Regulatory Division
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US Army Corps of Engineers ®
San Francisco District

SAN FRANCISCO DISTRICT

PUBLIC NOTICE

PROJECT: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project
Permit Modification – Pier E4 – E18 Demolition

PUBLIC NOTICE NUMBER: SPN-1997-230130S
PUBLIC NOTICE DATE: May 31, 2016
COMMENTS DUE DATE: June 30, 2016

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1. **INTRODUCTION**: The California Department of Transportation (CalTrans) (POC: Stefan Galvez-Abadia, (510) 867-6785), 111 Grand Avenue, Post Office Box 23660, Oakland, California 94623-0660, has applied to the U.S. Army Corps of Engineers (USACE), San Francisco District, for a modification to a Department of the Army Individual Permit to replace the original east span of the San Francisco-Oakland Bay Bridge (SFOBB) with a new bridge immediately to the north. This modification would allow for the controlled implosion instead of the mechanical demolition of Piers E4 - E18 of the original bridge. The original Department of the Army permit authorization was issued on December 4, 2001, pursuant to the provisions of Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C § 1344 *et seq*.) and Section 10 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C § 403 *et seq*.).

2. **PROPOSED PROJECT**:

Project Site Location: The east span of the SFOBB is located in San Francisco Bay and spans Yerba Buena Island and the City of Oakland (Figure 1). Piers E4-E18 are located between latitude 37° 48' 58.3452"N and longitude -122° 21' 8.6184" W, to latitude 37° 49' 13.7568" N and longitude -122° 20' 6.9936" W (Figure 2)(Table 1).

Project Site Description: Piers E4-E18 vary in construction and marine foundation. Piers E4 and E5 are founded on concrete caissons that were advanced over 130 feet into the soil beneath the waters of the Bay. Piers E6 to E18 consist of lightly reinforced concrete foundations that are supported by timber piles driven into the Bay mud.

Pier E4: As shown on Figure 3, Pier E4 is a cellular concrete structure, topped with a pier cap and concrete pedestals. It is approximately 200 feet (61 meters) in height, 90 feet (27.4 meters) long, and 60 feet (18.3 meters) wide. The pier is made up of 15 hollow cellular chambers. Fourteen of the chambers occur only below an elevation of approximately -51 feet (National Geodetic Vertical Datum 1929) and occur in two separate rows of seven chambers on each length side. The chambers run vertically from below the pile cap to the cutting edge (i.e., the deepest edge of the caisson) at the bottom of the caisson. The cutting edge of the structure is at an approximate elevation of -170 feet. Approximately 68 feet (21 meters) are above the mudline, and approximately 132 feet (40.2 meters) of the structure's height are buried in the Bay mud. The hollow chambers of Pier E4 contain water. Weep holes in the foundation are located at an approximate elevation of -2 feet. Through these weep holes, the water inside the caisson exchanges with the Bay water and varies in height with the tide. The pier cap, fender apron, and upper most portion of the caisson extend above the water line and support the steel superstructure of the bridge and are visible from the Bay. The fender system of Pier E4 is supported in two ways. On the longer east and west faces, the steel, plastic, and timber fender system is attached to and hung directly on the pier with anchor bolts. On the shorter north and south faces, a steel and timber fender system attaches directly to the concrete, extending approximately 33 feet (10 meters) away from the structure and supported on each side by 19 steel H-piles configured in a triangular pattern that were driven into Bay mud, for a total of 38 piles. The mudline elevation around Pier E4 is approximately -45 feet outside the scoured area.

