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Memorandum

TO: BATA Oversight Committee DATE: February 5, 2014

FR: Executive Director W. I. 1256

RE: 4th Quarter 2013 Project Progress and Financial Update Report for the Toll Bridge Seismic Retrofit Program

The 4th Quarter 2013 Project Progress and Financial Update Report for the Toll Bridge Seismic Retrofit Program will present program and project updates through the end of December 2013 and will be available at the Committee meeting.

With the opening of the new east span of the San Francisco-Oakland Bay Bridge, all seven state-owned toll bridges in the Bay Area have now achieved seismic safety either via retrofit or replacement of existing structures. Recent progress on completing the east span project included:

- Functional completion of the saddle retrofit of the failed bolts on Pier E2 of the Self-Anchored Suspension (SAS) span was achieved on December 19, 2013. No additional rods have failed in service on the bridge. The extensive rod testing program outlined in the July 8, 2013 Toll Bridge Program Oversight Committee (TBPOC) Report is on-going.

- Dismantling of the old span continues with the removal of the upper and lower concrete decks of the main cantilever section of the bridge. In February, the first sections of truss are expected to be cut out. As noted in last quarter's report and recent press accounts, the demolition work on the cantilever section of the old east span was delayed due to regulatory permit complications and construction equipment access conflicts with other contractors on Yerba Buena Island. The TBPOC is pursuing a series of remedial steps in the coming weeks to get the demolition work back on track as much as possible.

On January 24, 2014, the TBPOC participated in an informational hearing of the Senate Committee on Transportation and Housing on "Lessons Learned from the Development and Construction of the Bay Bridge." Copies of the Committee's investigative report, my Committee testimony, and a follow-up letter from Caltrans Director Malcolm Dougherty are attached. Previously reported challenges related to the fabrication of the SAS bridge, weld inspection, and failed E2 bolts were discussed at length.

As a reminder, staff has changed the BATA Oversight Committee reporting cycle for the Seismic Retrofit Program from monthly to quarterly. This is consistent with our existing statutory reporting cycle to the State Legislature and the California Transportation Commission. If you have any project questions, please contact BATA staff.

Steve Heminger

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THE SAN FRANCISCO-OAKLAND BAY BRIDGE: BASIC REFORMS FOR THE FUTURE

PRELIMINARY REPORT

January 2014

Prepared by News To the Next Power©
For the California State Senate Transportation & Housing Committee
The Honorable Mark DeSaulnier, Chair

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INTRODUCTION

This inquiry is the result of a request from state Senator Mark DeSaulnier, Chairman of the Senate Transportation and Housing Committee. This first report took three months, gathered dozens of in-depth interviews and examined thousands of pages of documents.

It is not an engineering audit and makes no findings on questions such as the quality of deck welds, anchor rods or foundations. Rather, it is an in-depth look into how key decisions about those sorts of vital issues were made and what lasting lessons can be learned from the process, especially in order to avoid future cost overruns and delays.

For those reading this report offline, all references made in footnotes can be found at the online version http://stran.senate.ca.gov/informationalhearings. Reference materials not available online will be found at the Metropolitan Transportation Commission (MTC) Library in the Bay Area.

PURPOSE AND SCOPE

This inquiry aims to learn from the construction of the eastern span of the San Francisco-Oakland Bay Bridge how we can spend our time and money wisely in the future, especially on massive public works projects of which there are bound to be more.

There will, undoubtedly, be those with dissenting and critical views. Although one might expect sharply different perspectives on the inevitable economic and political machinations that have been very much a major part of this story, there is another clear lesson learned here: Even engineers – electrical, civil, mechanical, the list goes on – very often have blunt and passionate disagreements on much of their work. There is as much art as science in building an unusual, arguably unique structure of the size, scope, schedule and cost of the east span of the San Francisco-Oakland Bay Bridge.

But there is also surprising consensus on much of what at first may appear to be conflict. It is here Californians can hope – and reasonably expect – their stewards of the public trust will find ways to make the construction of the spectacular new span pay in even more ways than the essential tasks of carrying millions of people to work, to school, to the doctor, to their families and other vital functions of everyday life.

EXECUTIVE SUMMARY OF MAJOR FINDINGS

TRANSPARENCY:

"The people of this state do not yield their sovereignty to the agencies which serve them. The people, in delegating authority, do not give their public servants the right to decide what is good for the people to know and what is not good for them to know. The people insist on remaining informed so that they may retain control over the instruments they have created." – From the Introduction to California's Bagley-Keene Open Meeting Law.

In the course of this investigation people with significant credentials have made serious accusations about critical components of the bridge regarding welds in the roadway decks[1] and large bolts that affix critical bridge components.[2] In addition, there are new questions regarding corrosion of the bicycle/pedestrian path. To a lesser extent, there remain reasonable questions regarding the foundations holding up the landmark tower,[3] usually referred to as the SAS, an abbreviation for Self-Anchored Suspension.

Some of these findings may alarm people. Some people will dismiss them. It is up to the people of California and their public servants to come to their own conclusions. It is not the purpose of this investigation to make those determinations.

It is within the scope and purpose of this inquiry to air these vital public issues, too long hidden from full view. To that end, it is the finding of this investigation that there appear to have been chronic attempts to keep many of the serious safety allegations quiet, put aside and not dealt with in an open, businesslike manner in the public's best interest. This is demonstrated in deck weld issues and the now infamous anchor rods or bolts issues, as well as many other controversies that have come to light largely through the news media rather than public disclosure by government agencies.

Furthermore, this inquiry has come to the inevitable conclusion that there are legitimate concerns that this appears to be part of an institutionalized, if not malicious, lack of transparency in the project.

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[1] See page 18.
[2] See page 25.
[3] See page 26.

It is understood that some of the consequences of the desire for what was initially considered confidentiality might not have been intended. But after almost a decade of work, it is apparent some serious adjustments toward more transparency will benefit everyone.

Californians not only deserve and need to know almost everything they want to know about the project in order to make accurate, sober judgments, there is a far more grave potential consequence to the lack of transparency that has plagued the project from the start: Lack of accountability.[4]

FIDUCIARY RESPONSIBILITY:

Although Californians were originally told the bridge would cost less than $1.4 billion dollars to build, that cost has grown by some 400 percent to almost $6.3 billion.[5] When Californians pay back the money borrowed and interest to finance the span by the years 2053-54, the bill is likely to be closer to $13 billion.[6]

How the government-appointed stewards of the bridge construction have spent much of that money has been largely documented – if in haphazard, piecemeal fashion -- during the years.[7] There can be little argument that the explanations for massive cost overruns until 2005 were directly attributable to time-consuming design changes, political delays, unfavorable market conditions and world events far beyond mortal control.[8] Yet, the largely unexamined history of bridge costs since the significant change of management in 2005 also gives pause.

This inquiry has led to the conclusion that bridge managers spent significant sums of extra taxpayer money on contracts that had already been signed but contractors were not fulfilling. This extra money often went to contractors who were falling behind their deadlines. And in fact, these extra millions of dollars often did not put the contractors back on schedule. Instead, the money was spent to make them *less* late.

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[4] "The liberties of a people never were, nor ever will be secure when the transactions of their rulers may be concealed from them." – Patrick Henry, 1788

[5] https://www.mediafire.com/folder/58q6560zurnzb4l/aj44n35w8u8omsf/aj44n35w8u8omsf/shared & http://trid.trb.org/view.aspx?id=659552

[6] MTC/BATA CFO Brian Mayhew.

[7] The best single place to see detailed tables on the costs associated with the bridge may be found at the Results Group study of January 2005. (link to Studies & Documents page)

[8] Planners today commonly refer to what some still call "Acts of God," as Black Swans.

Some of the bridge's top managers unabashedly declare it was their responsibility to spend the extra millions to ensure the builders completed an earthquake safe, lifeline span[9] as promptly as possible, especially in light of the years of already accumulated delay when the new management took over in 2005.

This is an important point. Yet, if the bridge managers were indeed comfortable with this position, then there should have been no need to have extraordinary closed door meetings and lack of full disclosure regarding these extra millions spent on what bridge managers refer to as "incentives," "accelerations," and "mitigations."

It must be stated that two major political events shortly before the creation of the new management structure accounted for a significant share of the jump. However, many millions of dollars were spent on what some have described as "scope creep" and "prettying up the bridge."[10] This includes items such as special lighting, palm trees, and the architecture of the controversial bike-pedestrian lane to Yerba Buena Island. Bridge managers have pointed out historic concerns by Bay Area political leaders regarding aesthetics and that their decisions were in keeping with that. These, too, are matters best dealt with openly.

TWO DOZEN YEARS OF PLANNING & BUILDING:

As mentioned above, planning, politics, unexpected events are all often – and correctly – cited as primary causes of the extraordinary length of time to complete the bridge for use by everyday traffic, almost exactly 24 years after the Loma Prieta Earthquake of October 1989.[11]
The bridge's current managers are quick to suggest there are two major construction phases to the project, the first characterized by chaos and massive cost overruns. The second phase, the narrative goes, was after the Legislature created the Toll Bridge Program Oversight Committee, or TBPOC,[12] in 2005 when it cleared the mess and got the bridge on schedule, within budget, and under control. This doesn't tell the whole story.

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[9] http://www.dot.ca.gov/dist4/sfobbdeis/deis1.html
[10] Denis Mulligan, Golden Gate Bridge General Manager and CEO.
[11] http://earthquake.usgs.gov/regional/nca/1989/
[12] "The POC," as insiders often refer to the triumvirate composed of the head of Caltrans, the Metropolitan Transportation Commission (MTC) and the California Transportation Commission (CTC).

It is the finding of this investigation that there were cumulative years of delays after the TBPOC took control of the bridge project. These delays are largely attributable to crises beyond the POC's control, such as the lengthy and costly construction stops in the critical connection of the east span to Yerba Buena Island and the completion of the landmark SAS tower looming 525 feet above the west bound roadway[13] – explicitly just 6 feet taller than the magnificent 519-foot towers between Yerba Buena and San Francisco to the west.

