives. Based on the information provided in the EIS/EIR, Caltrans will determine a preferred alternative and issue a Record of Decision (ROD) to notify the public of the selected alternative and the reasons for that decision.

S.9 Project Coordination with Other Agencies

Below is a list of federal, state, and regional agencies and individuals who were consulted during the scoping process, contributed information for inclusion in the text, and/or contributed information for inclusion in the various technical reports prepared in conjunction with this Draft EIS/EIR. Table S-2 provides a list of agency actions, permits, and approvals that would be required for completion of the proposed project.

S.9.1 Federal Agencies

National Marine Fisheries Services
United States Coast Guard

United States Army Corp of Engineers
United States Fish and Wildlife Service
United States Environmental Protection Agency

S.9.2 State Agencies

California Department of Fish and Game
California Department of Conservation, Division of Oil and Gas, District 2
California Regional Water Quality Control Board, Los Angeles, Region 4
California State Parks and Recreation
California Transportation Commission
California Coastal Commission
Department of Toxic Substances Control, Cypress office
State Historic Preservation Office

S.9.3 Regional Agencies

Metropolitan Transportation Authority
Southern California Association of Governments
South Coast Air Quality Management District

S.9.4 Local Agencies

City of Carson
City of Carson, Department of Health
City of Commerce, Department of Health and Services, Public Health Investigation
City of Los Angeles
City of Los Angeles, Department of Building and Safety
City of Los Angeles, Bureau of Sanitation, Industrial Waste Management Division
City of Long Beach
City of Long Beach, Department of Health, Hazardous Materials
City of Long Beach, Department of Health and Human Services
Long Beach Parks, Recreation and Marine
Long Beach Unified School District
Los Angeles City Fire Department

S.9.5 Tribal (Section 106)

S.9.5.1 Native American Consultation

In accordance with Section 106 of the National Historic Preservation Act, a request was made to the Native American Heritage Commission (NAHC) for a review of the *Sacred Lands Inventory* to determine if any known cultural properties are present within or adjacent to the project area of potential effects (APE). The NAHC responded, stating that no Native American cultural resources are known to exist within or adjacent to the project APE and provided a list of Native American groups and individuals for further consultation.

During the period of May through June 2002, the project solicited information and comments regarding cultural resources in the project area from local governments, public

and private organizations, and other parties likely to have knowledge of, or concerns about, such resources. No responses were received following consultation.

A second round of consultation with the NAHC for the SR-103 Extension to Alameda Street was conducted in 2004; the NAHC again responded stating that no Native American cultural resources are known to exist within or adjacent to the project APE. On October 19, 2004, groups and individuals were again contacted regarding the SR-103 portion of the project. Again, no responses were received following consultation.

S.9.6 Other Coordination Activities

In addition to the above, there have been ongoing coordination meetings between ACTA, the Alameda Corridor Engineering Team (ACET), the Port of Long Beach, and the Port of Los Angeles during project design and development. These meetings have addressed environmental and engineering issues associated with the proposed project alternatives to assure that the project does not interfere with ongoing operations and planned development at the ports, particularly at Pier A and Pier S. As a result of these meetings, the project alternatives have been designed to accommodate the interests of the ports and the pier operators. The issues addressed include, but are not limited to, at Pier S, advance planning for potential effects to the existing oil wells near Cerritos Channel, avoidance of the remediation cells, and compensation for loss of vehicular and equipment parking space. At Pier A, the SR-47 Expressway has been designed so the support columns avoid the operations buildings and avoid the alignment of a planned tunnel under SR-47. In addition, the design of the project alternatives is consistent with planned development at Pier A and Pier S. Another project element, the Ocean Boulevard/SR-47 Flyover, was developed as a result of these coordination meetings.

Also, the Project Development Team (PDT) conducts monthly coordination meetings to address design issues of all the alternatives in accordance with the needs of the various entities. Agencies in attendance at the PDT meetings include ACET, ACTA, representatives from Caltrans headquarters and Caltrans District 7, City of Carson, Federal Highway Administration, City of Los Angeles Department of Transportation, POLA and POLB.

S.10 Unresolved Issues

Regarding air quality, some members of the public requested a health risk assessment (HRA) be completed for the project alternatives. To address this concern, and in compliance with FHWA and Caltrans policy, a Mobile Source Air Toxics (MSAT) study was conducted.

S.11 Scope and Content of the Draft EIS/EIR

This Draft EIS/EIR examines the potential direct, indirect, and cumulative environmental effects of alternatives for the proposed project in accordance with requirements of NEPA and CEQA. The document describes why the project is being proposed, project alternatives, construction methods, the existing environment that could be affected by the alternatives, anticipated effects from each alternative, measures to avoid, minimize, or mitigate adverse effects, and those effects that cannot be fully mitigated.

The Draft EIS/EIR is organized into nine chapters, plus this Summary and the Appendices, as follows:

Summary
This chapter provides a summary of the project alternatives, potential adverse effects and avoidance, minimization, and/or mitigation measures, the scope and content of the Draft EIS/EIR, document organization, and key principles in preparing the document.

Chapter 1.0 Project Purpose and Need
This chapter describes the purpose and need for the project and the project objectives.

Chapter 2.0 Project Alternatives
Chapter 2.0 describes the project location, project background, alternatives evaluated in this Draft EIS/EIR, and alternatives initially considered but eliminated from further consideration.

Chapter 3.0 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures
This chapter is divided into 16 sections that address a specific environmental resource area. The sections are arranged according to the Human Environment, Physical Environment, and Biological Environment. Each environmental resource section describes the baseline condition as of July 2004, criteria for evaluating environmental effects, assessment methodology, effects of each alternative, and avoidance, minimization, and/or mitigation measures that would reduce or eliminate adverse effects.

Other sections of this chapter address the Relationship Between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity; and Irreversible and Irretrievable Commitments of Resources.

Chapter 4.0 California Environmental Quality Act Evaluation
Chapter 4.0 provides a discussion of significant adverse impacts as determined in compliance with CEQA criteria, mitigation measures that would eliminate or reduce the extent of such impacts, and unavoidable adverse impacts determined in accordance with CEQA criteria.

Chapter 5.0 Cumulative Impacts
This chapter describes the impact of each environmental resource by alternative, in combination with other reasonably foreseeable past, present, and future related projects in accordance with requirements of NEPA and CEQA.

Chapter 6.0 Summary of Comments and Coordination
Chapter 6.0 includes a description of the scoping process and coordination with public agencies and Native American tribes.

Chapter 7.0 List of Preparers
Chapter 7.0 identifies the individuals involved in preparing this Draft EIS/EIR.

Chapter 8.0 Distribution List for the Draft EIS/EIR
This chapter includes federal, state, regional and local agencies, groups, organizations, businesses, individuals, and libraries that will receive copies of the Draft EIS/EIR.

Chapter 9.0 References
Chapter 9.0 identifies the documents and other sources of information utilized in preparing this Draft EIS/EIR. References are arranged according to the section/chapter of the Draft EIS/EIR where they appear.