Pier E5: The Pier E5 caisson is a hollow cellular concrete structure, topped with a pier cap and concrete pedestals. Pier E5 is approximately 200 feet (61 meters) tall and contains 15 hollow chambers (Figure 4); approximately 130 feet (40 meters) is buried below the mudline. Unlike Pier E4, the Pier E5 structure's lower portion is wider than its upper portion. The shape of its bottom segment is wider from the approximate point where it meets the mudline (i.e., at its height of 130 feet [39.6 meters]) to its cutting edge, than it is in its upper segment. Pier E5 consists of two segments: 1) the upper portion that occurs in and above the water column; and 2) the lower portion that occurs mostly below the mudline. The upper portion of the structure occurs predominantly above mudline, is slimmer in shape than the lower segment, and is supported on its longer east and west sides by 12 angled buttress walls that are approximately 18 feet (5.5 meters) tall, perpendicular to the structure and completely submerged at all times. The height of the structure includes a concrete pier cap and two 6-foot-tall (1.8 meters) concrete pedestals on its top, which are always above water. The upper segment includes five hollow chambers in a single row through the center of the structure. These five caisson cells continue into the lower segment of the structure, all the way to the bottom of the structure. The hollow cellular chambers in this portion of the structure contain water. Weep holes in the foundation are located at an approximate elevation of -1 foot. Through these weep holes, the water inside the caisson exchanges with the Bay water and varies in height with the tide. The lower segment, from its approximate height at the mudline down to the cutting edge, is approximately 130 feet (39.6 meters) in height, 90 feet (27.4 meters) long, and 60 feet (18.3 meters) wide, and includes all 15 caisson cells. In addition to the central row of five chambers, two single rows of five chambers occur west and east of the central structure and run approximately from the scoured mudline to the cutting edge. The outer chambers in the lower segment are filled with water and are covered with pre-cast concrete slabs.

The Pier E5 caisson does not reach bedrock. The fender system of Pier E5 is supported in two ways. The steel and timber fender system hangs from and is attached directly to the pier with anchor bolts on the longer east and west faces. On the shorter north and south faces, the steel and timber fender system is attached directly to the concrete, extending approximately 20 feet (6 meters) away from the structure and supported on each side by 13 steel H-piles configured in a triangular pattern that were driven into the Bay, for a total of 26 piles. The mudline elevation around Pier E5 is approximately -47.5 feet outside the scoured area.

Piers E6-E18: Piers E6 to E18 are cellular concrete structures which are supported on concrete slabs and Douglas fir timber piles encased in a concrete seal. A concrete seal was poured on top of these piles, and a reinforced concrete slab was set on that seal. Dimensions for Piers E6 to E18 are shown in Table 2. Piers E6 to E8 and E10 to E18 each have two hollow concrete pedestals that are connected to the steel tower legs of the superstructure. A central reinforced concrete chamber connects the two pedestals. The structural designs for these piers are the same (Figure 5).

Pier E9 is a larger variant of the design used for the other timber pile-supported piers and has the greatest footprint and total volume of concrete of the timber pile-supported piers. On top of its concrete slab is a reinforced cellular structure, incorporating four solid concrete pedestals connected to the four legs of the steel tower. Pier E9 contains eight cellular chambers. On its west end, Pier E9 has five buttress walls (Figure 6). The concrete pedestals of Piers E18 and E19 are taller than those of the other piers, and they connect directly to the truss spans that they support.

Project Description: The current proposed project modification to use controlled implosion for Piers E4-E18 is similar to the Pier E3 Demonstration Project that was authorized and completed in 2015. As shown in the attached drawings, the applicant proposes to remove each pier using two phases. The first phase would involve pre-blast activities including dismantling the fender system (Piers E4 and E5 only), removing the pier cap and concrete pedestals, installing and testing the Blast Attenuation System (BAS). The second phase would involve installing charges, activating the BAS, imploding the pier; and managing the remaining dismantling debris.

