
MEMORANDUM

TO: STEFAN GALVEZ, CALIFORNIA DEPARTMENT OF TRANSPORTATION

FROM: PHIL THORSON, MANTECH SRS TECHNOLOGIES

SUBJECT: MARINE MAMMAL OBSERVATIONS MEMO

OBSERVATIONS DURING EAST SPAN PROJECT PILE DRIVING AT TEMPORARY TOWER G ON APRIL 20 AND 22, 2009

DATE: MAY 25, 2009

CC: IVY EDMONDS-HESS, PARSONS BRINCKERHOFF

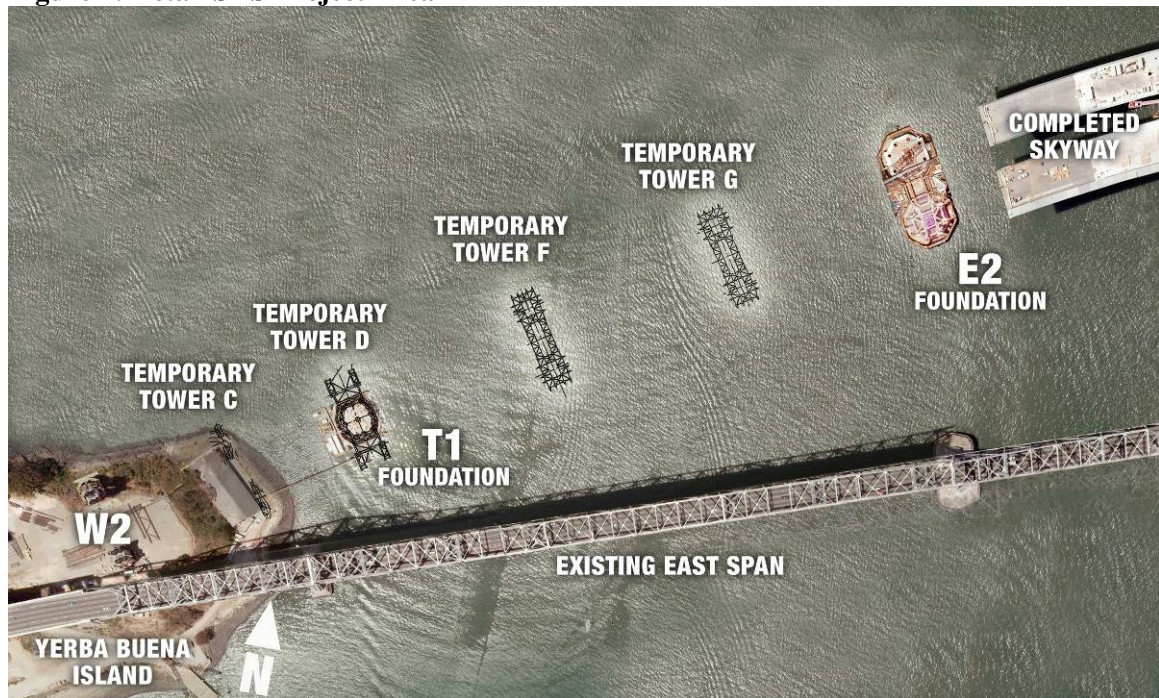
Introduction

The California Department of Transportation (Department) is in the process of replacing the East Span of the San Francisco-Oakland Bay Bridge (SFOBB) with a new bridge immediately to the north of the existing span (Figure 1). Construction of the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project (SFOBB Project) is a multi-year effort that will involve a number of construction activities on land as well as in San Francisco Bay. As part of the construction for the Self-Anchored Suspension (SAS) portion of the project, it is necessary to build temporary towers. These temporary towers, Temporary Towers D, F and G are marine based and require driving of temporary piles to support the SAS portion of the bridge during construction (Figure 2).

Figure 1: SFOBB East Span Seismic Safety Project Location Map



Figure 2: Detail SAS Project Area



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 (NOAA-Fisheries) to incidentally take, by harassment, a small number of California sea lions, Pacific harbor seals, and possibly gray whales and harbor porpoises. A comprehensive Marine Mammal Monitoring Plan for the driving of permanent piles was submitted to NOAA-Fisheries in May 2002, which meets the conditions of Section 5 – Mitigation Requirements (see page 2 of the IHA) and Section 6 – Monitoring Requirements (see page 3 of the IHA).

The latest IHA expired on May 1, 2008. A renewal is expected soon from NOAA-Fisheries. In the interim, the Department agreed to follow the requirements of the previous IHA. NOAA-Fisheries did, however request that the marine mammal safety zones (MMSZs) be more conservative and be based on a 160 dB re 1 microPa @ 1 m RMS isopleth during impact pile driving and a 120 dB re 1 microPa @ 1 m RMS isopleth during vibratory pile driving to ensure that Level B harassment to marine mammals would not occur during pile driving of the temporary casings.