Appendices

A	CEQA Checklist
B	Elevations
C	Section 4(f) Evaluation
D	Title VI Policy Statement
E	Relocation Impacts (DRIR)
F	Public Notices
G	Project Scope Summary Report (Seismic Retrofit)
H	Avoidance, Minimization, and Mitigation Measures
I	Rights-of-Way

S.12 Areas of Controversy

The following areas of controversy were raised in comments received in response to the NOI or comments submitted to the project team during the course of the environmental evaluation:

- **Marine vessel detours and economic impacts.** The proposed replacement bridge is designed for a fixed vertical clearance of 14.3 m (47 ft). Potential adverse effects could occur with respect to marine vessels traveling in Cerritos Channel that are too tall to clear the 14.3-m (47-ft) vertical limit. Such vessels would be required to detour through the outer harbor, with a consequent economic impact.
- **Historic Schuyler Heim Bridge**. The existing Schuyler Heim Bridge is considered eligible for listing in the National Register of Historic Places and the California Register of Historic Resources. Demolition of the existing bridge or obstruction of views of the existing bridge behind the replacement bridge would constitute a substantial change in the significance of a historical resource.
- **Pier S and Pier A Property Acquisitions.** Property acquisitions required in areas of Pier S and Pier A would alter the planned physical layout and operation of the Pier S and Pier A Terminals by the Port of Long Beach.
- **Health Risk Concerns – Toxic Air Contaminants.** Health risk concerns are related to the increased diesel truck traffic in proximity to the Wilmington community as a result of a new expressway.
- **Community Concerns**. Numerous comments were raised by various community groups in the Wilmington area and City of Carson in opposition to the project. These relate to redirection of truck traffic closer to the Wilmington area, with resulting air emissions, noise, light and glare, and traffic issues, and concern for the effects to the aesthetics of the commercial and residential neighborhood.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
3.1 LAND USE, RECREATION, AND COASTAL ZONE	No avoidance, minimization, and/or mitigation measures are proposed related to Land Use, Recreation, and Coastal Zone.
3.2 GROWTH	No avoidance, minimization, and/or mitigation measures are proposed related to Growth.
3.3 COMMUNITY IMPACTS	
CONSTRUCTION **Alternatives 1, 1A, and 3** Permanent full acquisition of six businesses located on 10 parcels, permanent highway easements of approximately 125 partial takes (aerial/highway easements), and 78 temporary construction easements. Nine boat slips would be acquired at the Leeward Bay Marina. **Alternative 2** Two buildings would be acquired as permanent highway easements, thereby denying them of their existing use for business. There are 61 partial parcel takes (permanent aerial/highway easements) and 44 temporary construction easements. **Alternative 3** There are 24 temporary construction easements takes and 32 partial parcel takes (permanent aerial/highway easements with Alternative 3. **Alternative 4** Approximately 17 partial takes for permanent aerial/highway easements.	**CI-1** Provide relocation assistance or compensation to eligible persons and businesses in accordance with the federal Uniform Relocation Assistance and Property Acquisition Act of 1970, as amended (42 USC Sections 4601-4655) and the California Relocation Act (California Government Code, Section 7260 et. seq.)
OPERATIONS	No avoidance, minimization, or mitigation measures related to Community Impacts are proposed for project operations.
3.4 UTILITIES AND PUBLIC SERVICES	
CONSTRUCTION Alternatives 1, 1A, 2, 3, and 4 The build alternatives would affect existing utilities in the project area, requiring relocation and avoidance, with the potential for some service disruption.	**U-1** Provide advance notification to utility users of the potential for service disruption and the anticipated time/date of the disruption.
Both the existing Schuyler Heim Bridge and the new bridge would be closed temporarily for up to 1 month, and the southbound SR-47 exit ramp at New Dock Street would be closed for approximately 4 months. As a result, land-based public and emergency services that rely upon the Schuyler Heim Bridge as their primary emergency route, including Port Police and LBFD, would be required to use alternative emergency response routes (primarily the Vincent Thomas and Gerald Desmond Bridges).	**U-2** Prior to bridge construction, notify watch commanders and station chiefs of all fire, police, and other land- and water-based response stations that service the port area or use the Schuyler Heim Bridge or Cerritos Channel as a travel route to respond to service calls in order to minimize delays to emergency response providers during project construction.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
There would be a temporary closure of Cerritos Channel to marine vessel crossings for approximately 25 days at various times throughout the period of bridge construction.	This action will allow for the identification of alternate routes and the development of contingency response plans, including: • Temporary interim policies that will identify alternative resources within the public service and emergency response organization (i.e., alternative response units located closer to the incident); and • Mutual aid agreements between bordering public service and emergency response organizations (i.e., LAFD and LBFD) that could be dispatched
	U-3 Specify in the contract that construction in the Cerritos Channel must occur in a manner that allows emergency marine vessels to pass or be carried out in such a way that barges with construction equipment will be moved quickly to allow passage of emergency vessels.
	U-4 Determine where construction-related activities have the potential to disrupt response routes and coordinate with Los Angeles and Long Beach police and fire departments, as well as any local emergency medical service units.
	U-5 Utilize a Transportation Management Plan that is agreeable to all emergency service providers and the project design team.
	U-6 During final design, after selection of the preferred alternative, a determination will be made regarding which of the identified utilities will be relocated. Plans for the relocations will be developed in consideration of the project schedule and consultation with the utility providers which include, but are not limited to, LADWP, LBWD, SCE, SCG, GTE/Verizon, AT&T, City of Los Angeles. In addition, pipeline relocations will be planned and implemented in consultation with TOPCO, Exxon Mobil, Gulf Oil, and SCG. In further consultation with utility providers, some obsolete utilities may be removed at the request of the provider.
OPERATIONS	No avoidance, minimization, or mitigation measures related to Utilities and Public Services are proposed for project operations.
3.5 TRAFFIC AND TRANSPORTATION	
CONSTRUCTION **Alternatives 1, 1A, and 2** Project construction is expected to have temporary effects to off-street employee parking and marine terminal equipment parking at the Port of Long Beach Pier A East and Pier S Terminals.	**T-1** Prior to construction, temporary parking spaces will be provided to replace existing parking capacity that will not be available during project construction. Caltrans will coordinate with the Port of Long Beach and Port of Los Angeles to identify replacement parking for the Pier A East and Pier S

