

San Francisco Bay Conservation and Development Commission

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April 27, 2026

TO: Engineering Criteria Review Board Members

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SUBJECT: Berkeley Pier and Ferry Terminal Project; Pre-Application Review
(For Engineering Criteria Review Board consideration on May 27, 2026)

Project Summary

Project Proponent

City of Berkeley and San Francisco Bay Water Emergency Transportation Authority (WETA)

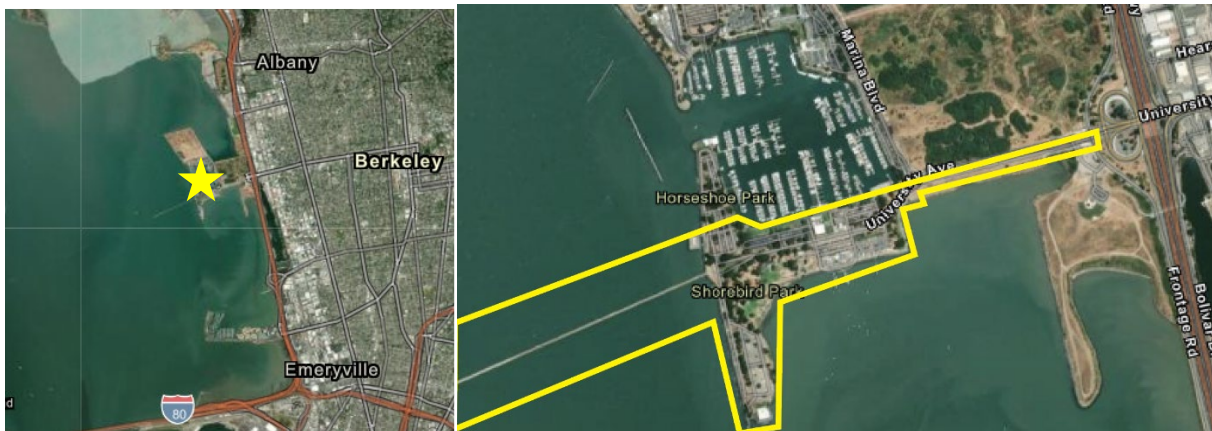
Project Representatives

Liza McNulty, City of Berkeley Capital Improvement Programs Manager
James Connolly, COWI, Design Project Manager

Project Site

The project is located at the Berkeley Waterfront along the San Francisco Bay in the City of Berkeley, Alameda County. As shown in Figure 1, the project site encompasses the closed Berkeley Pier, including the entry plaza for the Berkeley Pier and abutments adjacent to the Berkeley Pier, and the San Francisco Bay waters around the existing Pier.

Figure 1. Project Location and Boundary



Project Overview

The Berkeley Water Transportation Pier Ferry Project (Project) includes construction of a new Pier, Breakwater, and Ferry Terminal in San Francisco Bay. Landside improvements include elevation of the Plaza, pier abutments and shore stabilization north and south of the pier. The project would introduce a new zero-emissions electric ferry service, operated by the Water Emergency Transportation Authority (WETA), linking Berkeley to San Francisco and Larkspur.

The proposal includes:

Pier: replacing 1,080 feet or more of the existing closed BCDC-required public access fishing pier with a new 22-foot wide, 1,080-foot-long public Pier. The Pier would provide pedestrian access to a ferry terminal and boarding facilities, as well as emergency vehicle access.

Plaza and Shoreline: shore retention and Pier abutments to stabilize access to the Pier and elevation of the Plaza to provide safe pedestrian and vehicle access between land and the Pier.

Breakwater: a new 300-foot-long breakwater, generally perpendicular to the new pier. The Breakwater will be designed to provide access for pedestrians as well as maintenance vehicles and to shelter the Ferry Terminal from wave energy to reduce risks of ferry service interruptions.

Ferry Terminal: facilities on the north side of the Pier. Two in-line terminals have been included in the Environmental Impact Report, but only the western-most terminal closest to the breakwater will be constructed initially.