To be sure, some of the longest delays were not the work of the bridge builders. Rather, they were the product of political infighting at the very highest levels of California state government. In this, we find a state still divided by north and south, self-described conservatives against self-described progressives and even engineers versus engineers. There are no easy answers for these conundrums of a rowdy, vital democratic process that helps makes California the fascinating, inspiring and often paradoxically frustrating land of legend.

But this investigation has also found clear evidence of attainable management practices – some of which are already quietly going into place – that could obviate many of the critical delays suffered during the last two-dozen years. These are described more fully in the full report, as are the other principal findings summarized in this executive summary.

[13] http://baybridgeinfo.org/projects/sas

TIMELINE

October 1989: Loma Prieta earthquake.

November 1989: Gov. George Deukmejian orders board of inquiry about bridge and freeway collapse.

May 1990: "Competing Against Time" report (Governor's Board of Inquiry) recommends higher priority on seismic retrofitting.[14]

June 1990: Governor forms Seismic Advisory Board.

September 1992: UC Berkeley team commissioned by the California Department of Transportation (Caltrans) says retrofit east span will cost $150-200 million. New bridge would cost more than $1 billion. Study costs $500,000.[15]

Summer 1995: Caltrans Seismic Advisory Board recommends consideration of new bridge.[16] Caltrans begins work on "30 percent design" study for estimates on final costs and schedule.

March 1996: Voters approve Proposition 192[17] authorizing $650 million for seismic retrofit for state owned Bay bridges.[18]

August 1996: U.S. Navy begins to balk at Caltrans requests for use of the Yerba Buena land, where core samples are needed for future construction planning. This will prove to be the beginning of an unusual and serious delay contributing undocumented millions to the final cost.[19]

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[14] Link to "Competing Against Time"
http://www.dot.ca.gov/hq/esc/earthquake_engineering/seismic_advisory_board/compete_against_time.pdf

[15] Studies and Documents

[16] http://www.dot.ca.gov/dist4/eastspans/right.html

[17] http://www.calvoter.org/voter/elections/archive/96pri/props/192.html

[18] The state-owned bridges crossing various points of the Bay estuary and rivers are Dumbarton, San Mateo, San Francisco-Oakland Bay Bridge, Richmond, Carquinez, Benicia and Antioch. The Golden Gate Bridge is owned and operated separately by the Golden Gate Highway and Transportation District.

[19] For a full discussion of this, turn to page 36.

December 1996: Ventry report recommends a new, cable-stayed bridge. The estimates total cost at $842,788,000 and completion by October 2002.[20]

December 1996: Caltrans Peer Review Panel also recommends new bridge.

December 1996: Caltrans head bridge engineer Brian Maroney says 90 percent probability new bridge would be done by mid-2004.

January 1997: Caltrans decides on new bridge rather than a retrofit of existing eastern span. Navy and Caltrans dispute flares over who is responsible for new ramps connecting bridge to Yerba Buena Island.

February 1997: Governor Wilson says it will be a new bridge, not a retrofit of the existing east span. State says it will pay for a simple skyway (no tower) for $1.52 billion and have it open in 7 years (2004). Caltrans says 2-towered cable-stayed bridge would cost $1.7 billion.

February 1997: Legislature argues about Bay Area money obligation. Senate Pro-tem Bill Lockyer threatens litigation. Governor Wilson withdraws $500 million pay offer.

February 1997: Lockyer asks the Metropolitan Transportation Commission (MTC) to take charge of bridge design.

March 1997: The MTC appoints Bay Bridge Design Task Force.[21]

April 1997: Environmental review begins.

May 1997: Caltrans says adding a bike lane would cost $167 million.[22]

May 1997: MTC's Design Task Force recommends a two-year study of the cable-stayed bridge option vs. the SAS. Controversy erupts over allegations that members of engineering panel allegedly participate in design "competition." [23]

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[20]San Francisco-Oakland Bay Bridge East Bay Crossing Replacement Value Analysis Findings, Ventry Engineering.

[21] The MTC created a Bay Bridge Design Task Force, 7-member subset of the commission. The MTC also created the Engineering and Design Advisory Panel (EDAP), comprised of 35 experts in bridge engineering, architecture, and geology.
The Design Task Force made its recommendations based on the advice of the advisory panel.

[22] This study alone cost $2 million.

June 1997: San Francisco Mayor Willie Brown opposes proposed northern alignment, saying it uses too much flat developable land in Yerba Buena. He also wants better ramps and a new Transbay Terminal.

June 1997: Coast Guard, with a base on the southeast corner of Yerba Buena, favors a northern alignment that would instead go on Navy land.

July 1997: Willie Brown changes mind and supports northern alignment, saying he defers to the Port of Oakland, which also officially opposes southern alignment, saying it would interfere with its development plans. Mayor Brown continues his call for new ramps and Transbay Terminal.

July 1997: MTC Design Task Force says it needs another year for final report.[24]

August 1997: SB 60 & SB 226 (Kopp) calls for statewide earthquake retrofits, including Bay Bridge for a cost of $1.285 billion, estimated by Caltrans. This is to be paid by Regional Measure 1[25] toll funds. Total statewide was to be $2.62 billion. The legislation imposed a $1 toll on all Bay bridges until January 2008 or until $907 million was collected, whichever came first. After that, the toll could stay for "amenities imposed by the Metropolitan Transportation Commission."[26] The legislation makes the MTC responsible for selecting design of replacement span. If costs go over, Caltrans required reporting to Legislature within 60 days and having a plan to pay for it.

September 1997: San Francisco Mayor Willie Brown writes letter to Caltrans saying if Navy gives islands to city, city will provide easements to Caltrans for bridge.[27]

October 1997: A group of East Bay officials oppose spending the planned $80 million for new Transbay Terminal in San Francisco.

January 1998: Tolls go up to $2.

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[23] This charge by Coman Feher Associates.

[24] The Design Task Force included now state Senator Mark DeSaulnier.

[25] http://bata.mtc.ca.gov/projects/rm1.htm

[26] http://leginfo.ca.gov/pub/95-96/bill/sen/sb_0051-0100/sb_60_cfa_950320_094918_sen_comm.html & ftp://www.leginfo.ca.gov/pub/97-98/bill/sen/sb_0201-0250/sb_226_bill_19970812_enrolled.html

[27] see page 36.

May 1998: Caltrans says 30 percent design complete. Cost of SAS would be up from $1.28 billion to $1.50-$1.56 billion. A cable-stayed bridge would be somewhat less.[28]

May 1998: MTC Design Task Force recommends SAS.

May 1998: West span retrofit begins. Cost estimated to be $308 million and to take 7 years.[29]

June 1998: Richard Berkson of Economic & Planning Systems of Berkeley completes Treasure Island study for San Francisco Mayor Willie Brown administration, concluding plan will cost city $1.2 million. Brown withdraws support of northern alignment, saying it interferes with city's responsibilities and plans for island.

June 1998: MTC approves SAS. Opponents include Anne Marie Conroy, representing San Francisco as executive director of the Treasure Island Development Authority (appointed by Mayor Willie Brown), Oakland Mayor Elihu Harris and Oakland Mayor-elect Jerry Brown.

June 1998: Governor Wilson signs bill adding bike path to be paid with tolls.

July 1998: Navy denies access to Caltrans for 4-inch holes soils testing until an environmental impact statement is complete.[30]

December 1998: A group of East Bay mayors call for halt in order to study running a railway on new bridge.

February 1999: Mayors Willie Brown of San Francisco and Jerry Brown of Oakland write letters urging southern alignment and international competition for design, which would effectively start the already decade-old process over again. MTC officials state every year of delay could cost an additional $50 million.[31]

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[28] See page 32.

[29] This study concentrates on the construction of the new east span. However, the retrofit of the historic west span took $302 million and 6 years.

[30] See page 36.

[31] The now infamous condemnation of a skyway design as a "freeway on stilts" is forever associated with these objections.

February 1999: The MTC Design Task Force reconvenes to hear complaints about alignment and design.

August 1999: White House meeting held to resolve issues between Navy and Caltrans.

September 1999: Navy relents on drilling, ending more than a year delay.

December 1999: Consultant says adding railway access would cost $3 billion.[32]

December 1999: White House orders Army Corps of Engineers to begin independent analysis of project.

January 2000: Mayor Willie Brown meets with White House to call for retrofit. So does UC Berkeley engineering Professor Abolhasaan Astaneh-Asl, who says the new design is not earthquake safe. He counters with his own plan.[33]

May 2000: White House orders Navy to give disputed land to Caltrans. This decision was not formally announced for 5 months.

September 2000: Army Corps of Engineers endorses a new bridge and northern alignment, with qualifications.[34]

October 2000: More than a year-delayed environmental meeting between federal government and Caltrans takes place.

April 2000: Federal Highway Administration commissions Army Corps of Engineers to study bridge design.

April 2001: Caltrans tells Legislature the new cost is $1.462 billion more than the last estimate for a new total of $2.747 billion. Caltrans attributes new estimates to more design information, previous omission of inflation costs, "acceleration" costs, MTC choice of bridge design, one-year Navy delay to get sample drillings on Yerba Buena and a second year delay for environmental studies required by federal agencies. Extending tolls is the proposed solution. Then Caltrans Director Jeff

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[32] http://www.mtc.ca.gov/planning/bay_bridge/rail_study/exec_summ.htm

[33] http://www.ce.berkeley.edu/~astaneh/

[34] http://www.mtc.ca.gov/planning/bay_bridge/bbmemo_sep22.htm

Morales says these are "high-end numbers." State Senate requests independent analysis of Caltrans cost estimates. MTC hires Bechtel Infrastructure Corp. to assist.[35]

May 2001: Federal Environmental Impact Statement released more than four years after process begins.

July 2001: Bechtel report says cost overruns could be $190-$440 million more on east span.

July 2001: Federal Highway Administration approves east span project, two years later than Caltrans had anticipated, allowing Department to begin contracting bid process.