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Up to 820 off-street employee parking spaces and 54 marine terminal equipment spaces would be affected. **Alternative 3** Project construction is expected to have temporary effects to off-street employee parking and marine terminal equipment parking at the Port of Long Beach Pier A East and Pier S Terminals. Up to 977 off-street employee parking spaces and 167 marine terminal equipment spaces would be affected. **Alternative 4** Project construction is expected to have temporary effects to off-street employee parking and marine terminal equipment parking at the Port of Long Beach Pier A East and Pier S Terminals. Up to 587 off-street employee parking spaces and 54 marine terminal equipment spaces would be affected.	Terminals. Exact locations will be determined after consultation with responsible parties, including property owners. Considerations of feasibility will include, but not be limited to, vehicle capacity, time of availability, distance from terminal(s), and the need for employee shuttles. **T-2** The Transportation Management Plan (TMP) will be implemented to enhance vehicular and pedestrian traffic.
OPERATIONS **Alternatives 1, 1A, 2, and 4** Project operation is anticipated to have permanent effects to approximately 15 employee parking spaces at the Port of Long Beach Pier S Terminal. During project operations, up to 12 parking spaces may be taken from businesses at the southeast corner of Alameda Street and M Street, depending on final column placement. Also, 15 to 25 on-street parking spaces may be impacted along the east side of Henry Ford Avenue between Grant Street and Anaheim Street.	**T-3** Compensation for the permanent loss of an estimated 15 employee parking spaces at the Port of Long Beach Pier S Terminal will be provided. Compensation will be based on an agreement between Caltrans and the Port of Long Beach.
Alternative 5 Under this alternative, there could be permanent effects if on-street parking is removed to provide additional travel lanes.	No avoidance, minimization, and/or mitigation measures are proposed for Alternative 5. As necessary, measures would be developed and included in the Final EIS/EIR if this alternative is chosen for development.
3.6 MARINE VESSEL TRANSPORTATION	No avoidance, minimization, and/or mitigation measures are proposed related to Marine Vessel Transportation.
3.7 VISUAL RESOURCES	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** Construction of a new bridge, flyover, and/or expressway would result in specific impacts to the visual environment of those portions of the project area in view of the new facility(ies).	**VR-1** The surfaces of columns, roadway barriers, soundwalls, and gore points will receive surface color treatments at specified locations, as determined by a Caltrans Licensed Landscape Architect.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	VR-2 Elements of the design of the proposed bridge and expressways, such as color, line, texture, and style, would be aesthetically pleasing and as unobtrusive as possible. During final design, particular attention would be paid to the vertical columns and soundwalls.
	VR-3 All visual design elements, including landscaping, would be designed and implemented with the concurrence of the Caltrans Licensed Landscape Architect and in compliance with local policies and guidelines.
	VR-4 Trees and vines will be planted along soundwalls and other walls at specified locations, as determined by a Caltrans Licensed Landscape Architect.
	VR-5 Design of the elevated expressway would be compatible (scale and massing) with the existing Schuyler Heim Bridge or future bridge and the Badger Avenue/Henry Ford Railroad bridge.
OPERATIONS	No avoidance, minimization, and/or mitigation measures related to Visual Resources are proposed for project operations.
3.8 CULTURAL RESOURCES	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** No archaeological resources were identified, and no archaeological sites are known to exist within the APE. If, during construction, unknown cultural materials are found, appropriate avoidance and minimization measures will be taken. **Alternative 3** If the U.S. Coast Guard requires demolition of the Schuyler Heim Bridge following implementation of Alternative 3, CR-1 through CR-4 would be implemented.	**CR-1** **Measures for Unknown Archaeological Resources** If any archaeological properties are discovered during construction, FHWA and SHPO shall be consulted, in accordance with 36 CFR 800.13(b).
	CR-2 Discovery of Human Remains If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Mr. Gary Iverson, District Heritage Resource Coordinator, Caltrans District 7, so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed, as applicable.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Alternatives 1, 1A, 2, and 4 Demolition and replacement of the existing Schuyler Heim Bridge would constitute an Adverse Effect on the bridge, under Adverse Effect Criterion 2(i), 36 CFR 800.5(a). In addition, demolition of the Schuyler Heim Bridge would be considered an adverse effect under significance Criterion 2(A), Section 15064.5 of the CEQA Guidelines.	**CR-3** The bridge shall be offered for sale for reuse in an alternate location to interested public agencies and non-profits. A marketing plan shall be prepared for the sale of the bridge including: a notification letter, fact sheet, list of intended recipients, as well as provisions for the salvage of smaller components in the case that there is no interest in re-use of the bridge. Advertisements shall be placed in appropriate newspapers of record. The offer shall run for 6 months. If no acceptable bids are received after 6 months this stipulation shall be deeded to have been met. The above shall be done in accordance with the U.S. Department of Transportation Historic Bridge Program 23USC144(o)(4)(A) and (B).
	CR-4 Informative permanent metal plaques shall be installed at both ends of the new bridge at public locations that provide a brief history of the original bridge, its engineering features and characteristics, the reasons for its demolition, and a statement of the characteristics of the replacement structure.
	CR-5 Pursuant to Section 110(b) of the NHPA, before the Bridge is demolished, the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) shall be contacted to determine what level and kind of recordation is required for the property. All documentation shall be completed and accepted by HABS/HAER before the Bridge is demolished.
	CR-6 Copies of the HABS/HAER report shall be disseminated to the City of Los Angeles Public Library and the City of Long Beach Public Library.
	CR-7 Information from the HABS/HAER report shall be available to the public for 10 years on an appropriate internet website.
	CR-8 A documentary (motion picture or video) shall be produced and shall address the history of the Bridge, its importance and use within the history of the Port of Long Beach and Port of Los Angeles, and demonstrate its operation and function. The motion picture or video will be of broadcast quality, of sufficient length for a standard 30-minute time period and will be made available for local broadcast stations to public access channels in local cable systems and to schools/libraries.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	CR-9 Traveling museum exhibits shall be prepared and shall address the history of the Bridge, its importance and use within the history of the Port of Long Beach and the Port of Los Angeles, and demonstrate its operation and function, appropriate for display in small museums, or for use in schools.
	CR-10 Artifacts removed from the Bridge during preliminary stages of the demolition process shall be offered to local museums, and provide for their delivery to accepting institutions. Examples of such artifacts may include, but not be limited to, control panels, instruments, structural members, railings, signage, plaques or other identifying ornamentation, street lights, navigation lights, etc.
	CR-11 Measures CR-3, CR-5, CR-8, and CR-10, above, shall be completed prior to demolition of the Bridge. All stipulations shall be completed within 1 year of demolition, unless an extension of time is agreed upon.
OPERATIONS	No avoidance, minimization, and/or mitigation measures related to Cultural Resources are proposed for project operations.
3.9 HYDROLOGY, FLOODPLAINS, AND OCEANOGRAPHY	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** Construction of the new fixed-span bridge would require excavation and other soil disturbance activities and introduce additional impervious surfaces to the project area, which would promote surface runoff of construction pollutants (i.e. trash and petroleum compounds from construction equipment) and erosion of channel banks. The pollutants would be collected by surface runoff and discharged into the Cerritos Channel. Degradation to Cerritos Channel and/or Consolidated Slip/Dominguez Channel water quality could be attributed to construction activities associated with pile placement that would disturb sediment, causing resuspension and dispersal into the water column.	**HY-1** The following are BMPs for protection of water quality of the receiving water during construction: • Tires on construction equipment that leaves a contaminated work site will be washed before the equipment leaves the site. • Within a contaminated work area, construction equipment will be cleaned only as necessary (e.g. moved to a non-contaminated area) to minimize the volume of decontamination wash water and prevent transport of contaminants from work site areas. • Designated locations will be provided for servicing, washing, and refueling equipment, away from temporary channels or swales that would quickly convey runoff to the drainage system and into the Cerritos Channel or Consolidated Slip/Dominguez Channel. • Contaminated material (e.g. oil, lubricants) will be kept at a safe distance, a minimum of 30.5 m (100 ft), from an entry into a receiving water body. Temporary barriers and containers will be used to confine any contaminated materials. Upon completion of construction, all contaminated material on the construction site will be removed and disposed of in accordance with federal, regional, and local regulations.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	• Use of marine construction equipment will not involve fuel transfers onsite. • A temporary spill containment system will be installed and maintained on either side of a water crossing. The contractor will be responsible for the containment plan and the execution of spill containment during the course of construction. The containment plan will be reviewed and approved by a resident engineer. • To prevent potential introduction of any lead-based paint into receiving waters, the contractor(s) will take appropriate measures to eliminate lead-based paint from reaching the receiving waters. If paint removal is necessary during the bridge dismantling process, the contractor will comply with all applicable laws and regulations relative to this process to ensure protection of receiving waters. • At project construction sites, as appropriate, the contractor will: – Provide stabilized entrances and exits – Regularly water the non-paved surfaces – Regularly sweep and vacuum paved surfaces – Install silt fences at the toe of excavation and embankment slopes – Install sand or gravel bag berms along the top of slopes – Install slope protection such as geotextiles, plastic covers, soil binders and erosion control blankets/mats – Install slope interruption devices such as fiber rolls and slope drains – Install permanent erosion control seeding, landscape planting or slope/rock paving – Protect storm drain inlets with inserts or linear interrupters such as gravel bag and/or sand bag berms – Manage stockpiles against wind and water erosion • Monitor and report BMP performance and conditions before and immediately after the completion of work, in accordance with SWPPP specifications.
