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To: Stefan Galvez, California Department of Transportation

From: Phil Thorson

Date: October 16, 2013

RE: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, Yerba Buena Island Transition Structure II Contract – Marine Mammal Observations During Demolition of Foundation C3 on October 8 and 9, 2013

Introduction

The California Department of Transportation (Department) replaced the east span of the San Francisco Oakland Bay Bridge (SFOBB) with a new bridge immediately to the north of the original span. As part of this construction, several temporary foundations were installed in order to support pieces of the bridge as they were installed. With the opening of the bridge in September 2013, these foundations are no longer necessary and as such are to be removed. Four of the foundations, Foundations C1-4 are located underneath the western edge of the Self Anchored Suspension (SAS) span at the Yerba Buena Island shoreline (Figure 1). One of the foundations, C1 is located partially below the mean high tide line (MHTL) and is subject to regular tidal action. The other three foundations are located on land above the mean high tide line and are subject to occasional tidal action.

The contractor will utilize excavators located on crane mats placed to the east of each of the foundations. Excavators equipped with hydraulic hammers will demolish the above surface portion of the foundation to just below the shoreline elevation. Saw cutting may also be utilized in the demolition. Following this, the rubble and steel reinforcement will be removed and clean fill and rip rap will be placed on top of the dismantled foundation footprint to bring the area back to preconstruction elevation and slope.

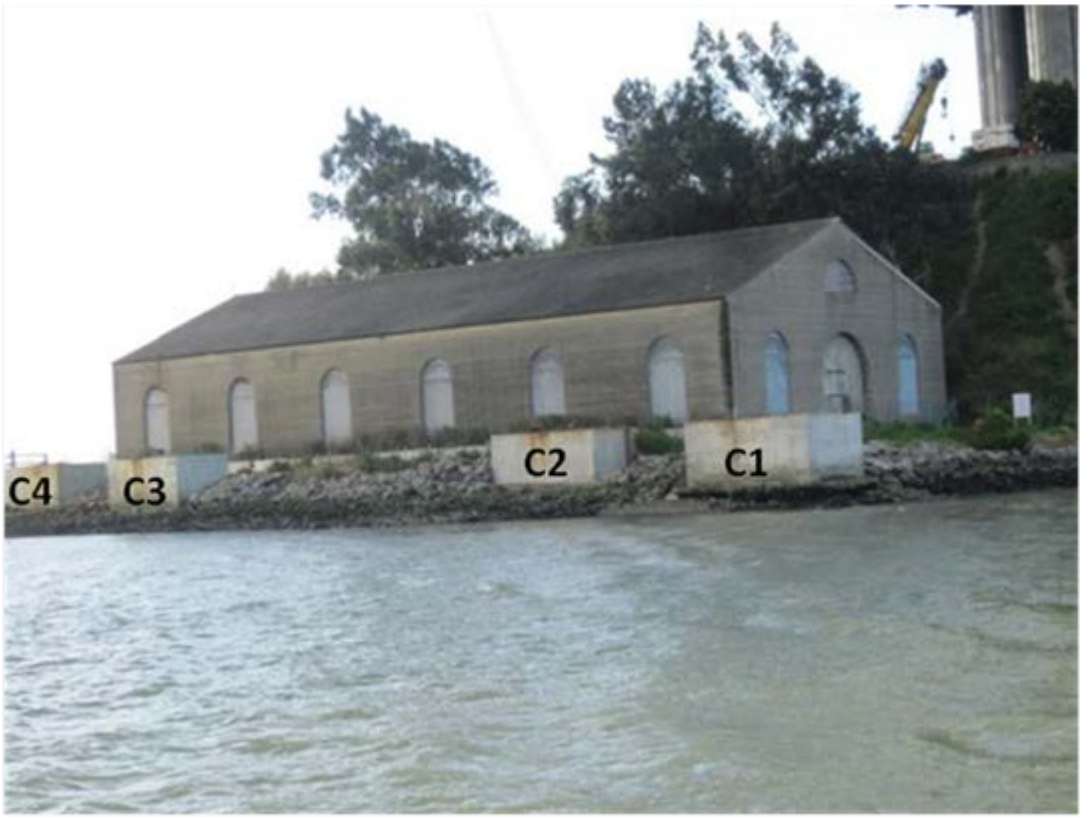

Figure 1. Photo of the four C Foundations adjacent to the Torpedo Building on Yerba Buena Island. Marine mammal monitoring was conducted during demolition of the Foundation C3