September 2001: The tragedies of September 11th spark increases in bonding and insurance costs.

September 2001: AB 1171 (Dutra) decrees new spending plan, capping all California bridge seismic retrofit at $5.085 billion.[36] AB 1171 funds the project by repealing the 2008 toll expiration. The bill also specifically banned bumping up the toll from $1 for this project. If the cost of the bridge increased from this latest figure, Caltrans is required to report to Legislature within 90 days and explain why. Legislation uses Caltrans' east span estimate of $2.6 billion, ignoring MTC estimate of $3.1 billion. MTC also estimates completion for May 2007.[37]

January 2002: Construction on new Bay Bridge commences. Caltrans says will be done in 2007.

June 2002: Caltrans pushes back completion date to 2009.

August 2002: State Auditor issues report concluding the Bay Area chose a more expensive design in the SAS.

March 2003: Caltrans says east span will cost $395 million more than $2.6 billion it last estimated. New cost estimate: $2.95 billion.

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[35] http://www.mtc.ca.gov/legislation/seismic/Bechtel-Report.pdf

[36] http://www.leginfo.ca.gov/pub/01-02/bill/asm/ab_1151-1200/ab_1171_bill_20011014_chaptered.html

[37] Most of these major jumps in costs and delays were first reported by news accounts in Bay Area news media, not by public officials.

August 2003: One SAS foundation bid comes in $210 million, 63 percent higher than Caltrans estimate of $129 million. (See May 2004).

October 2003: Caltrans rejects single bid, saying it is too high, and hires another independent review committee (headed by Th. Warner, former head of Utah Dept. of Trans.) to analyze bidding process.

November 2003: Caltrans says east span will be $2.98 billion and will open 2011.

March 2004: Bay Area voters approve Regional Measure 2 [38] adding another $2 to $1 toll. Money will be used for variety of seismic upgrades, including Bay Bridge.

April 2004: The Independent Review Committee (appointed October 2003) says SAS may cost $1.5 billion, not $800 million Caltrans estimate.

May 2004: Only one bid on SAS tower contract. Estimate had been $1.4 billion (foreign steel) and $1.8 billion (domestic steel). This is about twice over the Caltrans estimate of $733 million.

August 2004: MTC-commissioned Bechtel report says no point in rebidding or redesigning.

August 2004: Caltrans says cost now up another $2.383 from $2.6 billion. Now will be $5.13 billion. Department cites higher labor and materials costs, higher insurance and bonding costs.[39]

August 2004: Internal Caltrans review says it has spent $500 million on outside consultants studying issues raised about the bridge construction.

September 2004: Fitch Ratings Agency predicts $6 tolls to cover proposed bond debt.[40]

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[38] http://bata.mtc.ca.gov/projects/rm2.htm

[39] Once again, the public learns of this through news accounts not through any announcements by state officials.

[40] Link to Fitch PDFs or in Studies and Documents

September 2004: Governor Arnold Schwarzenegger administration asks Federal Highway Administration for Peer Review Team risk study on all alternatives. Also: the Independent Review Team, (formerly Independent Review Committee headed by Warner) used by administration for other bridge studies, is reactivated to look at the single bid situation. In the same month it recommends not accepting the single bid.

November 2004: Independent Review Team (Schwarzenegger administration) recommends cable-stayed bridge.

December 2004: Federal Highway Administration Peer Review Team concludes construction risks lowest with SAS, and cable stayed is most risky. But those risks have to do with public acceptance. Regarding cost overruns and delays the highest risk is SAS and lowest is the skyway alternative.[41]

December 2004: Caltrans recommends staying with SAS, while warning "the potential for cost increases is also high." Skyway would be cheaper but fighting over it could lead to long, costly delays while another significant earthquake could strike in the meantime.

December 2004: Schwarzenegger Administration proposes dropping the SAS alternative and going with the skyway.

January 2005: The Results Group completes study suggesting bridge will cost $5.3 billion.

July 2005: Enactment of AB 144 (Hancock) creates Toll Bridge Program Oversight Committee (TBPOC).[42]

July 2005: TBPOC first meeting. It votes to reject the one bid on the SAS and agrees to add $3 million incentives to 3 lowest bids.

November 2005: Work on the marine foundation of the SAS and the Yerba Buena Island detour is suspended while the Legislature debates next steps.

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[41] http://www.dot.ca.gov/baybridge/PRT_Final%20Report.pdf

[42] ftp://leginfo.public.ca.gov/pub/05-06/bill/asm/ab_0101-0150/ab_144_cfa_20050713_160936_asm_floor.html

May 2006: TBPOC awards main SAS contract to the consortium American Bridge/Fluor (ABF).

July 2006: TBPOC minutes show a concrete contractor is found using "recycled materials."

February 2008: TBPOC minutes indicate Chinese welding issues arise.[43]

September 2008: Quality assurance team finds problems with anchor bolts during Ohio inspection.[44]

December 2008: Contract Change Order (CCO) 77 for $13 million is approved by TBPOC.[45]

December 2008: TBPOC awards a $40 million contract to Caltrop, which subsequently subcontracts quality assurance work to Alta Vista Solutions.

March 2009: Bridge tolls are increased. "Drastic measures" for Chinese delays discussed in TBPOC meeting.

May 2009: Cracks discovered on existing east span of Bay Bridge, resulting in a proposed eyebar replacement strategy that initially failed and eventually cost $15 million.

July 2009: Caltrans Director and TBPOC member Will Kempton tells ABF[46] they have "an unhappy client."[47]

July 2010: Bay Bridge tolls climb to $6 at peak hours.

August 2010: The single most expensive contract change order, CCO 160, approved by TBPOC.

October 2011: Discovery of water in bicycle/pedestrian path segments and steel rods affixing path to bridge.

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[43] For a full discussion of this controversial and significant issue, see page 18.
[44] For a full discussion of this controversial and significant issue, see page 25.
[45] For a full discussion about the approximate 1500 change orders on the bridge, see page 28.
[46] American Bridge/Fluor is the prime contractor for the bridge fabrication in China.
[47] From TBPOC minutes.

November 2011: Foundation issues upset TPBOC because not told by Caltrans.

December 2011: Caltrans signs $21 million quality assurance contract with Alta Vista Solutions.

March 2013: Bolts issue revealed to public. [48]

September 2013: Bridge opens to traffic. Retrofits begin almost immediately.[49]

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[48] This latest major embarrassment to the Bay Bridge project was also revealed in the press, rather than a public announcement by state officials.

[49] This timeline is part compilation of many previously assembled timelines and part original material.

TRANSPARENCY

The question of transparency on the construction of new eastern span of the Bay Bridge is inextricably meshed with the question of safety. Both key factors, in fact, remain questions and this alone should be of concern to legislators, bridge managers and most of all, the public, all of whom desire and deserve answers.

In the absence of easily accessible public information on this project, of which they have paid – and will continue to pay for the next 40 years – Californians instead hear stories about the bridge that prompt everything from unsupportable fears to fuzzy urban myths.

There are people – some of whom in state government and at our best universities – who have lingering concerns that the new bridge may collapse in the next big earthquake. There are people – some of whom are members of the bridge engineering community – who say there are two expensive separate decks instead of one economical roadway because environmental activists insisted two would provide more sun for eelgrass in San Francisco Bay.[50]

This serves no one. Not the men and women who built the bridge and gave much of their lives for this lifeline structure. Not the people who managed the bridge who decry rumors and what they consider misleading or even downright sloppy news stories.[51] Not the California state government, charged with carrying out the safety and fiduciary responsibilities of the public. And certainly not the people of California who have every right to know what their money and sacrifice bought them. There is an antidote for this: Open access to public information.

If there is one consistent finding of this inquiry from the beginning of the Bay Bridge project almost a quarter of a century ago to the opening of the span to traffic last Labor Day weekend is that there has been a lack of public transparency. This report discloses and highlights some of the most vivid examples.

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[50] In fact, the decision to build two separate, side-by-side decks was largely an aesthetic one. Link to Studies & Documents page for eelgrass studies

[51] MTC Executive Director and TBPOC Chairman Steve Heminger says "there were so many manufactured and fallacious controversies they can't tell those from the real ones."

DECK WELD CONTROVERSY EMERGES

A notable example of transparency-safety issues relates to the welds in the bridge deck panels underlying the roadways themselves.[52] Although there were a few brief news accounts roughly 4 years ago bringing up some of these concerns, bridge managers quickly dismissed them and so the issue died away.

This inquiry has found ample evidence that this key safety issue briefly appeared and then disappeared less because of any lack of merits to the concerns than because of an ongoing lack of public disclosure enabled in part by extraordinary exemptions for the TBPOC from the Ralph M. Brown Act[53] and the Bagley-Keene Open Meeting Law[54] -- laws guaranteeing open public meetings for most government actions in California. In addition, there are formulaic clauses in Caltrans contracts punishing candor and rewarding secrecy.[55]

QUALITY ASSURANCE EXPERTS DISCOVER WELDING CRACKS

The specific issue regarding the safety of the welds began shortly after the state awarded the prime fabrication contract to American Bridge/Fluor (ABF)[56] in 2006. ABF, in turn, planned to sign a subcontract with Shanghai Zhenhua Heavy Industry Co., Ltd. – commonly called ZPMC[57] – to build the steel decks and the SAS tower.

As a standard safety protocol, Caltrans first had its independent quality assurance specialists perform an audit of ZPMC before allowing it to take on the critical deck and tower subcontract.[58] This quality assurance firm was one with a long and well-established record then known as MACTEC,[59] an internationally recognized

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[52] To be explicitly clear, this has nothing to do with what ultimately proved to be false charges of faulty welds in the bridge foundations – charges James Merrill and MACTEC had earlier investigated and found false.

[53] http://ag.ca.gov/publications/2003_Intro_BrownAct.pdf

[54] http://www.dca.ca.gov/publications/bagleykeene_meetingact.pdf

[55] See page 29.