	HY-2 Construction activities that would produce sediment transport of pollutants through the Cerritos Channel or Consolidated Slip/Dominguez Channel will be minimized through strict adherence to construction BMPs which include, but are not limited to, the following: • Channel bank work will include bank protection (riprap, concrete walls, and sheet piling) to eliminate the possibility of enhanced bank erosion. • Use of cofferdams during blasting or other bank or sediment disturbing construction activities. • Use of turbidity curtains in lieu of silt curtains.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	HY-3 Groundwater encountered during construction will be temporarily stored onsite, tested, transported, treated, and disposed offsite. A dewatering permit will be obtained from the Los Angeles RWQCB. Based on results of the groundwater assessment and recommendations from the RWQCB, one of the following will be utilized for disposal of groundwater from the proposed dewatering operation: • Onsite treatment • Treatment and disposal offsite • Disposal into local sewer system To dispose of groundwater into the City of Los Angeles sewer system, an Industrial Wastewater Discharge Permit is required, which is issued by the City of Los Angeles Department of Public Works, Bureau of Sanitation, Industrial Waste Management Division. To satisfy permit conditions, treatment of discharge water could be required.
OPERATIONS	No avoidance, minimization, and/or mitigation measures related to Hydrology, Floodplains, and Oceanography are proposed for project operations.
3.10 WATER QUALITY AND STORMWATER RUNOFF	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** Soil erosion from nearby bridge construction areas might allow surface runoff into the channel, resulting in solids transport and elevated levels of phosphates, TSS and TDS. Demolition of the existing Schuyler Heim Bridge could result in paint, rust debris, and particulate matter being deposited into the Cerritos Channel. Certain constituents, including copper, zinc, and a number of the organic compounds (PAHs), would be suspended in concentrations in excess of the WQC for a short time before being diluted. With the CIDH construction method for bridge support structures, holes for the support structures would be passively filled with groundwater, which would be removed prior to filling with slurry and concrete. The removed groundwater would then be disposed of properly.	See **HY-1, HY-2**, and **HY-3**, above.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
OPERATIONS **Alternatives 1, 1A, 2, 3, and 4** Surface runoff effects from replacement bridge on the water quality of the Cerritos Channel are expected to vary depending on: Incidental drippings from vehicles and accidental spills that introduce contaminant material, or waste discharge from the bridge and its approach structures Bridge maintenance activities Potential redirection of stormwater runoff Surface runoff would flow into the Cerritos Channel and may include: Particulates from pavement wear and vehicles Metals such as zinc, lead, iron, copper, cadmium, chromium, nickel, and manganese Bromide (from leaded gasoline exhaust) Diesel fuel Tire wear Auto body rusting Metal plating Break lining wear Greases and lubricating oils from automobiles and trucks Trash discarded from vehicles Pathogenic bacteria (indicators) from soil, litter, bird droppings, and stockyard waste hauled by vehicles on the new bridge	**WQ-1** BMPs for surface runoff include construction of barriers at entry points to receiving waters to prevent large debris from entering the receiving water, and continuous monitoring of the new bridge structures for excessive buildup of debris that could be discharged in a precipitation event.
Alternatives 3, 5, and 6 Under Alternatives 3, 5, and 6, the existing Schuyler Heim Bridge would remain. (Under Alternatives 5 and 6, the bridge would continue to operate.) Low levels of pollutants from runoff from the bridge surface, painting of the steel truss members, and periodic introduction of paint material flaking from the bridge would continue.	**WQ-2** The following BMPs will be continued as related to ongoing maintenance for the existing Schuyler Heim Bridge: • Remove excess grease from moving parts of bridges manually and collect it for disposal. • Degrease prior to painting and hydro-blast to remove old paint with additive-free water, where possible. • Erect shrouds around working areas and suspend nets and tarps below bridges to catch debris from abrasive removal of old paint and over-spray from painting, where wind conditions permit. • Anchor tarps to barges below and enclose the bridge above to confine debris, where the bridge deck is not too far above water level.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	• Use barges and booms to capture fugitive floating paint chips and custom-built enclosures to confine and capture abrasives, old paint chips, and paint. • Use vacuum or suction shrouds on blast heads to capture grit and old paint. • Carry out storing, mixing, and cleaning operations on land. • Keep all materials securely locked up, to avoid vandalism and accidental spills into the watercourse. • Schedule bridge maintenance to avoid egg incubation, juvenile rearing, and downstream migration periods of fish.
3.11 GEOLOGY/SOILS/SEISMICITY/ PALEONTOLOGY/ TOPOGRAPHY/MINERAL RESOURCES	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** **Geology and Geologic Resources** The project is located in an area of active faulting and historic ground shaking resulting from fault movement. Earthquakes could occur from movement on seven active, historically active, or potentially active faults ranging in distance of 85 km (53 mi) to 0.3 km (0.2 mi) from the project site.	The following avoidance and minimization measures would be incorporated into final project design: **GEO-1** Design criteria, standards, and procedures contained in state and local jurisdiction standards and specifications (e.g., Uniform Building Code) would be applied during final design of the project, including earthquake-resistant standards to reduce potential effects from a major earthquake.
In addition, more than 80 percent of the project site is located in an area where historic occurrences of liquefaction, subsidence, and/or geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacement.	**GEO-2** A geotechnical study would be completed for all areas associated with load-bearing features, and areas with potential for slope failure (e.g., trenches) and soil subsidence, and a geotechnical report would be prepared. The geotechnical report would include project-specific recommendations consistent with standards established by state and local jurisdictions. Geotechnical report recommendations would be incorporated into final project design.
	GEO-3 Monitoring during construction would be performed by a licensed geologist or engineer to verify construction occurs in compliance with features, standards, and practices included in final design to reduce potential effects from earthquake damage; slope and/or foundation instability; erosion, sedimentation, and flooding; land subsidence; and volcanic hazards.
Paleontology Excavation for bridge column footings and, at depths greater then 1.5 m (5 ft) below the current ground surface, any footing for elevated roadways, including on-ramps, off-ramps, and bridge approaches, would have a high potential for encountering fossil remains at previously unrecorded fossil sites and, therefore, could affect paleontologic resources if any such resources were encountered during construction.	**PALEO-1** Implement Paleontological Resource Impact Mitigation Program which includes, but is not limited to, the tasks shown below. Additional detail is provided in the Paleontological Resources EIS/EIR Technical Section (Jones & Stokes, 2005). • Program will be directed by a paleontologist or paleontological consulting firm approved by Caltrans. • Conduct program in compliance with lead agency and professional society guidelines.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	• Develop and obtain museum storage agreement • Coordinate with construction contractor to provide information regarding lead agency requirements for the protection of Paleontological resources. • Conduct paleontological monitoring, as appropriate. • Treat any specimens collected in accordance with museum repository requirements. • Transfer any collected fossils to museum repository. • Maintain daily monitoring logs. • Prepare final report.
OPERATIONS	No avoidance, minimization, and/or mitigation measures related to Geology/Soils/Seismicity/ Paleontology/ Topography/Mineral Resources are proposed for project operations.
3.12 HAZARDOUS WASTE/HAZARDOUS MATERIALS	
CONSTRUCTION **Alternatives 1, 1A, and 4** Construction activities could encounter hazardous materials (and thereby have the potential for release of such materials) as a result of excavating subsurface soil, disturbing groundwater, or removing aboveground structures.	**HAZ-1** Conduct a soil investigation prior to any soil excavation for the build alternatives (1 through 4). The investigation would assess the potential presence of hazardous contaminants and determine disposal options if necessary for the contaminated soil. The soil investigation could consist of an ADL investigation and investigation for other contaminants of concern due to effects from adjoining properties.
	HAZ-2 Evaluate soil and groundwater information for the adjoining Sunshine Truck Stop, LA Refining Company, Texaco Refining, TCL, Dow Chemical, and former Long Beach Naval Shipyard property to assess potential effects. If the review indicates evidence of contamination or a lack of sufficient data, a soil and groundwater investigation will be conducted, and further measures will be implemented, as necessary.
Alternatives 1, 1A, 2, and 4 Demolition of the existing bridge, which has the potential to contain regulated and/or potentially hazardous materials, including lead-based paint and asbestos, could result in the release of asbestos into the surrounding environment, where it could then enter the Cerritos Channel and adversely affect surface water quality.	**HAZ-3** Inform demolition contractors of the potential presence of LBP in structures subject to demolition, and applicable Occupational Safety and Health Administration (OSHA) and other regulatory measures shall be adhered to in the demolition of such structures. If contamination is encountered during the construction process, implement appropriate health and safety measures to protect workers and the general public. Such measures may include engineering controls, requiring appropriate personal protective equipment, worker monitoring, and site-specific health and safety plans.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	HAZ-4 A licensed professional will conduct a predemolition survey of the Schuyler Heim Bridge ACM and LBP. The purpose of the survey would be to determine the presence of regulated and/or potentially hazardous construction materials on the bridge. Any demolition activities that would remove or disturb these materials would implement measures in accordance with applicable regulations. As required by law, the abatement contractor shall be a licensed professional.
