LA-47 - Vincent Thomas Bridge Deck Replacement
(EA 07-39020)

Project Description

The project proposes to replace the entire bridge deck and seismic sensors of the Vincent Thomas Bridge (VTB), Bridge # 53-1471, on State Route 47 in the City of Los Angeles, Los Angeles County.

Route 47 is a freeway that extends from Route 110 in San Pedro via the Vincent Thomas Bridge to Route 710. The Vincent Thomas Bridge is a cable suspension steel bridge spanning the main channel of Los Angeles Harbor between San Pedro and Terminal Islands. The structure, which was completed in 1963, has a total length of 6,062 feet. The bridge, which is the main gateway to the Port of Los Angeles, carries an average of 44,500 vehicles daily of which 11% are heavy trucks.

Need

The deck of the bridge is rapidly deteriorating due to concrete fatigue caused by heavy truck traffic. In 2009, a polyester concrete overlay was applied to the bridge deck to address spalling in the bridge deck. Starting in 2011, new deck spalls began to occur and have been increasing in severity with each subsequent bridge inspection.

In-depth investigation of the bridge deck has been ongoing using ground penetrating radar equipment, rapid automated sounding equipment, and physical and chemical concrete testing. Concrete test samples showed that the deck was failing below the polyester overlay causing the subsequent spalling. According to the latest bridge inspection (2022), the deck conditions have deteriorated from fair to poor. As a result of the evident grade of deterioration of the deck and the results of the physical and chemical testing performed a technical team of the Office of Structure Maintenance and Investigation determined and recommended that the best strategy to extend the life of the bridge and provide a safe operation for the traveling public was to remove and replace the deck of both the suspended and approach spans.

Purpose

This project proposes to preserve the structural integrity of the Vincent Thomas Bridge (Bridge #53-1471) structure, restore gritty and ride conditions, and improve its overall safety features in an economical manner.

In addition, the existing median barrier and railings which currently do not meet the requirement of the new Manual for Assessing Safety Hardware (MASH), will be also upgraded. The overall stability of the bridge will be monitored with the replacement of seismic sensors.

Project Proposal, Alternatives

Two alternatives are being considered:

Alternative 1 - Programmable Project Alternative

This alternative would replace the entire bridge deck and upgrade barriers, railings, and seismic sensors. Within this full deck replacement alternative, the Bridge Design team performed a feasibility study, and several options for the bridge types were investigated. It was determined that the strategies for the deck replacement shall meet the following requirements:

- Minimize the impact on the existing bridge's load rating (LR) to avoid major structure strengthening.
- Minimize unbalanced loading effects on the existing bridge. The unbalanced loading due to dead and live loads may cause significant torsional movement of the existing truss superstructure that may cause overstress of the bridge towers and the cable system.
- Minimize the impact on existing traffic due to the deck replacement process.

The Feasibility Study deck replacement options include:

- Orthotropic steel deck
- Precast/Prestressed (PC/PS) concrete deck
- Cast-in-Place/Reinforced Concrete (CIP/RC) deck

Other major items associated with the removal and replacement of the bridge deck are:

- Replacement of 18 joint seals at approach spans.
- Replacement of 11 joint seals at suspension spans.
- Removal of 4 finger joints at suspension spans and replacement with seismic joints.
- Removal of the existing Type 2 Barrier Railing/steel plate curb and replace it with CA ST-75 Bridge Rail with Chain Link on the Railing (Type 7).
- Removal and replacement of the median concrete barrier Type 50 with Type 60G.
- Install /Upgrade of Sign and Pavement Marking per current standards.

The analysis and final determination of the type of deck will be based on technical, economical, riding quality, life span, constructability, and environmental impact factors which will be assessed during the execution of a Project Report, leading to the design phase of the project. In addition, the participation and input of the impacted community and stakeholders like the City of Los Angeles, City of Long Beach, Port of Los Angeles, and Port of Long Beach will be considered in the decision-making process.

Alternative 2. - No Build Alternative

This alternative would not preserve the life of the Vincent Thomas Bridge and does not address the deficiency in the structure.

Stage Construction – Traffic Impacts and Closures Options

Due to its location, type of structure, and physical and environmental constraints, bridge closure options due to staging considerations are of vital importance to limiting port operational impacts and achieving the constrained construction completion deadlines required by the funding of the project, the following preliminary staging options are being considered:

• **Single-Stage Construction:** full closure may last 9-12 months with detours and 24/7 work.

• **Two-Stage Construction:** partial closure up to 18-24 months one lane open/three closed with nightly and 55-hour closures – 24 to 30 months with no 55-hour closures.

• **Three-Stage Construction:** partial closure up to 24-30 months with one lane open and closed in each direction with nightly and 55-hour closures – 30 to 36 months with no 55-hour closures.

The closure durations are conservative estimates that are based on staff work experience who have performed deck repairs, finger joint repairs, and deck overlays on the Vincent Thomas Bridge over the years. Most of the work in the multistage options will be done during 55-hr and overnight bridge closures.

Anticipated detour routes will direct traffic to and from Terminal Island via the Commodore Schuyler F. Heim Bridge (SR-47) from the north and the Gerald Desmond Bridge (I-710) from the east. These detour routes potentially include West Harry Bridges Boulevard, Alameda Street, Anaheim Street, Pacific Coast Highway (SR-1), Henry Ford Avenue (SR-47), and Terminal Island Freeway (SR-103). Official detour routes will be selected during the project's approval phase.

Potential Environmental Impacts

The Environmental Document is anticipated to be an Environmental Impact Report (EIR) / Environmental Assessment (EA) depending on the outcome of public scoping and preliminary results of studies during PA&ED.

No significant right-of-way involvement is anticipated. The project will not require permanent right of way takes. Once the means and methods of construction are determined and chosen, there may be a need for construction staging area(s). Coordination with the railroad will be required, but further utility field surveys will be conducted in the PA&ED phase.

Public Scoping Meeting

An in person scoping meeting will be held on**, Thursday, April 27, 2023 from 5:30 p.m. to 7:30 p.m.** at East Wilmington Greenbelt Community Center 918 Sanford Ave, Wilmington, CA 90744.

A virtual meeting will also be available on **Thursday, May 4, 2023 from 5:30 p.m. to 7:30 p.m.** Virtual Meeting Room at virtualeventroom.com/caltrans/vtb/ or scan the QR code

Spanish interpretation will be made available at each meeting. Individuals who require special accommodation (American Sign Language interpreter, accessible seating, documentation in alternate formats, etc.) are requested to contact Caltrans District 7, Alex Brown at (213) 310-2590 at least 14 days prior to the scheduled public hearings. TDD users may contact the California Relay Service TTY line at 711.

Both the in person and virtual meeting will provide you an opportunity to obtain first-hand project information and to express your comments and concerns about the proposed project.

All comments received will become part of the project record and will provide valuable input to our environmental and design personnel. Scoping comments must be submitted by **May 26, 2023.**

Comments can be submitted via regular mail, email, or at the scoping meeting.

Mail comments to:

Jason Roach
Division of Environmental Planning (Project EA 07-39020-0)
California Department of Transportation, District 7
100 South Main Street, MS 16A
Los Angeles, CA 90012

Email comments to: caltransvtb@virtualeventroom.net

If you have any questions, please contact Jason Roach, Division of Environmental Planning, at (213) 310 - 2653. Thank you for your interest in this important project.

LA-47 VINCENT THOMAS BRIDGE DECK REPLACEMENT

PROJECT LOCATION MAP