May 21, 2013

Hon. Sen. Mark DeSaulnier,
Chair, Senate Committee on Transportation and Housing
State Capitol, Room #5035
Sacramento, California 95814

Re: Summary of Decision to Follow National Standards for Bolts and Testing

Dear Sen. DeSaulnier:

Please accept this letter and attached documents as responsive to your request during the May 14, 2013, hearing of the Senate Transportation and Housing Committee for a history of the decision-making process that preceded the galvanization of high-strength rods on the San Francisco-Oakland Bay Bridge.

Those deliberations occurred a decade ago. Email communications show that designers, engineers and metallurgists were aware of the risks of hydrogen embrittlement—the phenomenon that led to the breakage of 32 such rods during construction in mid-March—and that they took steps in manufacturing and testing that they believed would prevent it.

As we discussed previously, the San Francisco-Oakland Bay Bridge was not the first structure on which this material was installed. In fact, decision-makers noted that it had already been in use on the Richmond-San Rafael Bridge when they concluded it could work on the Bay Bridge.

As you will see from the attached documents, the use of hot-dip galvanized steel fasteners on the San Francisco-Oakland Bay Bridge was approved in stages: first the type of steel itself, and then the method of protecting that steel from corrosion.

In response to the concern over hydrogen embrittlement, the department relied upon nationally-approved standard testing protocols—set by the American Society for Testing and Materials—to guard against this phenomenon. This approach proved inadequate. We now know that a more robust testing protocol and a more finely articulated set of specifications could have prevented the problem. We will, of course, use that knowledge as we replace fasteners that have to be removed as part of our investigative process.

Please also find attached a copy of the Design Criteria for the San Francisco-Oakland Bay Bridge, per your request.

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As we continue gathering information and conduct testing during the investigation—and as we provide that information to the entities providing independent oversight of that investigation—please be assured I will keep you apprised of our progress. That information will include the quality assurance and quality control documents we discussed. Gathering those documents is labor-intensive and we are working diligently and methodically through that process.

The next key event in the investigation will be May 29, 2013 in which the Toll Bridge Program Oversight Committee (TBPOC)—the entity authorized by law to maintain oversight of all seismic improvements on the Bay Bridge—will present an update to the Bay Area Toll Authority on the status of the TBPOC investigation. Additional information about cost and schedule for the engineering solution to the broken bolts, as presented on May 8, 2013, will also be provided.

Regarding the 2010 bolts on the pier—and other similar bolts that remain sound after weeks and months of tensioning—preliminary test results and records continue to show multiple differences from the 2008 bolts that broke. These other bolts on the bridge continue to perform as expected. Although these other bolts on the bridge are sound, engineers will be testing these good bolts further to determine how many decades they will last before receiving routine maintenance, repair or replacement.

Safety is all that matters to Caltrans or anyone else. The Bridge will open only when it is safe.

Sincerely,

MALCOLM DOUGHERTY
Director

Enclosures:

- Summary Timeline of Decision to Follow National Standards for Bolts Set by American Society for Testing and Materials
- SAS Design Criteria
- Caltrans Bridge Design Specifications
- ASTM Standard Specifications for Zinc Coating
- ASTM Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
- E2-T1 Special Provisions

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