	HAZ-5 Conduct asbestos removal in conformance with Rule 1403 of the South Coast Air Quality Management District (AQMD) and EPA's National Emissions Standards for Hazardous Air Pollutants regulation.
	HAZ-6 Paint from the dismantled bridge sections would be chemically removed at a suitable offsite location in an upland area. This will be done to avoid the introduction of lead-based paint into the receiving waters. If paint removal is necessary during the dismantling process, the contractor would comply with all applicable laws and regulations relative to this process to ensure protection of receiving waters.
Alternative 2 Portions of the alignment of the SR-103 Extension overlie two former landfills. One of these, the Alameda Street Landfill, is proposed to be included in the National Priority List (NPL). If soil excavation at this landfill occurs during construction of the SR-103 Extension, hazardous waste could be encountered.	**HAZ-7** Groundwater data for Alternative 2 currently are not available. However, considering the history and nature of activities conducted at some of the sites within the Alternative 2 right-of-way, it is recommended that a groundwater evaluation be conducted, both to assess disposal alternatives for groundwater encountered during construction, and to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permitting process. If groundwater is found to be contaminated, it would be treated in place and/or transported for treatment and/or disposal at an appropriate facility, in accordance with applicable regulations.
	HAZ-8 If soil excavation is necessary in the vicinity of the two former landfills along the Alternative 2 alignment, a soil investigation will be conducted. If soil is found to be contaminated, it would be treated in place and/or excavated and transported for treatment and/or disposal at an appropriate facility, in accordance with applicable regulations. One of the former landfills, the Alameda Street Landfill, is proposed to be included in the National Priority List (NPL). Therefore, coordination with the Department of Toxic Substances Control (DTSC) is recommended while evaluating the viability of Alternative 2. See **HAZ-1**, **HAZ-3**, **HAZ-4**, **HAZ-5**, and **HAZ-6**, above.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Alternative 3 Construction activities could encounter hazardous materials (and thereby have the potential for release of such materials) as a result of excavating subsurface soil, disturbing groundwater, or removing aboveground structures.	See **HAZ-1** and **HAZ-2**, above.
OPERATIONS **Alternatives 3, 5, and 6** The Schuyler Heim Bridge would be retrofitted (Alternative 3, only) and remain in place and would require ongoing maintenance.	See **WQ-2**, above (Section 3.10, Water Quality and Stormwater Runoff).
3.13 AIR QUALITY	
CONSTRUCTION **Alternatives 1, 1A, 2, 3, and 4** The direct sources of construction emissions would be from construction equipment exhaust or fugitive dust. Direct emissions of CO, NO_X, ROG, SO_X, and PM_{10} are predicted to exceed daily significance thresholds during construction.	Measures for PM_{10} / $PM_{2.5}$ **AQ-1** Apply nontoxic soil stabilizers to all inactive construction areas (previously graded areas inactive for 10 days).
Impacts to sensitive receptors near construction areas would be inversely proportional to distance and would decrease with distance from the source. Construction laydown areas would be located as far from sensitive receptors as the project would allow.	**AQ-2** Replace ground cover in disturbed areas as quickly as possible.
The indirect source of construction emissions would be from marine vessels having to detour during construction. Emissions from marine vessels would exceed the SCAQMD NO_X threshold.	**AQ-3** Reduce traffic speed on all unpaved roads to 15 mph or less.
Total Total emissions (direct plus indirect) of CO, NO_X, ROG, SO_X, and PM_{10} are predicted to exceed daily significance thresholds during project construction.	Measures for CO, ROG, and NO_X **AQ-4** Develop and implement a trip reduction plan to achieve a 1.5 average vehicle ridership for construction employees.
	AQ-5 Implement a shuttle service for construction workers to and from retail services and food establishments during lunch hours.
	AQ-6 Prohibit truck idling in excess of 2 minutes.
	AQ-7 Suspend use of all construction equipment operations during second-stage smog alerts.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	AQ-8 Use electricity, if feasible, from power poles rather than temporary diesel- or gasoline-powered generators. **AQ-9** Heavy Duty Truck Buyback Program The purpose of the buyback program would be to accelerate the modernizing of the heavy duty engine fleet operating in the South Coast Air Basin. By removing the older engines in the fleet and requiring replacement with newer, cleaner vehicles, a net reduction of NOx emissions (and other combustion pollutants) would occur. This reduction would help offset marine vessel detour emissions. The protocols to be used would be consistent with the Carl Moyer Program, which is already being administered by the SCAQMD. However, this program is not available to projects such as Schuyler Heim Bridge Replacement and could not be used to actually implement this project's buy-back program. The Gateway Cities Diesel Fleet Modernization Program would be an example of a buyback program with similar reduction goals. Also, the POLA/POLB Clean Air Action Plan has a heavy duty truck buy back component. While participating in already existing programs might be preferable (and possible), it would not be necessary in order to accomplish heavy duty truck buy back. The heavy duty truck buy back could be done independently, though it would have to adhere to already accepted protocols (SCAQMD). A heavy duty truck buyback program would consist of three steps 1) identify target vehicles based on year of make; 2) provide incentives for operators to participate 3) establish a means to ensure that replacements meet the net improvement forecasted. The construction phase of this project is where the greatest impact of increased emission levels occurs. Therefore, the buyback program would be designed to mitigate the NOx emissions during that time. Based on recent buyback programs, the program for the proposed project would cost from $25,000 to $50,000 /ton of NOx reduced. This cost can vary significantly and will continue to increase as time passes. The number of tons mitigated would be based on marine vessel detour NOx emissions during construction. The rerouting of shipping vessels during project construction would amount to 132.8 lbs NOx per day, which is equivalent to 24.2 tons NOx per year. The indirect marine vessel emissions would be mitigated to a level that is below the SCAQMD significance threshold for construction emissions. It is estimated that each truck replacement would reduce an average of 0.55 tons per year of NOx and 0.12 tons per year of PM. This is based on emission factors representative of current buyback programs such as the Gateway Cities Diesel Fleet Modernization Program. These emission reductions would continue for 3 to 5 years, depending on the year of the truck updated. This timeframe would exceed the duration of the project construction phase.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
OPERATIONS **Alternatives 1, 1A, 2, 3, and 4** Indirect emissions would result from marine vessel detours around Terminal Island during operation of the new bridge. Daily emissions of NO_x would exceed the SCAQMD threshold. Operation of the new bridge would result in a net increase in emissions greater than the SCAQMD thresholds for NO_x.	No avoidance, minimization, and/or mitigation measures are proposed for project operations.
3.14 NOISE	
CONSTRUCTION **Alternatives 1, 1A, and 3** Both the Anchorage Way Marinas and Leeward Bay Marina would be subject to substantial noise effects from pile driving construction activities. Pile driving activities for the Cerritos Channel are expected to last approximately 2 weeks (10 days) for each of the two stages of falsework pile driving. Falsework pile driving for the Consolidated Slip is expected to last less than 2 weeks (10 days).	**N-1** Construction noise monitoring and control plans consistent with local noise ordinances will be prepared by a qualified acoustical engineer who is a current member of the Institute of Noise Control Engineering (INCE), and has 5 years of experience performing construction noise analyses. If mitigation is warranted, potential measures, such as screening, noise blankets, etc., would be evaluated for their effectiveness, and appropriate measures would be implemented.
Alternatives 2 and 4 The Anchorage Way Marinas only would be subject to substantial noise effects from pile driving construction activities. Pile driving activities for the Cerritos Channel are expected to last approximately 2 weeks (10 days) for each of the two stages of falsework pile driving.	**N-2** During project construction, pile driving will occur during daylight hours only.
	N-3 Residents identified as being impacted by noise from pile driving in Cerritos Channel or Consolidated Slip may obtain hotel vouchers for a local hotel so they can temporarily move. This mitigation measure would apply only during the time that pile driving is being conducted in the Cerritos Channel or Consolidated Slip. Some residents may, however, choose to stay and tolerate the noise. No other mitigation or compensation measure would be provided to residents.
OPERATIONS **Alternatives 1, 1A, 3** Leeward Bay Marina The peak-hour traffic noise levels would increase by between 1 and 10 dBA over existing conditions. Without abatement, the predicted loudest hourly noise levels would range from 61 to 67 dBA Leq(h). This alternative would result in noise levels at some locations that would approach the applicable Noise Abatement Criteria (NAC) for residential areas.	**N-4** Leeward Bay Marina Caltrans and FHWA will incorporate noise abatement in the form of a barrier along the SR-47 Expressway, with an approximate length of 239 m (785 ft) and an average height of 2.44 m (8 ft). The barrier will abate future traffic noise at 65 benefited noise-sensitive receivers. Preliminary reasonableness calculations indicate the estimated barrier cost would be approximately $23,400 per benefited residence, which is within the allowance per residence of $50,000 to $54,000.
Wilmington Neighborhood The peak-hour traffic noise levels would increase from 5 to 13 dBA over existing conditions.	**N-5** Wilmington Neighborhood For the Wilmington neighborhood, a barrier along the SR-47 Expressway and another on ground

