

# Memo

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**To:** Stefan Galvez, California Department of Transportation  
**From:** MICHAEL THILL  
**CC:** Ivy Edmonds-Hess, Parsons Brinckerhoff  
 Courtney Cacace, Garcia and Associates  
  
**Date:** October 26, 2009  
  
**Re:** San Francisco-Oakland Bay Bridge East Span Seismic Safety Project, Self-Anchored  
 Suspension Span  
  
**Subject:** T1 Temporary Access Trestle Installation – Hydroacoustic Measurements For  
 October 23, 2009

The California Department of Transportation (Department) is in the process of replacing the existing East Span of the San Francisco-Oakland Bay Bridge (SFOBB) with a new bridge immediately to the north. To facilitate the construction of the Self-Anchored Suspension Span portion of the new East Span, twenty 36-inch diameter steel pipe piles will be installed to support a temporary access trestle (see Figure 1). Hydroacoustic data was collected during impact pile driving of one pile with the bubble curtain in operation. Underwater sound measurements were collected at two locations 10 meters (25 feet) and 28 meters (71 feet) from the pile, at a depth of 2 meters (5 feet) on October 23, 2009 during impact driving. Data was not collected at 1,000 meters (2,540 feet) because of an equipment malfunction. The driving was completed using the Delmag 30-32 diesel impact hammer. Impact driving on October 23, 2009 began at 1350 hours and ended at 1354 hours. There were approximately 70 to 80 pile strikes in this time period. The peak criteria of 206 dB re: 1µPa at 10 meters (25 feet) from the pile was not exceeded. The accumulated SEL criterion of 187 dB re 1µPa-sec<sup>2</sup> at 28 meters (71 meters) from the pile was exceeded during the driving. The measurement results including accumulated SEL are summarized Table 1 and Table 2 below.

**Table 1: Summary of Measured Sound Levels for October 23, 2009**

Pile	Time	Location	Peak		SEL	
			dB re: 1µPa		dB re: 1µ-sec <sup>2</sup>	
			Mean	Range	Single Strike	Cumulative
1	1350-1354	10 meters	198	195-200	174	192
1	1350-1354	28 meters	201	198-203	175	193

Table 2: Summary of 28 Meter Measured Sound Levels for October 23, 2009

Pile	Time	Location	Peak		RMS	
			dB re: 1µPa		dB re: 1µPa	
			Mean	Range	Mean	Range
1	1350-1354	28 meters	201	198-203	187	183-189

Figure 1

