San Francisco Bay Conservation and Development Commission

375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600 State of California | Gavin Newsom – Governor | <u>info@bcdc.ca.gov</u> | <u>www.bcdc.ca.gov</u>

May 9, 2025

SUBJECT	California Department of Transportation (Caltrans) Tolay Creek Bridge	
	Julie.garren@bcdc.ca.gov)	
	Julie Garren, Bay Resources Program Manager (415/352-3624;	
	jennifer.hyman@bcdc.ca.gov)	
	larry.goldzband@bcdc.ca.gov) Jenn Hyman, Senior Engineer (415/352-3670;	
FROM:	Lawrence J. Goldzband, Executive Director (415/352-3653;	
то:	Engineering Criteria Review Board (ECRB) Members	
то:	Engineering Criteria Review Board (ECRB) Members	

SUBJECT: California Department of Transportation (Caltrans) Tolay Creek Bridge Replacement Project, Sonoma County – ECRB Meeting (BCDC Pre-Application) (For Board consideration on May 21, 2025)

Project Name

Caltrans Tolay Creek Bridge Replacement Project (BCDC Pre-Application)

Project Representatives

Javier Mendivil, PE, Project Manager, Caltrans

Peter Wei, GE, Transportation Engineer, Office of Geotechnical Design West

Michael Bergman, PE and Lewis Shen, PE, Caltrans Structures

Gary Sjelin, PE, Hydraulic Report, AECOM

Project Components under Review in this Meeting

The new Tolay Creek Bridge, including five sets of piers, two abutments, and three poured-inplace concrete retaining walls (4, 5 and 6) and one secant pile retaining wall (#3) to support the approaches to the bridge.

While this project is at the 65% design level, Caltrans is presenting only the design criteria and design approaches for the bridge calculations; the calculations and analyses are not available at this time.

Caltrans' bridge design follows a number of standard design details as well as Caltrans design manuals including the:

- Caltrans Highway Design Manual for Province 9
- Caltrans Seismic Design Criteria with October 2019 Interim Revisions, Version 2.0 (SDC v2.0)

 AASHTO LRFD Bridge Design Specifications, 2017 edition with California Amendments updated December 2023

Project Description

Caltrans is in pre-application discussions with BCDC regarding permitting of the Tolay Creek Bridge Replacement Project (the Project) and a permit application is expected soon. The Project is Phase 1 of the State Route (SR) 37 Sears Point and Mare Island Improvement Project. The bridge will be widened, with a lane added to each direction of travel, and lengthened from about 60 to 375 feet, with corresponding excavation of material below the new bridge to widen the creek at that location. The Project's purpose is to provide traffic congestion relief to improve traffic flow at peak travel times and increase vehicle occupancy. In addition, the Project will replace and lengthen Tolay Creek Bridge to allow for future restoration of the watershed upstream of the bridge. The location of the Project is shown in Figure 1 below. The Project is part of a larger program to add a lane to each side of SR37 between SR121 at Sears Point and the Mare Island Interchange, approximately 10 miles of what is currently a two-lane highway (one lane in each direction).



Figure 1 - Location Map

The new bridge will be a six-span bridge that is 375 feet in length and about 90 feet wide to accommodate a total of five traffic lanes and two shoulders. Deep foundations for the abutments and piers are planned. Both ends of the new bridge have approaches that require new retaining walls filled in with earth, so there are four retaining walls in total. The Project is considered by Caltrans to be an interim project with a project life of about 20 years. Caltrans is planning to replace the Project in 2050 with a causeway.

Project Site and Design Criteria

Tolay Creek was historically part of a series of tidal sloughs that surrounded marsh islands and received freshwater input from Tolay Lake and runoff from the Sonoma Mountains. The 10.5-mile-long creek enters San Pablo Bay via the Tolay Lagoon, an artificial lagoon that is brackish and fully tidal, and consists primarily of mudflats and submerged baylands. Tolay Creek is tidally influenced at the crossing, and the mean high-water tidal elevation extends to just upstream of the existing bridge. The Tolay Creek channel upstream of SR 37 primarily consists of vegetated salt marsh habitat. The existing Sonoma-Marin Area Rail Transit (SMART) railroad line's at-grade-crossing, just 200 feet west of the Tolay Creek Bridge, provides a hard elevation constraint to which the proposed bridge replacement profile must conform.