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Without abatement, the predicted loudest hourly noise levels would range from 61 to 69 dBA Leq(h). This alternative would result in noise levels at some locations that would exceed the applicable NAC for residential areas.	level along Alameda Street, with an approximate combined length of 1,405 m (4,610 ft) and height of 3.66 m (12 ft) to 5.49 m (18 ft) would be constructed to abate future traffic noise at 56 benefited noise sensitive receivers. Preliminary reasonableness calculations indicate that the estimated barrier cost would be approximately $37,500 per benefited residence, which is within the allowance per residence of $48,000.
Alternative 2 Long Beach Neighborhood/SR-103 Extension The loudest hourly traffic noise level would either decrease by 1 to 4 dBA, increase by 1 to 2 dBA, or equal existing conditions. Without abatement, the predicted peak-hour noise levels at this location would range from 62 to 72 dBA Leq(h) and would exceed the applicable NAC at many locations within this residential receiver area.	**N-6** Long Beach Neighborhood/SR-103 Extension Caltrans and FHWA will incorporate noise abatement in the form of two barriers along SR-103 with an approximate combined length of 835 m (2,740 ft) to abate traffic noise levels. The two barriers would be 3.66 m (12 ft) high, although the barrier section along the northbound off-ramp would be 4.57 m (15 ft) high. The barriers would reduce noise levels in the receiver areas to below the NAC and would reduce noise levels for 27 equivalent frontage units. Preliminary reasonableness calculations indicate that the barriers would cost approximately $37,100 per benefited unit, which is below the allowance per residence of $44,000 to $52,000. The locations of the noise barriers are based on preliminary engineering plans and, as such, are considered to be approximate. The exact locations of these barriers would be determined during final design based on safety, engineering, and feasibility.
Alternatives 4 Anchorage Way Marinas The loudest hourly noise levels would decrease by 1 to 5 dBA. As a result, the loudest hourly noise levels would approach or meet the applicable NAC.	Under Alternative 4, no avoidance, minimization, and/or mitigation measures are proposed for project operations.
Alternatives 5 and 6 Anchorage Way Marinas The loudest hourly noise levels would increase by 4 dBA due to an increase in traffic volume. This would not be a substantial increase, but all receiver locations would exceed the applicable NAC. Wilmington Neighborhood The loudest hourly noise levels would increase by 7 to 9 dBA due to an increase in traffic volume. This would not be a substantial increase, but several areas would approach, equal, or exceed the applicable NAC. Long Beach Neighborhood/SR-103 Extension The loudest hourly noise level would either equal the existing condition or increase by 1 or 2 dBA due to an increase in traffic volume. This is not a substantial increase, but a number of areas would either approach or exceed the applicable NAC.	Under Alternatives 5 and 6, no avoidance, minimization, and/or mitigation measures are proposed for project operations.
3.15 ENERGY	No avoidance, minimization, and/or mitigation measures related to Energy are proposed.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
3.16 BIOLOGICAL RESOURCES	
CONSTRUCTION **Alternatives 1, 1A, 2, and 4** Wetlands east of the Schuyler Heim Bridge and along SR-103 could be affected by construction activities.	**B-1 Wetland Avoidance** To avoid the wetlands present to the east of the Schuyler Heim Bridge along the low tidal terrace on Cerritos Channel, and along SR-103 near Gabriel Street, construction staging, traffic, and vehicle access would be excluded from these areas to the extent feasible. Caution fencing would be installed to protect the small wetlands, and construction activities would be modified to avoid the areas. This measure also will be implemented, as necessary, to avoid adverse effects to jurisdictional waters.
Alternatives 1, 1A, 2, 3, and 4 Resuspension of fine-grained bottom sediments would occur during the replacement, including demolition (and retrofit under Alternative 3) of the Schuyler Heim Bridge in the Cerritos Channel, placement of bridge footings in the Consolidated Slip/Dominguez Channel, and other construction activities at either site. The harbor sediments in the area of the bridges are primarily silt and finer-sized fractions and, if resuspended, are expected to stay in suspension for days, resulting in exceedances of water quality standards that may last at least a few days. This relatively limited time of resuspended constituents in the water column indicates the potential for acute toxicity to invertebrates or fish but not chronic bioaccumulation or food-chain effects to birds or mammals. The Schuyler Heim Bridge is assumed to contain lead compounds, which could cause a significant adverse effect to the channel water quality during paint removal activities or demolition.	**B-2 Protecting Aquatic Communities (including Essential Fish Habitat, Coastal Pelagic Species, Groundfish)** Sediment resuspension would be minimized by adherence to construction measures such as cofferdams and turbidity curtains, which would contain resuspended sediment onsite until it settles. For some underwater construction activities (such as blasting to remove portions of the Schuyler Heim Bridge, pile driving for new bridge), these would be implemented. These measures also would reduce the noise/vibration effects of blasting and pile-driving on fish larvae. Measures that would be implemented during construction (including retrofit [Alternative 3 only], demolition, and/or new bridge installation) to minimize sediment resuspension effects include: • Channel bank work would include bank protection (riprap, concrete walls) to eliminate the possibility of enhanced bank erosion. • Cofferdams and blasting mats would be used during blasting operations. • Cofferdam, silt curtains, and/or turbidity curtains would be used during pile-driving • Turbidity curtains that are constructed of a permeable material allowing water to flow through the membrane while trapping suspended sediment would be used during underwater construction. To reduce effects to channel water quality from lead compounds in paint during removal or during bridge demolition, the following measures in some combination would be implemented: • Erect shrouds around working areas and suspending nets and tarps below bridges to catch debris from abrasive removal of old paint, where wind conditions permit. • Anchor tarps to barges below and enclose the bridge above to confine debris, where the bridge deck is not too far above water level. • Use barges and booms to capture fugitive floating paint chips and custom-built enclosures to confine and capture the abrasives, old paint chips, and paint.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	• Use vacuum or suction shrouds on blast heads to capture grit and old paint. • Perform lead-based paint removal offsite following demolition of steel members.
Construction could result in the removal of southern tarplant and other special-status species, if present on the project site.	**B-3 Protecting Special-Status Plant Species** Preconstruction surveys for southern tarplant would be conducted prior to construction. Surveys would be conducted during the blooming period for this plant, between June and October. If identified on site: • The feasibility of avoiding areas that support the species would be evaluated and, if feasible, the area would be avoided during construction. • If avoidance is infeasible, then mitigation would be required (see Mitigation Measure B-13).
The loss of active roosts of bat species (pallid bat; long-legged myotis; long-eared myotis; Yuma myotis; western mastiff bat; pocketed free-tailed bat; and big free-tailed bat) as a result of bridge removal would represent an adverse effect.	**B-4 Protecting Special-Status Bat Species** Avoidance and minimization measures apply to the following species: pallid bat; long-legged myotis; long-eared myotis; Yuma myotis; western mastiff bat; pocketed free-tailed bat; big free-tailed bat. To avoid or minimize effects to these species, the following measures would be employed relative to bridge or highway deconstruction or, under Alternative 3, seismic retrofit: • Four quarterly bat surveys would be conducted in the 12 months prior to start of construction to determine the presence or absence of the species, as determined appropriate by a qualified biologist. Surveys may include, but are not limited to the following: – Exit surveys of potential roost sites conducted by survey biologists stationed around the bridge or highway with binoculars and echolocation meters at nightfall – Surveys of all accessible potential roost sites on the bridge conducted by biologists permitted by CDFG for bat survey and handling • In the event any of the above special-status bat species are identified during field surveys, the following would be conducted: – Exclusion of active roost sites by appropriate barriers, installed during the nonbreeding season from September to March – Taking appropriate steps to exclude roosts when vacant during nighttime foraging periods when identified during construction – Delay of construction where maternity roosts are encountered, where feasible, until after the young have weaned and are in flight • Education of construction workers to identify potential roost sites, to avoid activity when identified, and to advise biological monitors when roosts are encountered.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Some noise and construction activity may affect bird nests within 456 m (1,500 ft) of the project site.	**B-5 Protecting Bird Nests and Eggs** Preconstruction surveys to identify potential nest sites for birds will be conducted within all construction areas on the bridge prior to the nesting season. Potential nest sites will be passively excluded with bird spikes, plywood, or other means, as necessary. An onsite biological monitor will be present during construction activities to ensure that nests are not established within the construction zone, and to implement passive exclusion as necessary.
