TOLL BRIDGE SEISMIC SAFETY PEER REVIEW PANEL

March 23, 2012

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To: Toll Bridge Program Oversight Committee (TBPOC)

Ref: SAS T1 Foundation Review

The Toll Bridge Program Oversight Committee (TBPOC) met on December 8, 2011 with the Toll Bridge Seismic Safety Peer Review Panel (TBSSPRP) to discuss the integrity and safety of Toll Bridges in the Bay Area following the discovery of data manipulation by one Caltrans employee of the Foundation Testing Branch. The TBSSPRP was asked to review all pertinent documents and information concerning the involvement of this particular employee on any toll bridge project and the potential impact on the safety of these important bridges.

It was agreed that as a first step the new San Francisco – Oakland Bay Bridge East Bay Spans should be reviewed. The only foundation of the new East Bay Spans this employee in question was involved with is the foundation of the tower of the Self Anchored Suspension Bridge (SAS), referred to as T1.

To assist in this review, a draft report dated February 2012 was prepared for the TBPOC and the TBSSPRP by Earth Mechanics Inc. (EMI) under the direction of and with support from the Toll Bridge Program staff, to investigate the Design, Construction, and Nondestructive Testing of the T1 foundation. This draft report entitled "*Review of the San Francisco – Oakland Bay Bridge Self-Anchored Suspension Span T-1 Foundation Design, Construction, and Nondestructive Testing*", (February 2012, Draft), was reviewed and commented on by the TBSSPRP.

A copy of the revised final report entitled "***Background and Supplemental Information Relating to the San Francisco-Oakland Bay Bridge Self Anchored Suspension Bridge T1 Foundation Design, Construction, and Nondestructive Testing, Prepared for the Toll Bridge Seismic Safety Peer***

Review Panel and the Toll Bridge Program Oversight Committee, March 2012", was provided to us earlier this week. The revised report reflects our comments and the discussions with the Toll Bridge Program Technical Management. This final report, dated March 2012, is referred to as the "***T1 Foundation Report"*** in the remaining pages of this letter.

This letter responds to the specific questions asked by the TBPOC as they pertain to the T1 foundation of the SAS Bridge. All other Toll Bridge issues related to the potential data falsification will be addressed separately by the TBSSPRP once the respective investigations have been conducted and the results provided to the TBSSPRP. The TBSSPRP's responses to the questions posed by TBPOC are given below.

Question 1*: Please respond to reported questions on the Self-Anchored Suspension Span (SAS) pile design, structural capacity and seismic safety. Specifically respond to redundancy in design, rebar congestion, testing requirements (e.g. gamma test pipe clearances and spacing), and use of gamma-gamma logging versus cross-hole sonic logging.*

Response: As summarized in the ***T1 Foundation Report,*** the T1 foundation consists of thirteen 2.5m diameter cast-in-steel shell and rock socketed concrete piles. The foundation technician in question participated in the Gamma-Gamma Log (GGL) nondestructive testing on 8 of these 13 piles. For all of these 8 pile tests, other Caltrans foundation testing technicians or supervising engineers were present. Since discovery of the falsification of data at other bridges, the test records for the T1 piles were investigated by Caltrans Engineers for inconsistencies in data and time stamping and no inconsistencies were found. FHWA ran the data through an algorithm that is designed to detect duplicate data strings and spliced data strings and again no inconsistencies were discovered. The performed GGL testing showed good results and was strictly not even required for these steel shell and rock socketed piles. In addition, Cross-hole Sonic Log (CSL) testing conducted independently by the contractor showed the expected good construction quality.

From these investigations we conclude that it is highly unlikely that any data falsification occurred in the nondestructive GGL testing of the T1 foundation piles. Furthermore, after review of the design of the T1 foundation, we find that the foundation design contains a significant amount of redundancy and has a large margin of safety against unforeseen events.

Reinforcement congestion that can cause rock or air pockets in the piles due to concrete flow constriction were addressed by the concrete mix (self consolidating, high slump and small aggregate size). The full scale pile construction demonstration test conducted by Caltrans on December 8th under the observation of the TBSSPRP, confirmed the desired flow characteristics of the concrete through the rebar cage and the quality of the resulting concrete was confirmed using GGL and CSL testing as well as visual inspection following the formwork removal.

Design review of the most critical seismic assessment of the piles in tension and compression showed that even conservative estimates of individual pile capacities in tension and compression significantly exceed the highest demand estimates.

Thus, we are confident that the design and construction of the T1 foundation piles fully meet the performance requirements and will provide the required seismic safety.

Question 2*: Please review the design of foundations in the Toll Bridge program, including on the new Benicia-Martinez Bridge, and identify, if any concerns with the testing of those foundations.*

Response: This phase of our review focused solely on the T1 foundation of the SAS and not on any other portion of the Bay Bridge or any other Toll Bridge in the San Francisco – Oakland Bay Area. Other Toll Bridges will be reviewed as data become available.

Question 3*: Please review all materials provided by Caltrans related to Wiles testing allegations, including: Caltrans QA/QC test results; Contractor QC test results; audits by various agencies, including but not limited to the Department of Transportation Office of Inspector General, Federal Highway Administration, and the Bureau of State Audits; and any additional testing information, research or study data available that provides more in-depth analysis and/or clarity to the testing allegations.*

Response: The TBSSPRP has reviewed all available information as provided in the above referenced ***T1 Foundation Report*** for the SAS. We were not provided to date with any investigation reports by the Department of Transportation Office of Inspector General, the Federal Highway

Administration, or the Bureau of State Audits. (To the best of our knowledge these reports have not yet been released)

Question 4*: Is there any evidence that the testing was improperly conducted?*

Response: There is no evidence that GGL testing at the T1 foundation was improperly conducted. GGL testing at the T1 foundation was observed by multiple qualified technicians and engineers. The GGL data are consistent in regards to locations of known "artificial anomalies" and known defects. Defects of the kind encountered are common in pile testing and were dealt with in accordance with established Caltrans mitigation measures where necessary.

Question 5*: Based upon your review, is there any remedial testing, research, or other investigation or physical reconstruction needed?*

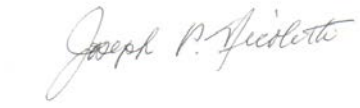
Response: No remedial testing, research, or other investigation or physical reconstruction is necessary at the T1 foundation to ensure full compliance with the design intent.

Question 6*: Are the bridges safe?*

Response: As stated above, the T1 foundation was designed, constructed, and NDE tested in a way that meets or exceeds the state-of-practice and will result in a safe and reliable performance of the bridge. Other Toll Bridges or parts of Toll Bridges will be commented on as information becomes available.

Respectfully Submitted

on behalf of the Toll Bridge Seismic Safety Peer Review Panel (TBSSPRP)



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