

The Chairman and Board members of MTC and BATA  
101 8<sup>th</sup> Street  
Oakland, California 94607

May 16, 2013

Subject: Bolt failures and testing lapses

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MTC

Sirs,

The Public meeting of May 8, 2013 allowed Board member Mr. Cortese to inquire into the vibrations inherent in all bridges subject to wind and dynamic live loads. Earthquake loadings and minimum charpy test ratings were not embedded in his question. The response of TBPOC was not a detailed and sufficient answer to Mr. Cortese astute inquiry. The technical reports which have been made public and the vague press reports have not included any “vibration ( i.e. Oscillating reversing stress levels)” aspects in testing and the design loadings of the suspect bolts under review. Only constant stress environmentally assisted brittle fracture has been reviewed.

Brittle fracture, fatigue and environmental assisted fracture should all be formally reviewed by the experts in light of the bolts actual loading (prestress with dynamic). To my knowledge no one has testified at your hearings and included the dynamic stress levels and this type of stress’s impacts on the serviceability of the ASTM 354 bd- pickled or sand blasted-galvanized bolts.

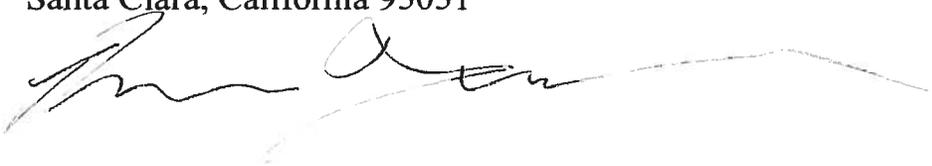
The public statements by many experts and managers makes one believe that the pretension stress is the only relevant type of stress that can cause brittle fracture in the installed ASTM bolts. Please see if other types of stress can cause new failures in the short or long term. A variation in the prestress stress level due to “vibration” and the lack of a tested and published safe maximum threshold (below the brittle fracture stress region) levels of stress makes the existing public information deficient. The 400 +/- Bolts at the tower base are older, non-compliant, prestressed to 0.4 Fu, and subject to dynamic service loadings. Please broaden the public reporting and information to eliminate “vibration” loading concerns. Clearly state the brittle fracture concern is eliminated because the combined stress levels ( 0.1+/-Fu, 0.4Fu, 0.7Fu + “Vibrations) are below an established and tested stress threshold that is required to induce brittle fracture in susceptible steels with hydrogen present.

The testing of the bearing assembly's hidden bolts by a long term review of how the bearing assembly component withstands actual service loadings over the next few years requires a public statement on the possibility of repair to any failed bolts. Can the bearing assembly be repaired/replaced with the bridge in service or will an extensive closure be required. Please make a statement on the possibility that the bridge would be out of service for months/years in the future.

The public exhibits which are attached to the letter to FHWA are missing a few very relevant dates and categories. Please upgrade the chart to include the date of bolt manufacture and which cleaning method was used prior to galvanization. Additionally, please provide a reference to the specific tests and inspections which were made and will be made. The current publicly announced approach is to inspect if any of the bolts have failed. It would seem a published audit of all bolts washers and nut manufactures documentation and testing and the CalTrans inspections testing and records should be made Public and in BATA's public files. Making this information a mandatory part of any final report and the public record is a basic due diligence requirement. Please have CalTrans document and prove in detail their approach.

Thank you

Mr. B. Donoghue  
3529 Mauricia Avenue  
Santa Clara, California 95051

A handwritten signature in black ink, appearing to read 'B. Donoghue', written over a horizontal line.