Some noise and construction activity may affect least tern nesting colonies within 456 m (1,500 ft) of the project site. The breeding activities of California least tern, if present, also could be disrupted.	**B-6 Protecting California Least Tern** Prior to construction, potential breeding habitat for least tern in the vicinity of the build alternatives (Alternatives 1 through 4) would be surveyed for least tern breeding colonies during the March 1 to September 1 bird nesting season. If the species is breeding within 457 m (1,500 ft) of proposed construction areas, measures would be developed in consultation with the USFWS.
Removal and replacement of the Schuyler Heim Bridge with a concrete fixed bridge would result in the loss of a known nest site for a breeding pair of peregrine falcons.	**B-7 Protecting American Peregrine Falcon** • Historical nesting sites on the Schuyler Heim Bridge would be made unsuitable prior to the nesting season (January 15 to July 30) to avoid direct effects to individuals or an active nest site during construction. This may include positioning exclusion materials, such as plywood, on these nest sites prior to the nesting season to render the sites unsuitable. • Site monitoring during the construction period would be conducted to observe the pair's movements and document its activities. This may assist in identifying nesting attempts by the pair on adjacent structures or within the construction zone. If this occurs, and the nest site is at risk or could be at risk during the nesting season, the site can be excluded. This includes risk from egg loss which may occur on a less than optimal nest site. If the nesting attempt site is not anticipated to be at direct risk from construction disturbance during the upcoming nesting season, then the pair will be allowed to nest, and nesting success will be monitored. • Efforts will be made to coordinate the construction schedule of the Schuyler Heim Bridge with the construction schedule of the future Gerald Desmond Bridge replacement project. If these two schedules do not overlap, then the Gerald Desmond Bridge may provide a nesting location for one peregrine pair to breed at the Schuyler Heim/Desmond bridge complex, which has generally been the case in past years. Coordination meetings with the Gerald Desmond Bridge project team are ongoing.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Some noise may occur during construction that could affect areas within 152 m (500 ft) of the project site; this may disrupt breeding activities for burrowing owl, if present.	**B-8 Protecting Burrowing Owl** To avoid effects on burrowing owls, preconstruction surveys of potential breeding sites would be conducted onsite within 152 m (500 ft) of construction activities. Construction activities would be delayed, if feasible, within 152 m (500 ft) of nest sites until after the breeding season for this species (February to July). If breeding birds are present, then mitigation would be implemented (see Mitigation Measure B-14).
Construction trucks and heavy equipment may introduce or transport seeds from non-native terrestrial vegetation, resulting in colonization of existing or newly created vacant spaces with exotic vegetation.	**B-9 Protecting Against Invasive Species** Caltrans and/or its contractors will implement the following measures: • Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations. Clean construction equipment at designated wash stations before entering the construction area. • Landscaping and erosion control included in the project would not use species listed as noxious weeds. • Seed all disturbed areas with certified weed-free native mixes. Use only certified weed-free straw or rice mulch in uplands only. • Conduct a follow-up inventory of the construction area during the first spring following the completion of construction to verify that construction activities have not resulted in the introduction of new noxious weed infestations. • If new noxious weed infestations are located during the follow-up inventory, the appropriate resource agency will be contacted to determine the appropriate species-specific treatment methods.
<u>OPERATIONS</u> **Alternatives 1, 1A, 2, and 4** Birds could be injured by coming into contact with transmission lines or energized parts of the transmission lines/towers.	**B-10 Protecting Avian Species at Transmission Towers** To protect against operational impacts to birds moving about or utilizing new transmission towers, construction design standards for avian protection will be followed, including use of visual line enhancers and adequate spacing between energized parts. No lighting will be associated with new transmission towers. Design standards for avian protection will be developed from the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and USFWS *Avian Protection Plan Guidelines* (APLIC and USFWS, 2005), APLIC's *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* (APLIC, 1996), or APLIC's *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (APLIC, 1994).
Alternatives 1, 1A, 2, 3, and 4 Noise and construction activity may affect least tern breeding activities and/or nesting colonies within 456 m (1,500 ft) of the project site.	**B-11 Mitigating for Breeding Colonies of Least Tern** This measure may include the following, pending consultation with USFWS: • Breeding habitat would be disrupted during the non-nesting season when terns are absent from the site. The disruption may include placement of barriers to discourage nesting.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
	• Breeding habitat to compensate for loss would be identified and established, possibly in coordination with existing tern mitigation programs implemented by Los Angeles Harbor at other locations, such as at Pier T.
The project would result in the removal of one known peregrine falcon nesting location on the Schuyler Heim Bridge, in a territory that typically supports one pair but contains two alternate nesting locations.	**B-12 Mitigating Loss of Peregrine Falcon Nest** This measure may include the following, as appropriate, pending informal consultation with CDFG: • Create a new nest site by placing a nesting box (and potential additional support material) on a tower of the Badger Avenue Bridge or other elevated structure, as determined by a qualified biologist. Because the Badger Avenue Bridge is located immediately adjacent to the Schuyler Heim Bridge, and is approximately the same height, there is the potential that it could provide a suitable vantage point and nesting location to peregrine falcons. The peregrine pair has never nested on this bridge in the past but this may be due to an absence of suitable nesting platforms and substrate. Further evaluation of any design changes or nesting ledge installations by a qualified peregrine expert would be conducted. • Offsite mitigation. The goal of the offsite mitigation would be to augment existing peregrine populations. This could be accomplished by purchasing approximately 10 nestling peregrines from a captive breeding facility and have those young released (hacked) in an area of California where, when they disperse, they will possibly create a new nesting pair. • The local peregrine falcon population (approximately five pairs) would be monitored for 2 years. The pair located on the Schuyler Heim Bridge would be monitored to determine if they nest on the Badger Bridge, or if they integrate into other territories by filling a vacancy in another pair, or by usurping existing individuals in a pair. If offsite mitigation is conducted, hacked peregrine falcons would be monitored to determine their fate and if a new nesting pair is established. An experienced peregrine falcon biologist would conduct monitoring of the hacked peregrine falcons.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Construction could result in the removal of southern tarplant and other special-status species, if present on the project site.	**B-13 Mitigating Loss of Special Status Plant Species** If special-status plant species cannot be avoided during project construction, then seed and/or propagules of the species would be collected and replanted at an alternative location. These activities will be conducted in coordination with the resource agencies. – Mitigation measures would be refined in coordination with the resource agencies and standard practices for this species. Measures may include the following: Areas determined to have appropriate hydrology and soil chemistry (salinity) shall be reseeded with seed collected from populations of southern tarplant. Southern tarplant is restricted to saline, vernally mesic areas, often along the margins of estuaries or areas of high salinity. – For one year prior to construction as feasible, southern tarplant seed shall be collected by personnel experienced in collection of native seeds. Seed collection shall be conducted during successive years from September through December. One-half of the first year's collected seed shall be hand-broadcast at the reintroduction site with the remaining one-half stored in appropriate conditions for introduction the following year. Seed collected during the second season shall be stored for potential later use in the event that success standards are not met following the seeding during years one and two. – Because southern tarplant is an annual species, population numbers are expected to naturally fluctuate from year to year depending upon environmental conditions. Reseeded areas shall be monitored for three years following the initial seeding. Establishment shall be considered successful if plant densities during any of the three years of monitoring are comparable to densities of the impacted populations based on sampling quadrants. If established populations do not achieve comparable densities of impacted populations, additional reintroduction sites shall be identified and stored seed, obtained during the collection period, shall be introduced into additional sites over a two-year period (as in the initial reintroduction program described above).
Some noise may occur during construction that could affect areas within 152 m (500 ft) of the project site; this may disrupt breeding activities for burrowing owl, if present.	**B-14 Mitigating for Burrowing Owl** Burrowing owl individuals present within the construction area would be flushed from active burrows during the non-nesting season (August to January) and burrows excluded. These activities would be conducted in a manner consistent with the *Burrowing Owl Survey Protocol and Mitigation Guidelines*, prepared by The California Burrowing Owl Consortium in 1997. Exclusions would require maintenance and monitoring to assure that individuals do not return.