Mechanical dismantling is expected to start in July 2016 on Piers E4 and E5, following removal of the overhead 504-foot truss sections and steel support towers that are part of the 504/288 dismantling work. Steps to remove the marine foundations will include mechanically removing the timber, steel, and pile-supported fender system that surrounds each pier (Piers E4 and E5 only), dismantling the concrete pedestals and concrete pier cap by mechanical means (including, but not limited to, the use of torches and excavators mounted with hoe rams, drills, and cutting tools) to an approximate elevation of +9 feet, and drilling vertical

boreholes where the charges will be loaded for controlled blasting. The charges will then be loaded into the drilled boreholes. Controlled blasting removal will be accomplished using hundreds of small charges, with delays between individual charges. Each controlled blast sequence will last approximately one to five seconds, depending on the pier being removed. The controlled blast removals have been designed to remove each pier to a minimum 3 feet below the average mudline elevation that occurs outside each pier's scoured pit.

Controlled blasting of Piers E4 and E5 will implode these piers and will cause resulting rubble to fall into the open caisson cells and to be entombed below the mudline. The demolition of Pier E6 will remove concrete by blasting down through the concrete slab and the top 3 feet of the concrete seal shall be removed to the approved elevation. However, the demolition of Pier E7 will remove concrete by blasting down through the concrete slab but not the concrete seal. Demolition of Piers E8 to E18 will remove concrete by blasting down through the concrete cellular structure, but not through the concrete slab, seal, and timber piles below. Remaining concrete seals and timber piles below the mudline will not be removed, but any rubble from the dismantling of Piers E6 to E18 that mounds above the determined debris removal elevation limits will be removed off-site for disposal.

Following each controlled blasting event and confirmation that the area is safe for work, construction crews will remove all associated equipment, including barges, compressors, the BAS, and blast mats. For Piers E4 and E5, it is expected that a small portion of rubble from each pier will fall outside its respective footprint and/or mound within the footprint of each pier, and will need to be managed after each controlled implosion. Concrete rubble resulting from the controlled implosions of Piers E4 and E5 that does not fall into the hollow caisson cells will be placed in the remaining caisson cells to be entombed below the mudline. The portions of each pier that do not break apart during controlled blasting and remain above the removal limits will be demolished by mechanical means. This may require use of underwater mechanical equipment, including hydraulic crushing or grinding machinery or diver-operated jackhammers. Rubble from the controlled blasting of Piers E6 to E18 will be removed down to each pier's respective planned debris removal limit elevation by a barge-mounted crane with a clamming bucket. The clamming bucket will be equipped with a GPS unit, to guide the movement of the bucket during underwater operation. The planned debris removal limit elevations are shown in Table 3.

Purpose of Modification Request: The purpose of the modification request is to complete demolition of Piers E4 to E18 in a more expedient manner and with less environmental impact than the originally permitted mechanical dismantling method.

Project Impacts: The proposed project modification would result in 84 cubic yards (6 cubic yards at each of the 14 piers) of temporary fill and no additional permanent fill subject to Section 404 of the Clean Water Act compared to the original authorization. Temporary structures and work in the bay subject to Section 10 of the Rivers and Harbors Act would also be reduced under the proposed permit modification. In the case of Pier E3, mechanical dismantling would have required the installation of a cofferdam around the work area, which would have required 394 piles of various types. In that case, pile driving alone would have taken approximately four years, while the four phases of the E3 demonstration project occurred within six months. It is reasonable to conclude that the demolition of the 14 piers by using controlled implosion rather than mechanical dismantling would significantly reduce the time needed to demolish and associated impacts.

Proposed Mitigation No additional compensatory mitigation for the demonstration project has been proposed. However, additional hydrographic, marine mammal, fish, bird, eelgrass, water quality, and hydro-acoustic monitoring has been proposed.

3. **STATE AND LOCAL APPROVALS**:

Water Quality Certification State water quality certification or a waiver is a prerequisite for the issuance of a Department of the Army Permit to conduct any activity which may result in a fill or pollutant discharge into waters of the United States, pursuant to Section 401 of the Clean Water Act of 1972, as amended (33 U.S.C § 1341 *et seq*.). The applicant has recently submitted an application to the California Regional Water Quality Control Board (RWQCB) to obtain water quality certification amendment for the project. No Department of the Army Permit modification will be issued until the applicant obtains the required certification amendment.