[56] http://www.fluor.com/projects/pages/projectinfopage.aspx?prjid=2

[57] http://www.zpmc.com

[58] Caltrans' Materials Engineering and Testing Service (METS) branch established this protocol after a near disaster at the Carquinez Bridge where ZPMC was paid to make 250,000 critical bolts. When the bolts arrived at the construction site, Caltrans found they had been made to the wrong size and they all had to be rejected and remade. This story was never revealed to the public.

[59] MACTEC was subsequently bought by engineering giant AMEC. Link

engineering firm that put one of its top people – James Merrill – in charge of a team of engineers and technicians. Merrill is an internationally recognized expert in his field and is a member of the distinguished panel[60] that establishes welding safety codes.

Senior Principal Engineer Merrill and his team gave ZPMC a "contingent pass," [61] finding the Chinese company having the infrastructure for the Bay Bridge job, but lacking experience and personnel. Merrill says Caltrans was taking "great risk"[62] in letting ZPMC do the work. Bridge managers executed the contract despite MACTEC's warning.

MACTEC engineers almost immediately started finding significant numbers of cracks in the deck welds underway at the Shanghai China fabrication factory. Merrill says he was "alarmed." Others agreed.

(Merrill's team had also found another unsettling quality problem that has been very much in the news during the last many months – a finding underscoring concerns found in this investigation. This inquiry addresses that immediately after the welds discussion in this report.)

CONTRACT AND CODE CALLS FOR NO CRACKS IN WELDS

Merrill, in an interview he submitted to for the first time because he was summoned by the state Senate, points out the ABF/ZPMC contract calls for absolutely no cracks in any of the welds. Indeed, welding codes have that same absolute standard for similar critical components.

"We found hundreds of cracks," Merrill stated in an interview at his San Diego office. Moreover, those were just "positive" sightings – that is to say fissures seen with the naked eye. More sophisticated quality assurance tests with tools such as Phased Ray Ultrasonic Testing would reveal more.

MACTEC, knowing the terms of the contract called for no cracks whatsoever, rejected the panels, throwing the project into a potentially serious time delay, as

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[60] http://www.aws.org/technical/d1/

[61] Caltrans defines a contingent pass as "Reasonable plans are in place to make necessary changes to the facility prior to the start of work on this project. All contingencies must be corrected as determined by a passing Department re-audit prior to fabrication to receive a status of "PASS."

[62] Link to Studies & Documents page

first noted in TBPOC minutes of September 2008. On March 5, 2009, the TBPOC minutes note "the situation is calling for drastic measures." Then on May 19, 2009, the minutes record "The TBPOC expressed concern over the lateness of this problem discovery, right before shipment, which does not inspire confidence."

In fact, at the end of the conflict, Caltrans engineers say the Bay Bridge suffered another long delay because of the welds issue, which had to be made up by other means. There was a financial cost that MTC Executive Director and TBPOC Chairman Steve Heminger said he estimates grew eventually to $100 million.

BRIDGE MANAGERS PUSH BACK

Merrill says his Caltrans supervisors told him he was being "too rigorous" in his findings, which then led to the next event. Traditionally, quality assurance experts such as MACTEC engineers report their findings to the Materials Engineering and Testing Services (METS) branch of Caltrans, located roughly 5 miles from Caltrans headquarters in Sacramento. Caltrans separated the quality oversight from construction to help avoid conflicts of interest.[63] The METS branch, headed by Deputy Division Chief Philip Stolarski, agreed with the MACTEC weld findings. "For the Chinese, the weld standards were 'suggestions,'" the METS chief stated in an interview requested for this inquiry. "For Caltrans, they were a binding agreement."

In May 2008, shortly after this standoff, top Caltrans executives dissolved the separation between quality assurance and construction in what bridge managers call "Team China." [64] Caltrans executives instructed MACTEC and Merrill to stop reporting to METS and instead report directly to the construction team, headed by Principal Construction Manager Peter Siegenthaler and Program Manager Tony Anziano. Merrill states the project management was more concerned with staying on schedule than anything else.

That conflict was not resolved until MACTEC's multiple contracts were up for renewal and Caltrans executives re-advertised it in the fall of 2008. Caltrans executives then hired another company, Caltrop,[65] which in turn sub-contracted

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[63] In an interview with the former head of Caltrans Risk Assessment, now doing the same job for the High Speed Rail Authority, this separation was noted as "important."
[64] Will Kempton was Caltrans director at the time.
[65] http://www.caltrop.com

quality assurance work to Alta Vista Solutions.[66] The Caltrop contract was worth $40 million.[67]

NEW CONTRACTOR CONTROVERSY

This turn of events leads to other serious questions that deserve full public knowledge: An independent pre-audit of Caltrop/Alta Vista by Mayes Testing Engineers found the Caltrop/Alta Vista group not adequately qualified for the job. The Seattle-based Mayes firm also found the Caltrop/Alta Vista staff was not even properly certified. Owner Michael Mayes says he wrote a report for Program Manager Tony Anziano but it "never got out of a draft stage. He kept asking me to change things. I had my suspicions. I think he didn't want it to get out that these guys were not qualified." It should be noted that The California Public Records Act shields disclosure of draft documents and those not formally accepted.[68]

Eventually, Caltrop and Alta Vista recruited some MACTEC staff – Senior Principal Engineer Merrill stayed with MACTEC – which gave Alta Vista the qualified personnel needed for the job.

In 2011, it should also be noted, Principal Construction Manager Peter Siegenthaler resigned from Caltrans and became a high-ranking executive with Alta Vista, where he remains.

INTERNAL DISSENT IN CALTRANS "TEAM CHINA"

Caltrans Civil Engineer Douglas Coe, celebrating his 25th career year with the Department in 2014, went to China in March 2007 to work alongside MACTEC and Merrill. From the start, he was also concerned about the welds.

In an interview for this inquiry he stated the hundreds of cracks in welds soon mounted into the thousands. "The Chinese were not catching stuff," he says. "Why are we finding all these cracks?" Coe says he was also concerned that bridge managers were pushing aside Merrill's findings. "Normally, we would have stopped it (fabrication)," he says. Coe recalls feeling "pressure not to stop. I said as fiduciary I have a duty and they have a duty to do this right. And as a civil engineer I have a professional obligation as well."

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[66] http://altavistasolutions.com
[67] Contract link in Studies & Documents
[68] Mayes documents In Studies & Documents

Coe says he insisted that if Caltrans was going to permit the Chinese to violate the terms of the contract, then the bridge managers at least had to write a change order allowing the cracks to stand. This eventually happened.[69]

Coe and Merrill say Siegenthaler instructed Merrill to use tack weld quality specifications that were also contrary to basic code standards. "Essentially what he was telling Jim (Merrill) was 'don't find cracks.' "[70] Coe says, "Pete wanted the problems to go away. The Chinese were a year and half behind schedule and ended being about 2 years behind."

PROBLEMS PILE UP

Coe, as with Merrill, says both Siegenthaler and Anziano repeatedly instructed him not to record his concerns in writing, either on paper or email, but rather to communicate orally. While Coe declined to share his interpretation of that instruction often heard in the course of this inquiry, Merrill says Anziano did not want a record that would be legally available through the California Public Records Act.

Even more disconcerting, Coe says, was catching the now CEO of the new quality assurance firm that took over for MACTEC outright "lying" about inspecting welds that connected the final deck panels – what are called "super-panels." Coe says when he found irrevocable evidence of a failure to adequately inspect the welds, Anziano reassigned him to lesser duty on the Antioch Bridge back in the Bay Area. "Anyone who went against Tony didn't stick around," Coe says. "This is the first time in my career the engineering wasn't allowed to be done right. This is the first time engineering decisions were made by non-engineers."

"I'm mad as hell that the Department (Caltrans) put me in a position to have to say this. It's a loss of public trust," Coe says, "But if that bridge starts to crack in five years it's all going come out."

Both Coe and Merrill say they don't believe the bridge is unsafe, but that the decks – they both left before the SAS was built – will require retrofitting throughout the life of the span, which Merrill suggests may not be the officially estimated 150

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[69] CCO 89 in Studies & Documents

[70] This refers to careful inspection along welds lines marked every 3 inches, the primary worry being cracks that begin small but later "run." Merrill confirms these conversations.

years because of the weld issues. Coe says the situation is contrary to "public welfare."[71]

A CONTRASTING SET OF PERSPECTIVES

Principal Construction Manager Peter Siegenthaler has a different, if not pinpoint memory of the events, as does Program Manager Tony Anziano and TBPOC Chairman/MTC Executive Director Steve Heminger. All three bridge managers state the cracks were repairable, have been largely fixed and that the bridge is safe.

Siegenthaler, now executive vice president of Alta Vista, states, "MACTEC was not providing the inspection services when needed." He says he was "alarmed" by the MACTEC situation and attributed much of the delay to the MACTEC team refusing to stay late in the work day to approve fixes on the cracked welds.

Anziano says he doesn't recall having any direct talks with Merrill or MACTEC that Merrill says were frequent and difficult. In fact, Anziano states "I did not ever get the impression that anyone there was alarmed. Issues were identified and routinely addressed." Anziano also stated "no one was discouraged in reporting quality assurance," and that there were only "healthy conversations" and "philosophical disagreements" regarding the weld issues. Anziano and Siegenthaler both state the change of reporting in quality assurance was simply "streamlining" and made sense at a complicated job site on the other side of the Pacific Ocean from METS. Anziano also states the MACTEC contract was dropped and the Caltrop/Alta Vista contract signed because there were "complaints" in the contractor community that the same people were getting the plum jobs over and over and that Caltrans was not allowing for competition.[72]

Anziano says he does not recall any serious objections by Mayes Testing Engineers to the Caltrop/Alta Vista contract and, in any event, they eventually acquired the properly certified personnel.