Pursuant to the Marine Mammal Protection Act, the Department requested and received an Incidental Harassment Authorization (IHA) from the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NMFS) to incidentally take, by harassment, a small number of California sea lions, Pacific harbor seals, gray whales and harbor porpoises (IHA 2013).

The Marine Mammal Exclusion Zones (MMEZ) for noise effects are based on a 180 decibel re 1 micropascal root-mean-square (dB re 1 µPa RMS) isopleth for cetaceans and 190 dB re 1 µPa RMS isopleth for pinnipeds. The marine mammal Exclusion Zone for demolition using a hydraulic hammer is unknown; therefore, NMFS has required a distance to 100 meters (328 feet) until hydro-acoustic measurements have been made. Initial Behavioral Harassment Zones for demolition are based on estimated distances to the 120 dB RMS isopleth. The estimated distance to the 120 dB RMS isopleth is 2,000 meters (6,562 feet). Once underwater sound level measurements are collected the size of the Exclusion and Behavioral Harassment Zones can be adjusted to correspond with actual distances to sound level thresholds.

If marine mammals are found within the Exclusion Zones prior to the start of demolition, the activity will be delayed until the marine mammals have moved beyond the Exclusion Zone, either verified through sighting by an observer or by waiting until enough time has elapsed

without a sighting (15 minutes for pinnipeds and harbor porpoise and 30 minutes for gray whale) to assume that the animal has moved beyond the Exclusion Zone. If marine mammals enter the exclusion zone after demolition has commenced, the hydraulic hammer will be stopped and marine mammal observers will monitor and record their numbers and behavior. Demolition will not resume until the marine mammals have moved beyond the Exclusion Zone, either verified through sighting by an observer or, by waiting until enough time has elapsed without a sighting (15 minutes for pinnipeds and harbor porpoise and 30 minutes for gray whale) to assume that the animal has moved beyond the Exclusion Zone.

The Behavioral Harassment Zones will be monitored during 20% of demolition work. Demolition work will not be delayed for marine mammals observed in the Behavioral Harassment Zones.

Methods

Monitoring was conducted by NMFS-approved marine mammal observers on October 8 and 9, 2013 in the vicinity of the C Foundations at the eastern end of Yerba Buena Island. Monitors were equipped with binoculars, rangefinders and cellular phones to communicate with each other and the resident engineer. For each observation the following data were recorded:

(1) location of sighting;
(2) species;
(3) number of individuals;
(4) number of calves present;
(5) duration of sighting;
(6) behavior of marine animals sighted;
(7) direction of travel; and,
(8) in relation to construction activities, if the sighting occurred before, during, or after the pile driving or dismantling activity.

A 100 meter (328 feet) Marine Mammal Exclusion Zone was used for demolition to correspond to the estimated 190 dB isopleth and a 2,000 meter (6,562 feet) Behavioral Harassment Zone was used for the demolition to correspond with the estimated 120 dB isopleth required in the 2013 IHA issued to the Department (Figure 2).

Figure 2. The "C" Foundation demolition project area with 100 meter (328 feet) Marine Mammal Exclusion Zone and 2,000 meter (6,562 feet). Behavioral Harassment Zone and marine mammal monitor observation sites (yellow solid circles; not all observation sites were used each day)

Observer #1 was located on the temporary trestle overlooking the C Foundations, Observer #2 was on the east side of Yerba Buena Island (YBI), and Observer #3 was located on the southeast end of Treasure Island or the San Francisco Oakland Bay Bridge as shown on Figure 2. Demolition on Foundation C3 (one of four C foundations) was conducted from 0728-1121 and 1238-1605 Pacific Daylight Time (PDT) on 8 October using the hydraulic hammer. Observations were made from 0645 to 1700 PDT. Demolition on Foundation C3 was conducted from 0730-1132 and 1356-1614 Pacific Daylight Time (PDT) on 9 October using the hydraulic hammer. Observations were made from 0655 to 1650 PDT.