Hydroacoustic monitors collected underwater sound data during initial impact pile driving events at each of the three marine based temporary towers to determine the distance to the 160 dB RMS isopleth. For Temporary Towers F and G the distance to the 160 dB RMS level varied in different directions from the pile. In all directions the distance was less than 1,000 meters (3,280 feet). Therefore, for the purpose of marine mammal monitoring, the MMSZ was set at 1,000 meters (3,280 feet) in all directions from impact pile driving.

The request from NOAA-Fisheries to determine a MMSZ for vibratory pile driving based on 120 dB RMS did not come until pile driving had been completed at Temporary Tower D and was more than halfway complete at Temporary Tower F. During vibratory pile driving at Temporary Towers F and G, hydroacoustic monitors were unable to locate the distance at which vibratory pile driving sound levels dropped to 120 dB RMS. Ambient sound levels in the Bay near the project site often equaled or exceeded 120 dB RMS. At a distance of 1,900 meters (6,234 feet) from the vibratory pile driving, monitors could no longer distinguish the pile driving sound from the ambient noise. The Department notified NOAA-Fisheries of this limitation and for the purpose of marine mammal monitoring, the MMSZ was set at 1,900 meters (6,234 feet) from vibratory pile driving.

Marine Mammal Monitoring Activities

Monitoring was conducted by NOAA-Fisheries-approved marine mammal observers on April 20 and 22, 2009 in the vicinity of Temporary Tower G of the SAS. A 1,900-meter (6,234-foot) MMSZ was used for the vibratory pile driver and 1,000-meter (3,281-foot) MMSZ was used for the diesel impact hammer to correspond with the 120 dB and 160 dB isopleths described above (Figure 3 & 4).

On April 20, 2009: Observer #1 and Observer #2 were located on the pile driving barge at Temporary Tower G, Observer #3 was located on the southeast end of Treasure Island, and Observer #4 was on the western end of the new Bay Bridge, as shown on Figure 3. Pile driving was conducted on four piles from 1402 to 1525 hours using the vibratory pile driver. Observations were made from 1300 to 1610 hours.

Figure 3: SAS temporary tower project area with 500 meter (preliminary), 1,000 meter (160 dB impact), and 1,900 meter (120 dB vibratory) MMSZs and marine mammal monitor observation sites for April 20, 2009.



On April 22, 2009: Observers #1 and #2 were located on the pile driving barge at Temporary Tower G and Observer #3 was on the western end of the new Bay Bridge, as shown on Figure 4. Pile driving was conducted on four piles from 0846 to 1032 hours using the diesel impact hammer. Observations were made from 0730 to 1120 hours.

Figure 4: SAS temporary tower project area with 500 meter (preliminary), 1,000 meter (160 dB impact), and 1,900 meter (120 dB vibratory) MMSZs and marine mammal monitor observation sites for April 22, 2009.



Results

April 20, 2009

No marine mammals were observed during the monitoring period.

The air temperature ranged from 24.9 to 32.1°C (76.8 to 89.8°F) and the winds were mostly calm to moderate ranging from 4.0 to 9.7 kilometers per hour (2.5 to 6.0 miles per hour). Temperature and wind data were acquired from the NOAA National Ocean Service Physical Oceanographic Real Time System.

April 22, 2009

Two harbor seals were observed within the MMSZ after impact pile driving had commenced.

- 0846: Pile driving begins on the first pile of the day using the diesel impact hammer.
- 0848: One adult harbor seal was observed 450 meters (1,476 feet) south of the Temporary Tower G piles (two minutes after the start of pile driving for the first pile). This was the only observation of this seal. In accordance with the IHA, once pile driving has commenced, operations can continue uninterrupted despite the fact that a marine mammal is within the MMSZ. The behavior of the seal seemed to indicate that it was not disturbed by pile driving activities.
- 0859: End of pile driving for the first pile.
- 0944 - 0958: Pile driving on the second pile of the day using the diesel impact hammer. No marine mammals were observed.
- 1019: A second adult harbor seal was observed 400 meters (1,312 feet) south of the Temporary Tower G piles (21 minutes after the end of pile driving on the second pile and one minute prior to the start of pile driving on the third pile). This was the only observation of this seal. Because the time between the end of pile driving of the second and the beginning of the third piles was less than 30 minutes, the observation of this seal did not require a delay in pile driving.
- 1020 - 1032: Pile driving of the third pile with the diesel impact hammer. No marine mammals were observed.

The air temperature ranged from 15.1 to 16.7°C (59.2 to 62.1 °F) and the winds were mostly calm, ranging from 5.8 to 13.3 kilometers per hour (3.6 to 8.3 miles per hour). Temperature and wind data were acquired from the NOAA National Ocean Service Physical Oceanographic Real Time System.