Anziano's perspective on Coe's remembrances, while also bedeviled by memory issues after years of controversy, is also different. The Program Manager says he does not recall demands for changing the welding standards or instructions not to

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[71] http://f2.washington.edu/cpo/cpoutlook/code-ethics-civil-engineering-vs-construction-management

[72] There are legal and administrative remedies for contractors who believe this is an ongoing issue.

put objections in documentable form. "In my view you are always better off with written communication," Anziano says. He does recall instructing Coe to withdraw a critical letter after some spirited discussions about weld quality. "Mr. Coe wanted tests that were beyond requirements and beyond contract. As a group we made this decision. That's not to say there wasn't dissent."

Anziano also recalls ABF and ZPMC being "extremely upset" because of what they thought was Caltrans "throwing rules out the window." The Program Manager reassigned the civil engineer back home to the Antioch Bridge project after determining the veteran Caltrans employee "had been unable to establish a working relationship with our contractors." Anziano said it was good for Coe to get "a fresh assignment."

It must also be noted that the bridge managers hired a group of experts it selected who reviewed the welding issue and gave it approval. Critics have questioned the conclusions of the study.[73]

Regardless of controversy, the delivery of the panels fell behind schedule and the TBPOC approved change orders to stop the hemorrhage in the shipment deadlines. MTC Executive Director and TBPOC Chairman Steve Heminger says "ZPMC was in the strong position to bargain with clients. That was the business model they were familiar with."[74]

These are all serious charges, even as isolated incidents. But they are not. Indeed, the controversy over the hydrogen-embrittled bolts,[75] also known as the E2 anchor rods, indicates a pattern that should prompt concern.

ANCHOR RODS PROBLEMS DOCUMENTED IN 2008

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[73] Link to Studies & Documents

[74] This refers to the extra money paid to ABF and presumably ZPMC in change orders

[75] Still another story revealed by the press

Caltrans sent Merrill's MACTEC quality assurance team to the Midwest to assess the bolts at the fabrication site. In September 2008, the team found the bolts were not elongated properly and the nuts not adequately hardened. The quality assurance team went back for a second inspection after fabrication began in October and found more of the same problems.

The quality assurance documents submitted to Caltrans by MACTEC also state the prime contractor – ABF – got the bolts "too late to allow normal release procedures." "In addition, documentation was either missing or incomplete."

A subsequent inspection found anchor rods and "the E2 Shear Key was shipped to the jobsite without QA testing results or METS release. Time was constrained because these components were ordered on a schedule that led to completion of fabrication only several days before anticipated installation."

The contractor blamed Caltrans for "schedule difficulties." Caltrans disputes that assertion.

Bridge managers resolved the situation by changing the specifications on the bolt fabrication contract and then accepted them "as is."

Merrill suggested there be more testing of the bolts if the fabrication was to go ahead. "I got told we weren't doing any testing and to stop mentioning it," Merrill states. "I was basically told to stop bringing it up. That was the end of that."

BICYCLE-PEDESTRIAN PATH ISSUES ARISE

In October 2011, a Caltrans corrosion engineer, Robert Reis, found many of the steel boxes making up the pedestrian-bicycle path had been left out in the rain uncovered for some period of time. Initially, this was of little concern because they were appropriately protected with paint. But "lift" holes in the boxes were left exposed without their caps. That allowed hundreds of gallons of water to enter and settle into the boxes and to contact the steel brackets that affix the path to the roadway.

Reis began his inspection to determine how much rust damage had taken place, but cut his work short when the California Department of Water Resources offered him a better job. Alta Vista Solutions then took over the inspection.

Program Manager Tony Anziano says he has little memory of this episode, except that some drainage solution took care of the problem. This is an ongoing issue for this inquiry and subject to further exploration in the coming weeks.

BRIDGE FOUNDATION DISCLOSURE ISSUES

Another issue with some similar characteristics had a bit more public airing in a controversial Sacramento news account regarding two key concrete foundations beneath the SAS tower.[76] This is an example of how more bridge workers say they are concerned about reporting safety issues to management.

Michael Morgan and a colleague who has already spoken out about parts of this issue worked on the foundation piles holding up the landmark SAS tower, which, of course, holds up much of the bridge. They have raised concerns to their managers on the bridge project and to this inquiry about the adequacy of testing the concrete pour on 2 of the 8 piles. Morgan says Caltrans supervisors responded to their concerns with either indifference or hostility. "If you bring up problems that are politically distasteful – stop a project dead in its tracks – you become the problem," Morgan says.

As with Merrill, some METS managers and Coe, Morgan says management considers them "zealots," because they expressed concerns about what they consider shortcuts. Their engineering concern was over the possibility that some of the foundation concrete may never cure or set well because the contractors may not have mixed it correctly.

There was a good deal of testing of these foundations, Morgan notes, but some of it clearly showed "significant" anomalies that warranted further testing that was either done incorrectly, not done at all, or in the case of pile 8, lost.[77]

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[76] This, to be very clear, has nothing to do with other reports regarding a former Caltrans worker found to be falsifying work on foundations at other construction sites in southern and northern California.

[77] A radiology testing called gamma gamma was performed by the state by inserting equipment down PVC tubes left in the wet concrete specifically for this testing procedure. When the anomalies showed, further testing using a procedure called Crosshole Sonic Logging (CSL) using steel pipes also embedded for the reasons, was performed at a wrong time by the contractor itself, rather than an independent party. The contractor then sealed up the testing tubes. Link to Studies & Documents

In addition, Morgan says in a familiar refrain by other bridge quality control people on a completely separate part of the project in China, managers repeatedly instructed them not to put anything in writing. "This is a common refrain among most of the executive staff that I have dealt with," Morgan states. "It is an institutional norm when dealing with anything sensitive. We heard it directly and indirectly many times."

Morgan says he does not believe the concrete is now a safety issue – he says only that it should have been adequately tested.

Program Manager Tony Anziano rebuts the assertions, saying he "absolutely" recalls the issue but that after an examination of the charges it was "not even a remote concern for us."

A DIFFERENT PERSPECTIVE ON PUBLIC INFORMATION

The fact that the Legislature created the TBPOC with an exemption from California's essential open meetings laws is startling. Some MTC staff and the state transportation officials who helped write the TBPOC enabling legislation still defend the exemption.

Those officials say the oversight body must have the freedom to candidly discuss issues such as potential litigation and contract negotiations away from the parties involved. No reasonable person would dispute this very real concern. Yet, countless public bodies across California have adjourned into executive session for decades to take care of the same sorts of business, as stipulated in the Brown and Bagley-Keene Acts and adjudicated in case law. If the lawyers advising the TBPOC suggest this isn't sufficient, then give consideration to legislation targeting those specific concerns.

Some TBPOC officials also point to the legally required quarterly reports it must send to the Legislature as part of its charter. Although these reports are carefully prepared for accuracy and often have excellent illustrations, they do not contain revelations or disclosures regarding issues such as the welds, bolts, bike paths, foundations, significant change orders, non-compliance reports, or conflicts such as expensive fights with other government agencies.[78] What's more, these quarterly

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[78] In fact, there have been significant and expensive intra-agency fights between the POC and other state programs such as Fish & Game and Industrial Relations, not to mention the U.S. Navy/San Francisco controversies that have never been fully aired.

reports appear months after issues have arisen and bridge managers have sometimes resolved them without any public knowledge.

Using the welds and bolts controversies as examples of potential negative outcomes from a lack of transparency or documented public access to information, a robust policy of open government in these instances may have prevented the inevitable questions when top bridge managers say they do not recall many of the details that could have clarified who said what to whom and when. The assurance of transparency that leads to accountability profits everyone in the long term.

CONTRACT CHANGE ORDERS AND OUTSIDE STUDIES

The TBPOC must approve all contract change orders (CCOs) [79] of $1 million or more. Approval of these CCOs is documented in the TBPOC minutes. But there is scant description of what they are for, almost never a clear explanation of what the original contract called for or how a CCO would change the contract terms. Unlike most public bodies across California – including the MTC itself – there are no supporting documents attached to agenda items, including CCOs.

As far as Caltrans records are concerned, there is no readily accessible and comprehensive list of the almost 1500 change orders totaling more than $1.4 billion that ultimately altered the plans and finances of the bridge project.[80] It must be noted that for this inquiry, Caltrans officials have gone out of their way to make most of the CCOs not only available but even assembled a short, but clear database of the change orders among the 15 prime contractors working on the Bay Bridge. This may be the first time the public has had an opportunity to begin looking at these reports regarding critical expenses. Hopefully, it is the beginning of a process further discussed in Conclusions and Recommendations.

Caltrans is unable to produce a comprehensive list of critical Non-Compliance Reports (NCRs) that would document many of the problems contractors have encountered meeting their contractual obligations.[81] In fact, some investigative

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[79] A Contract Change Order typically comes about when conditions change and the agreement is amended.

[80] Some progress can be reported here and is discussed in the Conclusions and Recommendations section.

[81] Worse yet, there have been expensive contractor snafus never brought to public light and not even eligible for a NCR because of management practices. A case in point was a $1.5 million CCO for repairing the bike path in April 2013, even though not one single bike – or pedestrian – had used it yet. TBPOC Chairman Steve Heminger objected to paying the extra

news reporters have had to wait months before receiving copies of NCRs – as well as other documents – requested through the California Public Records Act (CPRA).[82]

Caltrans has had more success compiling documents for the process known as Notice of Proposed Claims, in which a contractor declares a problem or issue has arisen.[83] Although this data is available, there is no clear way for the public to understand it, navigate it, or sort the information in meaningful ways.

It must also be briefly mentioned that neither the press nor the public have had access to bridge contractors (or any other Caltrans contractors on other public works projects) as a matter of policy. This may sometimes serve the interests of the contractors – though sometimes not. There are serious competitive reasons for this historic public information barrier and those should certainly remain respected. But the blanket language contained in standard Caltrans contracts prohibiting all free speech by contractors and answers to standard press inquiries may be overkill.[84]

There has been a significant, if uncounted and largely uncompiled list of studies, audits, and reports on the Bay Bridge. These have contained much valuable information but most of it has been after-the-fact, and usually the results of revelations rather than the cause of them. In addition, they are more often than not written in specialized language and not readily accessible to the public.