Table S-1
Potential Project Effects and Avoidance, Minimization, and/or Mitigation Measures

Environmental Resource/Impacts	Avoidance, Minimization, and Mitigation Measures*
Alternative 3 A small (about 1/4-acre) wetland is present within the footprint of Alternative 3, along the south bank of Cerritos Channel, just east of the existing Schuyler Heim Bridge. This wetland is likely to be removed under Alternative 3, as the proposed bridge alignment is directly in line with the wetland location.	**B-15 Mitigating Loss of Wetland** Under Section 404 of the Clean Water Act, a permit would be required from USACE prior to impacting waters of the U.S., including wetlands: • This may be achieved through the Nationwide Permit system, or an Individual Permit. • Compliance to permit conditions would be required. • The permit is likely to require implementation of mitigation to offset effects to waters of the U.S., including wetlands. This may include creation of offsite wetlands, or payment of fees into existing mitigation banks.
OPERATIONS	No avoidance, minimization, and/or mitigation measures related to Biological Resources are proposed for project operations.

Table S-2
Agency Actions, Permits, and Approvals Needed

Agency	Role	Action	Comment
Federal			
Federal Highway Administration	Responsible Agency	Project funding; Compliance with Executive Order 1190 re: protection of wetlands; Compliance with Uniform Relocations and Assistance Act	
National Marine Fisheries Service	Responsible Agency	Consultation re: Essential Fish Habitat; Incidental Harassment Authorization (IHA)	IHA may be required for project construction effects on harbor seal and California sea lion.
U.S. Army Corps of Engineers	Responsible Agency	Section 404 Permit (Clean Water Act); Section 10 Permit (Rivers and Harbors Appropriations Act)	
U.S. Coast Guard	Cooperating Agency	Bridge Permit (Section 9, Rivers and Harbors Appropriations Act)	
U.S. Fish and Wildlife Service	Responsible Agency	Endangered species permitting	
State			
California Coastal Commission	Responsible Agency	Coastal Development Permit	Required only if the local Coastal Development Permits are appealed.
California Department of Fish and Game	Responsible Agency	Streambed Alteration Agreement (Section 1600, Fish and Game Code); Endangered Species Permitting (as applicable)	Applicable endangered species: Peregrine falcon; bats
California Department of Transportation	Lead Agency	EIS/EIR Approval	
California Transportation Commission	Responsible Agency	Approval authority for funding and route adoption	
State Historic Preservation Officer	Responsible Agency	Consultation; Approval per Section 106 (National Historic Preservation Act)	

Table S-2
Agency Actions, Permits, and Approvals Needed

Agency	Role	Action	Comment
Regional			
Regional Water Quality Control Board	Responsible Agency	Section 401 Water Quality Certification (Clean Water Act); Section 402 National Pollutant Discharge Elimination System [NPDES] Permit (Clean Water Act); Report of Waste Discharge	
South Coast Air Quality Management District	Responsible Agency	Clean Air Act compliance.	
Local			
Alameda Corridor Transportation Authority	Project Applicant	Project funding	
California Department of Transportation	Responsible for permitting within its jurisdiction	Encroachment permits	
City of Long Beach	Responsible for permitting within its jurisdiction	Discretionary approvals	
City of Los Angeles	Responsible for permitting within its jurisdiction	Discretionary approvals; Encroachment permits	
City of Los Angeles, Bureau of Engineering	Responsible for permitting within its jurisdiction	Coastal Development Permit	
City of Los Angeles, Fire Department	Responsible for permitting within its jurisdiction	Permits for storage and use of flammable hazardous materials (explosives)	
County of Los Angeles, Department of Public Works, Flood Control District	Responsible for permitting within its jurisdiction	Encroachment permits	Specific to work in the Dominguez Channel
Port of Long Beach	Responsible Agency	Harbor Development Permit; Coastal Development Permit	
Port of Los Angeles	Responsible Agency	Application for Development Project; Coastal Development Permit	