Water quality issues should be directed to the Executive Officer, California Regional Water Quality Control Board, San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California 94612, by the close of the comment period.

Coastal Zone Management: Section 307(c) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C § 1456(c) et seq.), requires a non-Federal applicant seeking a federal license or permit to conduct any activity occurring in or affecting the coastal zone to obtain a Consistency Certification that indicates the activity conforms with the State's coastal zone management program. Generally, no federal license or permit will be granted until the appropriate State agency has issued a Consistency Certification or has waived its right to do so. Section 307(c) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C § 1456(c) *et seq*.), requires a Federal applicant seeking a federal license or permit to conduct any activity occurring in or affecting the coastal zone to obtain a Consistency Determination that indicates the activity conforms with the State's coastal zone management program. Generally, no federal license, permit, or permit modification will be granted until the appropriate State agency has issued a Consistency Determination or has waived its right to do so. Since the project occurs in the coastal zone or may affect coastal zone resources, the applicant has applied for a Consistency Determination and/or a Consistency Determination amendment from the San Francisco Bay Conservation and Development Commission to comply with this requirement. Coastal zone management issues should be directed to the Executive Director, San Francisco Bay Conservation and Development Commission, 50 California Street, Suite 2600, San Francisco, California 94111, by the close of the comment period.

4. **COMPLIANCE WITH VARIOUS FEDERAL LAWS**:

National Environmental Policy Act (NEPA): Upon review of the Department of the Army permit modification request and other supporting documentation, and at the conclusion of the public comment period, USACE will assess the environmental impacts of the proposed project modification in accordance with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C §§ 4321-4347), the Council on Environmental Quality's Regulations at 40 C.F.R Parts 1500-1508, and USACE Regulations at 33 C.F.R Part 325. The final NEPA analysis will normally address the direct, indirect, and cumulative impacts that result from regulated activities within the jurisdiction of USACE and other non-regulated activities USACE determines to be within its purview of Federal control and responsibility to justify an expanded scope of analysis for NEPA purposes. The final NEPA analysis will be incorporated in the decision documentation that provides the rationale for issuing or denying the permit modification for this Department of the Army Permit. The final NEPA analysis and supporting documentation will be on file with the San Francisco District, Regulatory Division.

Endangered Species Act (ESA): Section 7(a)(2) of the ESA of 1973, as amended (16 U.S.C § 1531 *et seq*.), requires Federal agencies to consult with either the U.S Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) to ensure actions authorized, funded, or undertaken by the agency are not likely to jeopardize the continued existence of any Federally-listed species or result in the adverse modification of designated critical habitat. As the Federal lead agency for this project, the applicant will be responsible for determining the presence or absence of Federally-listed species and designated critical habitat, and the need to conduct consultation. To complete the administrative record and the decision on whether to modify a Department of the Army Permit for the project, USACE will obtain all necessary supporting documentation from the applicant concerning the consultation process. Any required consultation must be concluded prior to the issuance of a Department of the Army Permit modification for the project.

Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA): Section 305(b)(2) of the MSFCMA of 1966, as amended (16 U.S.C § 1801 *et seq*.), requires Federal agencies to consult with the NMFS on all proposed actions authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. EFH is designated only for those species managed under a Federal Fisheries Management Plan (FMP), such as the Pacific Groundfish FMP, the Coastal Pelagics FMP, and the Pacific Coast Salmon FMP. As the Federal lead agency for this project, the applicant will be responsible for determining the presence or absence of EFH, and the need to conduct consultation. To complete the administrative record and the decision on whether to issue a Department of the Army Permit modification for the

project, USACE will obtain all necessary supporting documentation from the applicant concerning the consultation process. Any required consultation must be concluded prior to the issuance of a Department of the Army Permit modification for the project.