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money but was told a contractor had used it for a staging area and created "wear & tear" that had to fixed. Caltrans had already closed out the contract, so the contractor was not liable for the damage and the taxpayers were left with the bill.

[82] The CPRA requires government agencies to fulfill requests *no later than* 10 days after receiving the inquiry.

[83] Link to NOPC site http://www.dot.ca.gov/Bay_Bridge_Docs_12-20-13/

[84] Standard Caltrans contracts contain this language: "The Consultant shall not comment publically to the press or any other media regarding this agreement or the Department's actions on the same, except to the Department's staff, consultants own personnel involved in the performance of the agreement, at public hearings or in response to questions from a Legislative committee." "The Consultant shall not issue any news release or public relations item of any nature whatsoever regarding work performed or to be performed under this agreement without prior review of the contents thereof by the Department and receipt of the Department's written permission."

FIDUCIARY RESPONSIBILITY

Bay Area drivers have had an expensive time of it in the years since the Loma Prieta earthquake. During the first 15 years, the public generally understood and accepted tolls first going to $1, then to $2 and by 2004 a full $3. But then, as bridge retrofits – led by the new eastern span of the Bay Bridge – blew up in costs, the tolls jumped in 7 years to $6 during prime time driving hours. For an average commuter who must travel the bridge during the regular commute 5 days a week, that's $30 a week, $120 a month, and roughly $1,500 a year – a sum it would be wise for all toll decision makers to keep in mind, given the approximate $60,000 a year average income of Bay Area households.[85]

This toll money has not gone just to the Bay Bridge. It has gone to making all the state-owned bridges on the Bay estuary seismically safe. In addition, the money is paying for many other much needed and wanted public works projects such as the fourth bore of the Caldecott Tunnel, connecting Alameda and Contra Costa counties. Caltrans contractors have completed many, if not all, of these projects on time and on budget, especially the ones started after the creation of the TBPOC.

As for the eastern span of the Bay Bridge, as it has been noted time and again, the original estimate of $1.4 billion for a new bridge has soared a "staggering" [86] 400 percent to almost $6.3 billion. In order to meet this enormous financial obligation, the TBPOC issued bonds – a standard government instrument to raise money by borrowing against future revenues. MTC accountants, at the request of this inquiry, calculate the final sum, once bond principal and interest is paid, at $13 billion when settled in 40 years.

Although most of the Bay Bridge cost increases took place before the Legislature created the TBPOC nine years ago, it should be noted that since then the cost of the new Bay Bridge surged again by another almost $1 billion dollars.

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[85] For more data on income go to http://www.abag.ca.gov

[86] Karen Trapenberg Frick/ UC Transportation Center unpublished dissertation http://www.uctc.net/research/diss130.pdf

COST INCREASES UNDER THE TBPOC

In 2005, the Legislature passed AB 144 (Hancock) with a total budget of $8.685 billion for the entire seismic retrofit program of all Bay Area bridges. Of that total, $5.486 billion was earmarked for the eastern span replacement project, and it also included $900 million of contingency funding, which is a term of art used for extra "just-in-case" money that likely would be spent. As noted previously, AB 144 also created the TBPOC.

Among the more notable changes made after the TBPOC took charge of the project was the single most expensive change order, CCO 160, which cost an extra $184 million.[87] This was a heavily disputed and negotiated issue between the TBPOC and its prime contractor, ABF, regarding delays in shipping fabricated steel from China for the decks and SAS.

Some of the drama revolving around approval of CCOs can be glimpsed in the TBPOC minutes. For example, on May 19, 2009, CCO 108 was approved to "accelerate" construction for a cost of $45 million. On July 7, 2009, then Caltrans Director and TBPOC chair Will Kempton in his last meeting says ABF and TY Lin/MN (the designers) "have an unhappy client," referring to the TBPOC. Heminger said later the TBPOC worried that ABF was not giving its full attention to the Bay Bridge, but was distracted by other contracts with other parties.

A compilation of the change orders for the 15 prime contractors occurring with the TBPOC's approval amounted to an extra $1.4 billion. This is not to say these changes were not worthy. This is not an audit of CCOs, but there are two points this inquiry can make. First, this is public information and should be available for public scrutiny. Second, the public deserves explanations for this enormous amount of money being spent. For example, a change order allowing welding cracks that are a deviation from standard code needs public disclosure.[88] Extra money for "accelerations" when a construction company has already agreed to an important deadline needs public disclosure. What records are available demonstrate the bridge managers did not always enforce these agreements, but sometimes paid many extra millions to keep the schedules simply from further slippage. Having stated that, it is important to cite MTC Executive Director and TBPOC Chairman Steve Heminger, who notes the very documentable reality that conditions do change, sometimes beyond human control. "There's a common

[87] CCO 160 in Studies & Documents
[88] CCO 89 in Studies and Documents

expectation in the public that when something gets built it will be perfect," he says, "It's not."

The TBPOC also approved some changes one authority has called "prettying up the bridge."[89] These include a new design for the almost $200 million bike/pedestrian path and its custom handrails and the palm trees planted along the Oakland touchdown. Bridge managers have also approved spending millions more on custom LED lights not originally planned, including 5-sided light standards to mimic the shape of the SAS. Because the TBPOC decided not to use standard Caltrans round light poles, the engineers had to customize the pentagonal poles with flanges to withstand heavy winds. The extra cost for these features amounts to $4.8 million.

TBPOC Chair and MTC Executive Director Heminger acknowledges it was a "pretty aggressive lighting budget."[90]

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[89] Denis Mulligan, once state Toll Bridge Program Manager and now General Manager and CEO of the Golden Gate Bridge.

[90] The original lighting budget was for $16.1 million and after all the changes ended up being $20.9 million.

TWO-DOZEN YEARS OF PLANNING AND BUILDING

No one suggests that managing an ambitious, multi-billion dollar public works project such as the east span of the Bay Bridge must be a model of streamlined efficiency. Even the most defensive managers will, in moments of candor, agree there are management lessons to be learned from the project.

Oftentimes one will hear about the success or failure of leadership. To this point, it has been noted there have been 8 Caltrans directors since the Loma Prieta earthquake and the resultant lack of continuity has been an issue.[91] While leadership comes and goes, policies, protocols, and procedures can stay – especially if they work.

In 1996, Caltrans engineers said the original design with a tower and suspension cables – this famously after years of haggling about what earthquake standards to use, whether to retrofit the old cantilever bridge, whether to put rail across it and more – would take 8 years and cost a little less than $1.4 billion. The two Caltrans engineers who have taken most responsibility for this often-cited estimate even today say they could have done that – with one major qualification: If left alone to build the bridge they designed, scheduled and estimated.

"I never anticipated all the political turmoil," says the affable Caltrans estimator Chris Traina. "We're taxpayers, too," he adds with a hint of plaintiveness.

But Traina and colleague Brian Maroney are among the minority here. Most everyone else inside Caltrans, the MTC, and the California Transportation Commission interviewed for this inquiry are in accord that the original estimate, based on a 30 percent design, was, in retrospect, unrealistic. To both men's credit, that 30 percent design estimate was a model of progress at the time. Until then, estimates for other major projects normally began with 10 percent or less of the design completed.

Caltrans, much to its credit, has learned from this and now employs an increasingly sophisticated set of tools to do what planners call "risk assessment." [92] To be sure, there are some events, such as a mayor of a large city and a branch of the military

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[91] Robt. Best, James van Loeben Sels, Jose Medina, Jeff Morales, Will Kempton, Randy Iwasaki, Cindy McKim, Malcolm Dougherty.

[92] For example, the use of the Monte Carlo Method for estimating cost ranges is one of many tools that have emerged as this skill becomes increasingly sought after.

digging in their well-heeled shoes and heavy anchors for years at a time, that no one could reasonably have predicted when making original estimates.[93]

In retrospect, many transportation experts also agree that giving a hard cost number and completion date was a political error, although this is what the state Legislature expected at the time. Instead, the vast majority of those interviewed for this inquiry suggest designers of future mega-projects deliver a range of possibilities: best and worst case scenarios.

PREVIOUS EXAMINATIONS AND CHANGE

Countless studies, audits, and reports on the Bay Bridge, but no one – not Caltrans, not the MTC, not the California Transportation Commission – has a clear and comprehensive catalogue of this vast and expensive documentation that might help planners and managers. Even the Caltrans library staff in the Sacramento headquarters doesn't know how to collect this valuable treasure trove of data, insights and lessons. There is no tracking of how much money was spent on these studies. This situation is symbolic of the lack of simple organizational tools that can have an incalculable effect on safety, transparency, costs, and delays of major projects.[94]

Academics, such as UC Berkeley's Karen Frick of the university's Transportation Center, say that what have become standard management planning tools at many large organizations have historically not been incorporated at Caltrans. For example, Frick notes Caltrans engineers have extraordinarily limited travel budgets to attend and learn at workshops and conferences where technological and other advances are routinely shared among transportation professionals. This contributes to the difficulty of negotiating with better-financed and trained contractors. Caltrans executives such as Richard Land, who oversees the travel and study

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[93] One of the more startling stories revealed in the course of this investigation is about the Navy's well-known refusal to allow Caltrans to dig a small series of 4-inch holes on Yerba Buena for soils tests. What is not well-known is the "Naval blockade" led it to send boats into the Bay waters where Caltrans engineers were taking samples well away from the island where the SAS foundations were to go. The Navy threatened to board the Caltrans boats and arrest the crew if it did not cease, desist and depart – which it did. More on this subject on page 36.

[94] We have attempted to correct this as best possible by accumulating as much material as we could sweep up and posting links and other access points here: Studies & Documents page.

budget, takes some issue with this perspective, but allows that state budget cuts have sliced deeply into this aspect of Caltrans' operations.[95]

Almost everyone involved in this project attributes some of the costly delays in the project to a culture at Caltrans to take far too much time to execute the simplest of tasks. Just about everyone has a story, and former Caltrans Director Will Kempton's is among the best: When he was the boss he wanted to place a small directional decal – elegant and inexpensive chevrons – on freeway entrance signs so drivers would know if they needed to be on the right or left side of the street in order to get to a freeway onramp safely and swiftly – a small but important advance. But even the director of Caltrans couldn't get it done.