Although the hydraulic hammer was used for most of the demolition, a hydraulic saw/cutter was used intermittently or at the same time as the hammer to cut the steel reinforcement bars.

Results

October 8, 2013

Nine harbor seals and one sea lion were observed during the monitoring period. All nine harbor seals and the sea lion were observed within the Behavioral Harassment Zone during demolition and no seals or sea lions were observed within the MMEZ at any time. None of the animals showed a response to demolition noise and those within the cove adjacent to the USCG station were sighted multiple times throughout the monitoring period. Sightings of harbor seals within the USCG Cove are presented separately because of the high use of that area for resting or foraging.

Pinniped Sightings Outside the USCG Cove

0728: Demolition using the hydraulic hammer begins.

0810: One adult harbor seal was observed swimming south away from the US Coast Guard cove. The harbor seal was approximately 300 meters (984 feet) south-southwest of the demolition area and showed no response to any of the demolition activities.

0901-0912: One California sea lion was observed several times from 250 to 500 meters (820 to 1,640 feet) north of the demolition area. The sea lion continued swimming north and showed no response to any of the demolition activities.

0901: One adult harbor seal was observed swimming north at approximately 300 meters (984 feet) north of the of the demolition area and showed no response to any of the demolition activities.

1121: Demolition paused.

1238: Demolition using the hydraulic hammer re-starts.

1441-1446: One adult harbor seal was observed several times swimming east at approximately 125 meters (410 feet) northwest of the of the demolition area and showed no response to any of the demolition activities.

1605: Demolition ends for the day.

Coast Guard Cove YBI

0920 – 1440: Six harbor seals were observed multiple times resting or foraging in the cove adjacent to the US Coast Guard station. The seals were observed approximately 200 to 350 meters (656 to 1,148 feet) southwest of the demolition area. The harbor seals showed no response to any of the demolition activities.

The air temperature ranged from 13.8 to 18.5°C (56.8 to 65.3°F) and the winds were mostly calm to moderate ranging from 4.7 to 14.5 kilometers per hour (2.9 to 9.0 miles per hour). Temperature and wind data were acquired from the NOAA National Ocean Service Physical Oceanographic Real Time System (PORTS).

October 9, 2013

Eight harbor seals and no sea lions were observed during the monitoring period. All eight harbor seals were observed within the Behavioral Harassment Zone during demolition and no seals were observed within the MMEZ at any time. None of the animals showed a response to demolition noise and those within the cove adjacent to the USCG station were sighted multiple times. Sightings of harbor seals within the USCG Cove are presented separately because of the high use of that area for resting or foraging.

Pinniped Sightings Outside the USCG Cove

0730: Demolition begins using the hydraulic hammer.

0852-0856: One adult harbor seal was observed swimming slowly east at 310 meters north of the demolition area. The harbor seal showed no response to any of the demolition activities.

1132: Demolition paused.

Coast Guard Cove YBI

0813-1352: Seven harbor seals were observed multiple times resting or foraging in the cove adjacent to the USCG station. The seals were observed approximately 175 to 400 meters (820 to 1,312 feet) southwest of the demolition area. The harbor seals showed no response to any of the demolition activities.

The air temperature ranged from 11.8 to 18.0°C (53.2 to 64.4°F) and the winds were mostly calm to moderate ranging from 4.0 to 13.0 kilometers per hour (2.5 to 8.1 miles per hour). Temperature and wind data were acquired from the NOAA National Ocean Service Physical Oceanographic Real Time System (PORTS).