Marine Protection, Research, and Sanctuaries Act (MPRSA): Section 302 of the MPRS of 1972, as amended (16 U.S.C § 1432 *et seq*.), authorizes the Secretary of Commerce, in part, to designate areas of ocean waters, such as the Cordell Bank, Gulf of the Farallones, and Monterey Bay, as National Marine Sanctuaries for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values. After such designation, activities in sanctuary waters authorized under other authorities are valid only if the Secretary of Commerce certifies that the activities are consistent with Title III of the Act. No Department of the Army Permit will be issued until the applicant obtains the required certification or permit. The project does not occur in sanctuary waters, and a preliminary review by USACE indicates the project would not likely affect sanctuary resources. This presumption of effect, however, remains subject to a final determination by the Secretary of Commerce, or his designee.

National Historic Preservation Act (NHPA): Section 106 of the NHPA of 1966, as amended (16 U.S.C.§ 470 *et seq*.), requires Federal agencies to consult with the appropriate State Historic Preservation Officer to take into account the effects of their undertakings on historic properties listed in or eligible for listing in the National Register of Historic Places. Section 106 of the Act further requires Federal agencies to consult with the appropriate Tribal Historic Preservation Officer or any Indian tribe to take into account the effects of their undertakings on historic properties, including traditional cultural properties, trust resources, and sacred sites, to which Indian tribes attach historic, religious, and cultural significance. As the Federal lead agency for this project, the applicant will be responsible for determining the presence or absence of historic properties or archaeological resources, and the need to conduct consultation. To complete the administrative record and the decision on whether to issue a Department of the Army Permit modification for the project, USACE will obtain all necessary supporting documentation from the applicant concerning the consultation process. Any required consultation must be concluded prior to the issuance of a Department of the Army Permit modification for the project. If unrecorded archaeological resources are discovered during project implementation, those operations affecting such resources will be temporarily suspended until USACE concludes Section 106 consultation with the State Historic Preservation Officer or the Tribal Historic Preservation Officer to take into account any project related impacts to those resources

5. **PUBLIC INTEREST EVALUTION**: The decision on whether to issue a Department of the Army Permit modification will be based on an evaluation of the probable impacts, including cumulative impacts, of the project and its intended use on the public interest. Evaluation of the probable impacts requires a careful weighing of the public interest factors relevant in each particular case. The benefits that may accrue from the project must be balanced against any reasonably foreseeable detriments of project implementation. The decision on permit issuance will, therefore, reflect the national concern for both protection and utilization of important resources. Public interest factors which may be relevant to the decision process include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

6. **CONSIDERATION OF COMMENTS**: USACE is soliciting comments from the public; Federal, State and local agencies and officials; Native American Nations or other tribal governments; and other interested parties in order to consider and evaluate the impacts of the project modification. All comments received by USACE will be considered in the decision on whether to issue, modify, condition, or deny a Department of the Army Permit modification for the project. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, and other environmental or public interest factors addressed in a final environmental assessment or environmental impact statement. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the project modification.

7. **SUBMITTING COMMENTS**: During the specified comment period, interested parties may submit written comments to Patricia K. Goodman, San Francisco District, Regulatory Division, 1455 Market Street, 16th Floor, San

Francisco, California 94103-1398; comment letters should cite the project name, applicant name, and public notice number to facilitate review by the Regulatory Permit Manager. Comments may include a request for a public hearing on the project prior to a determination on the Department of the Army permit application; such requests shall state, with particularity, the reasons for holding a public hearing. All substantive comments will be forwarded to the applicant for resolution or rebuttal. Additional project information or details on any subsequent project modifications of a minor nature may be obtained from the applicant and/or agent, or by contacting the Regulatory Permit Manager by telephone or e-mail cited in the public notice letterhead. An electronic version of this public notice may be viewed under the *Public Notices* tab on the USACE website:
http://www.spn.usace.army.mil/Missions/Regulatory.