Some critics may find it ingenuous to conduct an inquiry into Bay Bridge delays that raises serious issues about reporting weld and other controversies that caused – and could have caused far greater – fallbacks in schedule. This would be to miss the point. Delay on big projects may not always be unavoidable; it may, at times, even be necessary. Rather, this inquiry finds, that applying modern management practices may save much time as well as cost. This includes public disclosure and encouraging employees to be candid. If, for example, bridge managers had fully addressed the anchor rods issues found in 2008, the extra time and millions spent now – not to mention credibility of the project – would have disappeared.

Caltrans is a vast enterprise, with some 20,000 public employees working on some 600 active projects at any given time. At this moment, Caltrans is engaged in what it calls a top-to-bottom review of its practices. Clearly, its top managers know nothing will enhance Caltrans' more than boldly enacting effective organizational change.

UNEXPECTED DELAYS

Much of bridge delay is attributed to other public agencies, especially the City and County of San Francisco and the U.S. Navy.[96]

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[95] For an in-depth examination on this issue see "Risk Assessment and Risk Management for Transportation Research," authored by UC Berkeley transportation scholars Elizabeth Deakin, Karen Trapenberg Frick, and Kathleen Phu http://uctc.net/research/papers/UCTC-FR-2014-01.pdf.

Blame has been attributed to many: Oakland City Hall, the MTC itself, the Sierra Club, bike coalitions, and others. But clearly the California state Legislature had a role in politicizing the bridge. In addition, actions taken at the very highest levels of the state's executive branch also cost – rather than saved -- time and money. All were acting in what they saw as their interests and undoubtedly what they saw as

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[96] Former Mayor Willie Brown knew San Francisco would be assuming full ownership of the naval base at Treasure Island and adjoining Yerba Buena Island (YBI). He had been making plans for developing the land that are best told in an account found in the unpublished Ph.D. dissertation by Karen Trapenberg Frick, assistant director of the University of California Transportation Center in Berkeley. We quote extensively from it here:

The "marina development at Clipper Cove was accelerated when San Francisco approved a $12 million marina expansion plan by Treasure Island Enterprises, a joint venture of lobbyist and businessman Darius Anderson and Ron Burkle's Yucaipa Company. The proposal recommended construction of a 400-slip marina, restaurant, a public pier and other related amenities.

Another critical capital project for the naval base was upgrading the access ramps between the Bay Bridge and YBI. The Navy and San Francisco thought the ramps were substandard and unsafe. These ramps were of interest because the only vehicle access to the islands was via these ramps, and safe vehicle access was tantamount to ensuring successful development. The Navy owned the ramps and was in the process of transferring ownership to either San Francisco or Caltrans. The agencies debated who should pay for upgraded ramps, and they strongly recommended that the East Span project upgrade and fund improvements. Since a major financial package was being put together for the bridge, it seemed rational to San Francisco and the Navy that the facility's access ramps ought to be included. A preliminary draft cost estimate for ramp improvements was reported at $25 million in 1997. San Francisco and the Navy approached Caltrans about funding the ramps. In response, Caltrans replied, "Replacement of the ramps is not related to the purpose and need of the East Span Seismic project. Furthermore, the ramps are outside our jurisdiction since they are owned by the Navy. To include replacement of the ramps in the East Span Seismic Safety environmental document would be to expand the scope beyond the intent of seismic safety."

One Navy source told Frick "we never felt we could give property away. In the case of Treasure Island, it's a valuable property."

"Importantly, however, an interview with a naval official revealed that the Navy's support also was tied to its interest in maintaining a relationship with Mayor Willie Brown to assist the Navy with the disposal and reuse of Hunter's Point Naval Shipyard, a base in southeastern San Francisco that had been closed as a full service base since 1974. According to this official, the Navy "definitely had instructions to support, in law, the city, but we really needed him (Mayor Willie Brown) on Hunter's Point. Navy wanted Brown to tell his folks to get moving and take the property over. We wanted him to take it off our hands quickly." This official commented that Hunter's Point was a particularly controversial base for the Navy to dispose of because of major issues related to environmental clean-up as well as addressing issues raised by the strong neighboring area of Bayview/Hunter's Point that had been largely affected by the base's original closure. This interview revealed that the Navy had a broader agenda than had been reported in other interviews and in the media about the reasons for supporting San Francisco."

the interests of their various constituencies. The story of the spectacular new east span of the San Francisco-Oakland Bay Bridge is a fine representation of that, and of us.

CONCLUSIONS AND RECOMMENDATIONS

- Transparency in the affairs of the public is paramount and leads to accountability, which leads to better work.

- No public agency, including the Toll Bridge Program Oversight Committee, should be exempt from basic open government laws such as the Ralph M. Brown Act and the Bagley-Keene Open Meeting Law.

- In this day and age in California there should be mandatory Web sites that do not simply promote government projects such as the Bay Bridge,[97] but have room for disclosure, discourse, critiques, inquiries and more.[98] Some of this may be modeled on other excellent sites such as Washington State's Gray Notebook or here in California, San Diego's SANDAG.[99]

- Public employees should have a secure place to bring their concerns, complaints, and above all their safety issues. They should not fear retribution, reprisal or replacement. Robust, fearless discussions about issues such as safety, money management and innovative methods should always be encouraged, not squelched. This needs to become a verifiable institutional practice.

- The Legislature should consider establishing a fully independent bureau of inquiry modeled on Inspector General offices, whether for Caltrans or other state departments. This might be a consolidation of the current LAO and Little Hoover Commission.

- Communications of any official nature should be not just allowed, but encouraged, to be in some permanent media such as writing. This protects everyone.

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[97] Link to TBPOC site http://baybridgeinfo.org

[98] Construction critics such as Profs. Astaneh, Th. Devine, Wm. Ibbs and outside experts such as Yun Chung should also be afforded an easily accessible place in this theater

[99] Washington State link http://www.wsdot.wa.gov/accountability/
San Diego link http://www.sandag.org

- All government-commissioned studies, reports and audits should be not only routinely collected and consolidated by subject, but should be readily available to the public online.[100]

- The legislature and state should consider a policy allowing estimates for future large projects to be delivered with malleable ranges: Best and worst cases, accompanied with risk assessments for each.

- State government should consider creating of a formal change manager role on large projects. The position would be responsible for tracking all change orders, non-compliance reports and the like. These, too, should be readily accessible online to the public.[101]

- The legislature should consider creating oversight committees for large projects that might be modeled after the strong points of the TBPOC. As POC Chairman and MTC Executive Director states, it would be wise to have these oversight committees in place before projects begin not afterwards when they are chartered to fix errors that are sometimes irreparable.

- The Legislature should consider conferring oversight powers to the California Transportation Commission, which last year alone doled out $5.1 billion, but has no real role in making sure the money is spent the way the commission stipulates.[102]

- Caltrans should publish executed contracts between state agencies such as Caltrans and its many contractors. Aside from the unvarnished fact that this regards the public's money, visible contracts will create competition not concealment.

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[100] There is at least one book and one documentary film about the Bay Bridge under production. These sorts of examinations should also find a place in a public spot.
[101] CTC Executive Director Andre Boutros dryly noted in the course of this investigation "People don't like to be scrutinized in general."

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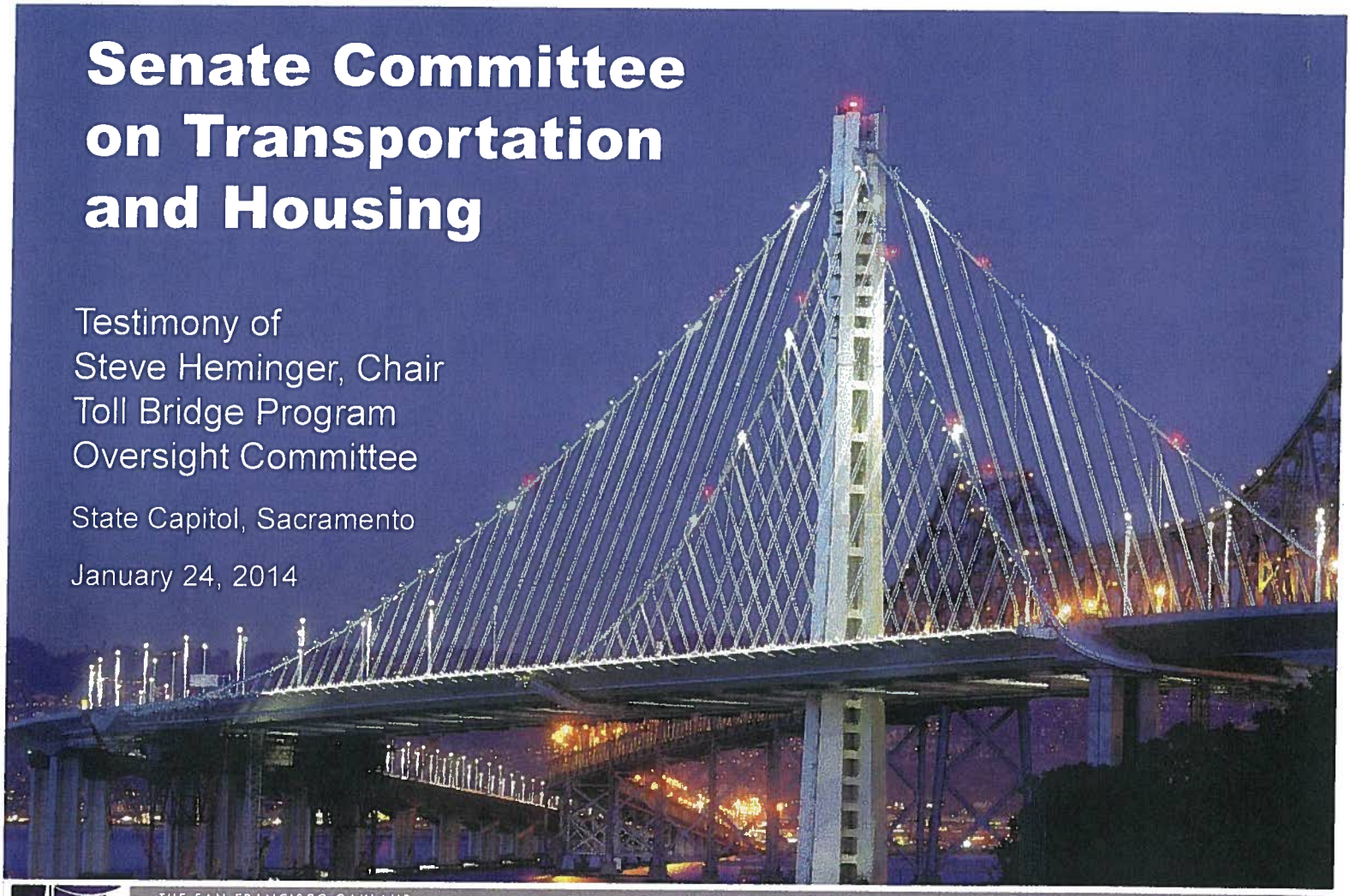
[102] The CTC has been informally discussing this these last few months, according to Executive Director Andre Boutros. But he notes his staff is only 17 strong. And a visitor can't help but notice this powerful if little known office is hidden in one hallway on a back floor of Caltrans headquarters.

