# California Legislature

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May 21, 2013

Malcolm Dougherty, Director
California Department of Transportation
1120 N Street
Sacramento, California 95814

Dear Director Dougherty:

This letter is a follow up to the May 14th Senate Transportation and Housing Committee hearing. We don't feel satisfied with the answers that were provided. Below we outline a number of follow-up questions to which we'd appreciate timely responses. We understand you and your staff are busy attempting to resolve the steel bolt issues, but we firmly believe, as Mr. Heminger stated in the hearing, that the road to rebuilding the public's confidence in the bridge begins with frankly and honestly telling them what happened and what consequences may result.

Our specific questions include:

1. Our understanding is that Caltrans made the decision to use high-strength, galvanized steel fasteners during the design phase of the project in consultation with internal and external metal and corrosion experts. In the hearing, you pledged to make available details concerning the decision-making process by the May 29th Special Bay Area Toll Authority Meeting.
    a. Who was the Engineer of Record that ultimately agreed to the design deviation allowing the use of high-strength, galvanized steel fasteners on the Bay Bridge?
    b. Who was consulted, and what contribution did each person involved provide concerning this deviation?
    c. What reviews were conducted, who was involved in the review process, and at what point in the overall design phase was this decision made?
2. In the hearing, you referred to a "Design Engineering Team" that made design deviation decisions and specifically suggested that among the members of that team were corrosion experts.

a. Who are the members of the Design Engineering Team today, and who has historically been part of this team? Please provide names, titles, and qualifications for each as well as at what times they participated.
b. Please outline and describe every deviation from state, national, and international standards and specifications approved by the Design Engineering Team.
c. When and where did the Design Engineering Team meet? Were there regularly scheduled meetings, or was it on an "as needed" basis? If possible, please provide any agendas, minutes, notes, staff notes, electronic communications and correspondence related to these team meetings.
d. Who was the corrosion expert described in the hearing? Did he or she ever communicate any concerns regarding the design of the bridge or the use of high-strength, galvanized bolts? Please provide any documentation related to his or her concerns.

3. Caltrans specifications for the high-strength bolts and rods required them to be "blasted" instead of "pickled" when galvanized to address the potential for hydrogen embrittlement. Recent media reports suggest that the more than 424 anchor rods at the bottom of the tower were "pickled" when galvanized, despite Caltrans specifications. Experts suggest that this type of galvanization process increases the potential for hydrogen embrittlement, particularly given the tension of these rods. Our understanding is that these anchor rods are embedded in the base of the tower.
    a. Are you able to access these tower rods to test their hardness and determine their susceptibility to hydrogen embrittlement?
    b. Can you test the tension level of each rod to better estimate its susceptibility to hydrogen embrittlement?
    c. If you determine that they are susceptible to hydrogen embrittlement, what alternatives do you have to address the problem?
    d. Do you have some idea of how many of these anchor rods could suddenly fail without jeopardizing the safety of the bridge?

4. Your presentation stated that the 274 bolts that anchor each strand of the main cable are made of galvanized, high-strength steel and are tensioned to 40 percent. The critical stress curve in your presentation describes, and experts suggest, that hydrogen embrittlement is a concern at roughly 40 percent tension and grows when tensions are 50 percent or greater.
    a. Are you able to access the main cable anchor bolts to test their hardness and determine their susceptibility to hydrogen embrittlement?
    b. Can you test the tension level of each bolt to better estimate its susceptibility to hydrogen embrittlement?
    c. If you determine that these bolts are susceptible to hydrogen embrittlement, what alternatives do you have to address the problem?
    d. Do you have some idea of how many of these anchor bolts could suddenly fail without jeopardizing the safety of the bridge?

5. Experts suggest that, even if high-strength, galvanized bolts don't fail in the first week or two after tensioning, there is still a risk they could fail in the coming months or years.

a. Is the threat of hydrogen embrittlement susceptibility of the Bay Bridge's galvanized, high-strength bolts time-sensitive? In other words, is there a set period of time that, once reached, minimizes the likelihood of the bolts failing sometime in the future?
b. If you conclude that the hydrogen embrittlement susceptibility does not increase over time, upon what evidence do you base this conclusion?

In addition, the San Francisco Chronicle reported today that Mr. John Fisher and Mr. Robert Reis have both expressed concerns throughout the design process regarding the use of galvanized, high-strength steel bolts and rods. Please provide us with any reports, notes, correspondences or electronic communications that communicate their concerns.

We would appreciate written responses as soon as possible; by May 31st at the latest.
We hope to have answers to each question or an update on when you expect the answers to be available. Please let me know if you have any questions.

Sincerely,

**MARK DeSAULNIER**
**Chair**

**TED GAINES**
**Vice Chair**