The proposed project also includes landside development, parking, transit links, pier demolition and dredging; however, these do not raise safety of fill issues and are not being brought to the ECRB for review.

Purpose of this Meeting

The ECRB met on February 25, 2026, to review and advise BCDC staff about the safety aspects of the Pier, Breakwater and Terminal designs. The authority to review and revise engineering criteria and any safety provisions is bestowed on the ECRB through the Bay Plan policies, especially Safety of Fills Policies No. 1 and 2, and the McAteer-Petris Act Government Code Section 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." At the conclusion of the February meeting, the ECRB identified several topics needing follow-up examination. The purpose of this meeting is for the Board to review these follow-up topics.

At the February 2026 ECRB meeting, the Board reviewed the following reports submitted by the City of Berkeley concerning the safety of the fill that is part of the Project.

- Basis of Design (BOD) 60% Draft ECRB Submittal 01-09-2026
- Geotechnical Report 2024-12-16 Rev 01-09-2026 ECRB Submittal 01-09-2026



- Coastal Study (December 2025); Main Report; Appendix A – eTrac Memo on vertical datum conversion; Appendix B - Sea Level Rise Risk Assessment (included twice); Appendix C – Wave disturbance maps; Appendix D - Sediment Transport Study; and Shoreline Protection Review ECRB-Submittal-01-09-2026
- Design-Drawings-60% Draft ECRB-Submittal-01-09-2026
- Structural Calculation Package 60% Draft ECRB Submittal-01-09-26
- BCDC ECRB Submittal - Response to Comments 01-25-26

The ECRB requested additional information on specific geotechnical, coastal and structural concerns. These included, among other concerns: an examination of the pier stability based on the loadings that are likely to be required under ASCE 61-26¹ and the new California Building Code; the range of stabilities analyzed for the rock dike-pile interactions; re-examination of the wave heights and runup that are likely to occur at the Pier site based on newer references provided during the ECRB meeting; examination of wave loadings on the pier structure; examination of the project design for the intermediate-high sea level rise scenario through the end of the century; and design conditions and cumulative seismic loading for pile sleeves.

Reports submitted to address these follow-up concerns include:

- BWTPF BCDC ECRB Feb. 25, 2026 Meeting Summary ADA Draft Response 4-27-26, which referenced the following Attachments:
 - Attachment No. 1a - Vertical Shift Analysis Between NOAA MLLW and City of Berkeley MLLW; eTrac, ND
 - Attachment No. 1b - BWTPF - Hydrographic Survey Vertical Datum; Email from Woolpert Dated 03-19-2026
 - Attachment No. 2 - ASCE 7-22 Response Spectra Table
 - Attachment No. 3 - ASCE 7-22 Response Spectra Figure
 - Attachment No. 4 - Updated Slope Stability Analysis

All materials provided for the February and May ECRB meetings are part of the project record and, together, address concerns related to the Safety of Fills.

¹ The ECRB requested that the Applicant discuss use of the draft ASCE 61-26; however, the Applicant noted that the Draft document stated that it should not be used for design efforts and confined their analysis to the requirements in ASCE 7-22.

Board Questions

For the initial February meeting, staff recommended that the Board frame its remarks on the proposed Pier, Breakwater and Ferry Terminal considering safety of fill and the Commission's policies on sea level rise, and shoreline protection. For the May 27, 2026, meeting, staff recommends that the Board focus its review on the follow-up topics identified at the February meeting:

1. Whether the Project's updated seismic criteria table and additional checks adequately address the Board's concern regarding codes;
2. Whether the Project's expanded slope stability search has sufficiently identified the worst-case failure plane;
3. Whether the Project's coastal analysis utilizes wind and wave data sources that are adequate and appropriate for the site;
4. Whether the Project's additional wave load calculations adequately demonstrate that wave loading does not control the design; and
5. Whether the Project's updated sleeve pile design provides sufficient displacement capacity.