<u>Hydrology</u>

The Federal Emergency Management Agency (FEMA) 100-year Base Flood Elevations (BFE) along the bridge and the eastern approach, which does not include sea level rise (SLR) or the effects of wind-driven waves, is 10 and 11 feet (NAVD 88). The 100-year tide level near this location is 9.86 feet NAVD88 (AECOM 2016).

The bridge was designed for 0.7 feet of sea level rise, for the year 2046, based on the Ocean Protection Council's (OPC) 2024 State of California SLR Guidance.

Creek modeling was performed to identify flows and the elevation of Tolay Creek at the Bridge. Different tide levels were modeled including storm surge, SLR and 50- and 100-year rainfall events. For future conditions, the maximum water surface elevation was modeled to be 9.45 feet NAVD88. The minimum soffit elevation (the bottom of the bridge) was recommended to be 12.6 feet NAVD88 based on the extreme high water elevation of 9.90 feet + 1.0 feet wave crest + 0.7 feet for SLR + 1 foot of freeboard.

Geotechnical Considerations

The site is susceptible to strong earthquake-induced ground motions during the design life of the bridge. As revealed in the borings and CPTs, very soft to soft Bay Mud to depths of 34 to 50 feet underlies the bridge. The structure is located within an Alquist-Priolo Earthquake Fault Zone for the Rodgers Creek Fault, and is located in the immediate vicinity of the mapped concealed fault trace. The Fault Rupture Report (FRR) calculates a design offset of 1.7 feet of right-lateral strike-slip offset. Vertical design offset is assumed to be 0.9 foot. The fault is estimated to have a slip rate of 9 mm/year. The potential for liquefaction and lateral spreading do not exist.

Existing grades along the southern limits of the planned bridge and eastbound widening are located along the perimeter of a tsunami hazard area. The planned structure and widening may be affected in the event of a tsunami due to the relatively low elevations.

Soil Parameters to be used in the design were derived from field investigations performed in 2023 and 2024.

Purpose of this Meeting

The purpose of the meeting is to request the review and advice of the ECRB about the safety aspects of the bridge design. The authority to review and revise engineering criteria and any safety provisions is bestowed on the ECRB through the Bay Plan policies, especially policies Nos. 1 and 2 on the Safety of Fills, and the McAteer-Petris Act government section code 66605(e), which require that all fill must be constructed "in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters."

The Board will review the following reports submitted by Caltrans presenting the design criteria for the Project.

- 1) Draft 65% Plans
 - a) Tolay Creek Bridge Plans (3 sheets)
 - b) Retaining Walls 3, 4, 5 and 6 Plans (3 sheets)
- 2) Geotechnical
 - a) Caltrans, Preliminary Foundation Report for Tolay Creek Bridge, July 22, 2024
 - b) Caltrans, Fault Rupture Report for Tolay Creek Bridge, September 30, 2024
 - c) Caltrans, Type Selection Report, November 14, 2024
 - d) Tolay Creek Bridge, Recommended Design Acceleration Response Spectrum
 - e) Preliminary Geologic Subsurface Profile
 - f) Map and Logs of CPTs and Soil Borings
 - g) Tolay Creek Bridge and Retaining Walls General Notes/Design Criteria
- 3) Final Hydraulic Report by AECOM, March 6, 2025
- 4) Acrow Temporary Bridge Structure Plans and Case Study

BCDC requests the Board to assess the following questions:

- 1. Whether the design criteria for the Project are appropriate for the existing site hazards and conditions;
- 2. Whether current flooding and future sea level rise (SLR) concerns are addressed adequately based on the references and the nature of the project; and
- 3. Whether there are any design and physical concerns that have not been addressed.