Project Site

Site History

Prior to its industrialization, the Berkeley Waterfront was a tidal marsh, and its first known inhabitants were the Huchiun-Ohlone people. The site of one of the Bay Area's oldest Ohlone shell mounds, currently an asphalt parking lot at 1900 Fourth Street, is less than half a mile east of the project site. From the Gold Rush until the mid-20th century, the primary use of the Berkeley Waterfront was commercial maritime transportation. As public pressure for Bay conservation mounted in the 1950s, Berkeley Waterfront land uses shifted from primarily industrial to a mix of commercial development, recreation, and public access.

The Berkeley Marina as it exists today is located entirely on Bay fill. Development of the area began in the early 20th century with the construction of private wharves, followed by the harbor now known as the Berkeley Marina. Filling continued through the early 20th century and ended after the establishment of BCDC, when the Commission approved a few final fill projects (through 1968) to expand public access, recreation, and limited commercial activity. César Chávez Park, north of the Marina, was originally constructed in 1957 as a municipal landfill, but was capped and opened to the public as a park in 1991.

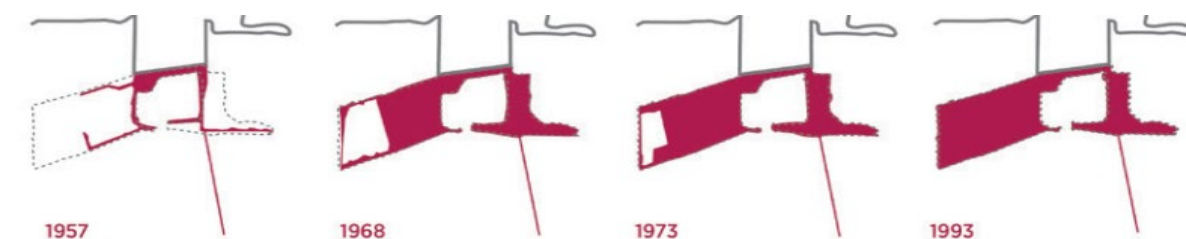
The Berkeley Waterfront is located on State Public Tidelands. Public Tidelands are generally all subject to the Public Trust Doctrine, and the California State Lands Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways.



Berkeley Pier

In 1926, the Golden Gate Ferry Company constructed a causeway extending from the original Berkeley shoreline at Second Street out to deeper water, where automobiles could board a ferry bound for San Francisco. Following the opening of the Bay Bridge in 1937, most ferry services in the region were discontinued and the causeway was formally transferred to the City of Berkeley. The City operated the structure as a public fishing pier until its closure in 2015 due to structural deterioration.

Figure 2. Fill in Berkeley Marina from 1957 to 1993



Source: 2024 Draft Berkeley Waterfront Specific Plan

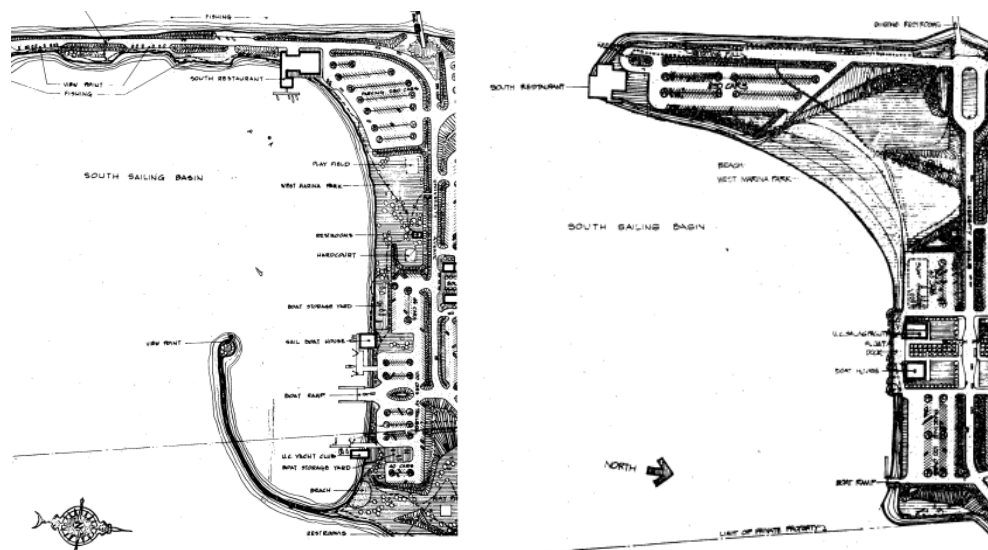
Permit History and Planning Context

Permit History

The permitting history at the Berkeley Waterfront is extensive, ranging from minor capital improvement projects to major dredging, fill, and shoreline protection projects. The selected permits listed below are most relevant to the proposed project.

- **BCDC Permit No. 1966.028.00.** Authorized use of 40,000 cubic yards of dredged material from the South Sailing Basin to fill 4.6 cubic acres adjacent to the shoreline in 1966 “for a marina restaurant, public beach, park area, automobile parking, and a relocated and expanded University of California sailing facility.” This permit has not been amended since the original authorization.
- **BCDC Permit No. 1979.005.14.** Authorized the mooring and use of no more than 100 live-aboard vessels, maintenance of wooden pilings and docks, repairs to utilities and marina infrastructure, and dredging activities within the Bay. The primary permit for activities within the Berkeley Marina and has been amended 14 times since the original authorization.
- **BCDC Permit No. 1982.006.03.** Authorized improvements to the Berkeley fishing pier. Required public access includes the entire length of the Berkeley Municipal Fishing Pier, which must remain open to the public.

Figure 3: Fill Authorized BCDC Permit No. 1966.028.00 (Before and after 1965)



Draft Berkeley Waterfront Specific Plan

The City of Berkeley has been developing a Waterfront Specific Plan (WSP) to provide a vision for meeting community needs at the Waterfront for the next 25 to 50 years. The process began in 2019 in response to City Council concerns about a growing fiscal crisis on the Waterfront. The City published the most recent draft of the WSP in November 2024, however, there is no funding currently identified to complete the WSP. Note that the Pier Ferry project and the WSP are two separate projects, and the Pier Ferry project does not depend on adoption of the WSP to proceed.

Berkeley Pier Ferry Project Development

In 2019, in partnership with WETA, the City of Berkeley initiated a feasibility study to determine the feasibility and preferred layout for a new Pier that would provide both recreation access and amenities and an all-electric ferry terminal. After a multi-year process that included both technical analyses and public engagement, a preferred alternative was presented to the Berkeley City Council and WETA Board of Directors in 2021.

Previous BCDC Reviews of the Proposed Project

The proposed project has been presented twice to the Design Review Board on May 12, 2025, and November 3, 2025, during the project's early design/environmental review stages, introducing the landside project elements and broader Berkeley Waterfront context. The ECRB reviewed the Pier, Breakwater and Terminal Facilities aspects of the project at a meeting on February 25, 2026. This is the second time this project is being presented to the ECRB.

Proposed Project

Project Elements

The main construction elements for which the ECRB requested additional discussion or analysis are the Pier, Breakwater and Ferry Terminal, all of which will be designed for a 50-year project life.

Pier and Breakwater

The proposed Pier would accommodate both recreational uses emergency vehicles, and potentially two ferry terminals. The Water Emergency Transportation Authority (WETA) is responsible for coordinating and providing ferry transportation in response to emergencies or disasters affecting the Bay Area transportation system. The landing(s) will be designed for use as a staging area for first responders and evacuation by ferry in the event of a catastrophe and shall be designed as an essential facility, CBC Risk Category IV, and should be operational following a seismic event. The ECRB requested discussion about the conformance of the proposed project with the current Berkeley Building Code, ASCE 7-22, and the soon to be released ASCE 61-26.

The proposed new pier would be a 22-foot-wide, pile-supported structure that would be accessed through the new entry plaza. It will be approximately 1,080-foot long and include a 300 foot, 14-foot-wide breakwater. Most of the Pier (980 feet of the 1,080 feet) and all of the Breakwater will be at 17.6 feet City of Berkeley Mean Lower Low Water (MLLW) elevation (Top of Pier). The first 100 feet of the pier will transition from the Plaza elevation of 16.5 feet MLLW to the main Pier elevation.

The Breakwater is a new waterside pile-supported structure, located in the middle section of the pier, seaward of the Ferry Terminal. The breakwater was not part of the original pier design. It is also not part of the emergency elements of the transportation system and has been designed as a Risk Category II structure. The Breakwater will run north-south at about the middle-section of the Pier and be bisected by the Pier. In addition to providing shelter for the ferry service, the breakwater sections will provide public access.

The Breakwater will be constructed of pre-cast concrete panels and batter or rake piles. It has been proposed to reduce wave energy at the Ferry Terminals and reduce risks of service interruptions. The main concern for the breakwater will be overtopping and safe access. Based on 2075 Design Still Water of 11.9 feet MLLW and 2% wave runup of 4.5 feet, the EuroTop (2018) overtopping threshold of 0.1 l/s/m requires a proposed minimum breakwater height of 17.6 feet MLLW. In addition to waves, and overtopping, it will be designed to support loads from an AASHTO H15-44 vehicle, such as a maintenance truck.

The Pier and Breakwater elevations are based on a design still water level of 11.9 feet MLLW (based on an extreme water level of 10.3 feet MLLW, a proposed 50-year life of structure intermediate Sea Level Rise (SLR) of 1.6 feet by 2075) and an examination of green water levels (maximum elevation of 14.2-15.2 feet MLLW), with some freeboard. A safe level of overtopping has been used for the Breakwater design (below). The ECRB requested examination of the Pier and Breakwater elevations under the intermediate-high sea level rise scenario, and requested re-examination of wave overtopping and loadings on the piles based on wave height information provided at the February ECRB meeting.



Landside Stabilization – Rock Dike and Plaza

The 13,500-square-foot public plaza would connect Seawall Drive and University Avenue and landside improvements to the Pier, Breakwater, and Ferry Terminal. The Plaza will be elevated to 16.5 feet MLLW for sea level resilience and to match the elevation of the lowest, landward portion of the Pier. Deep Soil Mixed columns would stabilize the elevated Plaza and pier entrance. The historic template of the rock dike that borders and stabilizes the shoreline will be reestablished. The dike may move during a seismic event and load several of the most landward piles. Collars will be placed around these piles to prevent the displacement from impacting the piles. The ECRB requested that the Applicant identify the full range of possible failure slopes for the rock dike, analyze the dike displacement for multiple seismic events, and examine the adequacy of the offset of the collars to protect the piles.

Terminal and Ferry Landing

The ferry terminal and associated infrastructure (gangway, charging float, etc.) are located on the north side of the proposed Pier between the shore and breakwater. The Ferry Landing will have a 50-year design life, assuming regular maintenance and replacement of the zinc anodes. The steel float will be 42 feet x 135 feet and will have a nominal freeboard of 34 inches at the edge. The float will be checked for overtopping and stability with the proposed freeboard. As discussed at the February ECRB meeting, a ramp will connect the ferry terminal with the pier, and the pier and terminal elevations will determine the ramp length and slope. The ECRB requested that the Applicant elaborate on connections between the landside facilities and the ferry terminal, as well as how an increase in Pier elevation would modify the adjacent project elements.

Commission Plans, Policies, and Guidelines

McAteer-Petris Act and San Francisco Bay Plan Policies

The *McAteer Petris Act* (ACT) and the *San Francisco Bay Plan* (Bay Plan) contain several regulatory and policy sections relevant to Bay fill, ([Section 66605](#) et al, of the Act), Bay structures and [shore protection](#) (Plan pages 50 – 53) and Climate Change ([Guidance on BCDC Climate Policy](#)).

Codes and Standards used for the Pier, Terminal, and Breakwater

The following codes, specifications, regulations and industry standards, where applicable, shall cover the main design and material for the structures and other related items:

Principal General Design Standard:

1. Accessibility Standard for Pedestrian Facilities in the Public Right-of-Way (PROWAG) 2024
2. ASCE 7, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers, 2022 (ASCE 7-22).

3. CBC, California Building Code, California Building Standards Commission, 2022 (2022 CBC Vol 1 & Vol 2)
4. ASCE 61, Seismic Design of Piers and Wharves, American Society of Civil Engineers, 2014 (ASCE 61-14)²
5. ABS, American Bureau of Shipping and Affiliated Companies, Rules for Building and Classing Steel Barges, 2024
6. Alameda Countywide Clean Water Program; C.3 Stormwater Technical Guidance, May 19, 2024 (Version 8.2)
7. Alameda County Hydrology & Hydraulics Manual
8. Berkeley Stormwater Requirements Checklists
9. California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit, Order No. R2-2022-0018 as amended by Order No. R2-2023-0019, NPDS Permit No. CAS612008 (May 11, 2022)
10. Caltrans Standard Specifications 2025 Edition.
11. Caltrans Standard Plans 2025 Edition
12. Layout and Design Guidelines for Marina Berthing Facilities, California Department of Boating and Waterways, Boating Facilities Division, July 2005
13. Unified Facilities Criteria, UFC 4-151-01 Design: Pier and Wharves
13. Unified Facilities Criteria, UFC 4-159-03 Design: Moorings, June 16, 2016

In situations where the above standard does not cover a particular design situation, the applicable design practices and guidelines may include, but are not limited, to the following:

14. ACI 318-19 (22), Building Code and Commentary for Structural Concrete, American Concrete Institute, 2019 (ACI-318-19(22))
15. ACI 315-18, Manual of Standard Practice for Detailing Reinforced Concrete
16. ACI 357.2R-10 America Concrete Institute, State of the Art Report on Floating and Float-In Concrete Structures, FARMINGTON FILLS, MT
17. AISC, Steel Construction Manual 16th Ed. 2023 Berkeley Water Transportation Pier Ferry - BASIS OF DESIGN – 60% SUBMITTAL 7

² The ECRB requested that the Applicant discuss use of the draft ASCE 61-26; however, the Applicant noted that the Draft document stated that it should not be used for design efforts and confined their analysis to the requirements in ASCE 7-22.

18. ACI 543, Design, Manufacture and Installation of Concrete Piles, American Concrete Institute, 2012 (ACI PRC 543R-12)
19. AISC 360, Specification for Structural Steel Buildings, American Institute of Steel Construction, 14th edition, 2022 (AISC 360-22)
20. API Recommended Practice 2A-WSD, 22nd Edition
21. ASTM Standards, Various, American Society for Testing and Materials International (ASTM).
22. AWS D1.1, Structural Welding Code – Steel, American Welding Society, 2020 (AWS D1.1:2020)
23. AWS D1.2, Structural Welding Code – Aluminum, American Welding Society, 2014 (AWS D1.2:2014)
24. IBC, International Building Code, International Code Council, 2021 (IBC 2021) NDS, National Design Specification for Wood Construction ASD/LRFD, 2024 edition, and National Design Specification Supplement, Design Values for Wood Construction, 2024 edition (2024 NDS).
25. PIANC International Navigation Association A.D. 1885 Guideless for Design of Fender System (2024) WG 211.
26. PCI Design Handbook: Precast and Prestressed Concrete, 8th edition, Prestressed Concrete Institute, 2017 14. US Access Board Proposed Passenger Vessel Accessibility Guidelines, June 25, 2013.