Senate Committee on Transportation and Housing

Testimony of
Steve Heminger, Chair
Toll Bridge Program
Oversight Committee

State Capitol, Sacramento

January 24, 2014

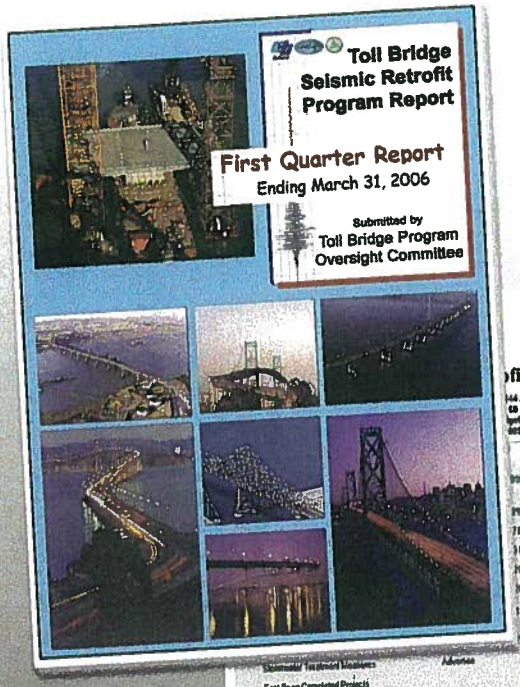


THE SAN FRANCISCO-OAKLAND
BAY BRIDGE
SEISMIC SAFETY PROJECTS

Tale of Two Projects: Pre-TBPOC

Year	Measure	Est. Program Cost ($ millions)
1996	Proposition 192	$650
1997	SB 60 (Kopp)	$2,620
2001	AB 1171 (Dutra)	$5,085
2005	AB 144 (Hancock)	$8,685

TBPOC Keyed On-Time and On-Budget Delivery



2006 First Quarter Report – Toll Bridge Seismic Retrofit Program

Table 3-Toll Bridge Seismic Retrofit Program—Schedule Summary

Project	AB 144 / SB 66 Project Complete Baseline (9/2005)	Approved Changes (Months)	Project Complete Current Approved Schedule (9/2006)	Project Complete Schedule Forecast (03/2006)	Schedule Variance (Months)	Schedule Status	Remarks
	a	b	c	d=b+c	e	f=e-d	g	h
SFOBB East Span Replacement Project							
Skyway	Apr 07		Apr 07	Apr 07	-		A schedule extension due to hinge pipe beam fabrication, service platforms electrical appurtenances, polyurea concrete, etc., is currently under evaluation and subject to negotiations with the contractor. Forecast completion date is TBD
SAS E2/T1 Foundations	Jun 08	(3)	Mar 08	Mar 08	-		
SAS Superstructure	Mar 12	12	Mar 13	Mar 13	-		Bids were opened on March 22, 2006. Contract award expected by April 18, 2006
YBI Transition Structures	Nov 13	12	Nov 14	Nov 14	-		In March 2006, the TBPOC approved the split of the YBI contract into three contracts. Schedules and estimates for the split contracts are being developed
Oakland Touchdown (OTD)	Nov 13	12	Nov 14	Nov 14	-		
• OTD Submarine Cable	n/a		Jul 07	Oct 07	3		Advertise date postponed pending execution of cooperative agreement with City of San Francisco
• OTD WestBound	n/a		Jul 07	Oct 07	3		Advertise date postponed to provide additional time for utility coordination and contract formation
• OTD EastBound	n/a		Nov 14	Nov 14	-		
YBI South/South Detour	Jul 07		Jul 07	Jul 07	-		Schedule is being assessed. Forecast completion date is TBD.
Existing Bridge Demolition	Sep 14	12	Sep 15	Sep 15	-		
Stormwater Treatment Measures	Mar 09		Mar 09	May 07	(10)		Forecast based on actual award date and duration in contractor's A+B bid
Open to Traffic Date: West Bound	Sep 11	12	Sep 12	Sep 12	-		
Open to Traffic Date: East Bound	Sep 12	12	Sep 13	Sep 13	-		
SFOBB West Approach Replacement	Aug 09	-	Aug 09	Aug 09	-		
Richmond-San Rafael Bridge							
• Seismic Retrofit	Aug 05		Aug 05	Oct 05	2		Seismic retrofit completed July 29, 2005. Formal acceptance of the contract on October 28, 2005.
• Public Access Project	n/a		Dec 06	May 07	5		

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fit Program—Cost Summary ($Millions)

		Approved Changes	Current Approved Budget (6/2006)	Actual Cost To Date (6/2006)	1st Quarter 2006 Forecast	At-Completion Variance	Cost Status
		e	a+c+d	f	g	h=g-a	i
			959.4	418.9	977.1	17.7	
			1,293.0	909.9	1,293.0	-	
			1,753.7	-	1,767.4	13.7	
			313.6	109.6	313.6	-	
			299.3	-	318.5	19.2	
			283.8	-	272.7	(11.1)	
			131.9	32.3	133.7	1.8	
			239.2	-	222.0	(17.2)	
			15.0	-	15.0	-	
	Advertise		90.3	69.1	90.3	-	
East Span Completed Projects			72.4	39.7	72.4	-	
Right-of-Way and Environmental Mitigation			35.1		11.0	(24.1)	
Other Budgeted Capital							
Total SFOBB East Span Replacement Project			6,466.6	1,670.5	6,466.6	-	
SFOBB West Approach Replacement	Construction						
Capital Outlay Support			129.0	74.9	129.0	-	
Capital Outlay Construction			300.0	195.0	300.0	-	
Total SFOBB West Approach Replacement			429.0	269.9	429.0	-	
Richmond-San Rafael Bridge Retrofit	Construction						
Capital Outlay Support			134.0	134.0	127.0	(7.0)	
Capital Outlay Construction			780.0	663.7	690.0	(92.0)	
Total Richmond-San Rafael Bridge Retrofit			914.0	798.0	825.0	(89.0)	
Program Completed Projects	Complete						
Capital Outlay Support			219.8	219.2	219.8	-	
Capital Outlay Construction			705.6	698.1	705.6	-	
Total Program Completed Projects			925.4	917.3	925.4	-	
Miscellaneous Program Costs			30.0	29.6	30.0	-	
Program Contingency			900.0	-	900.0	-	
Total Toll Bridge Seismic Retrofit Program			8,685.0	3,471.9	8,685.0	-	

- White Approved Schedule and Budget
- Potential Cost and Schedule Impacts. Possible future need for Program Contingency Allocation
- Known Cost and Schedule Impacts. Request for Program Contingency Allocation forthcoming

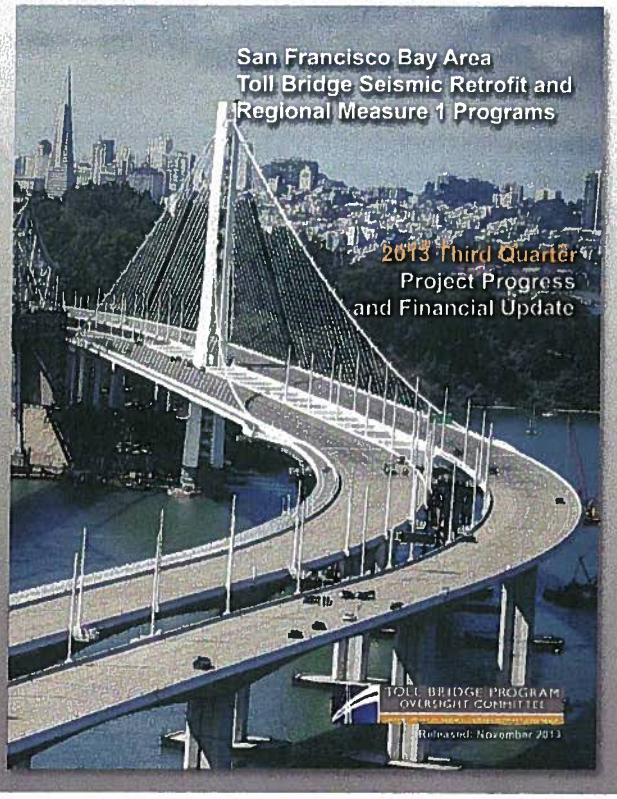
Note: Details may not sum to totals due to rounding effects

8 of 53

Sep 13

8.685.0

TBPOC Keyed On-Time and On-Budget Delivery



Toll Bridge Seismic Retrofit Program Cost Summary (Millions)

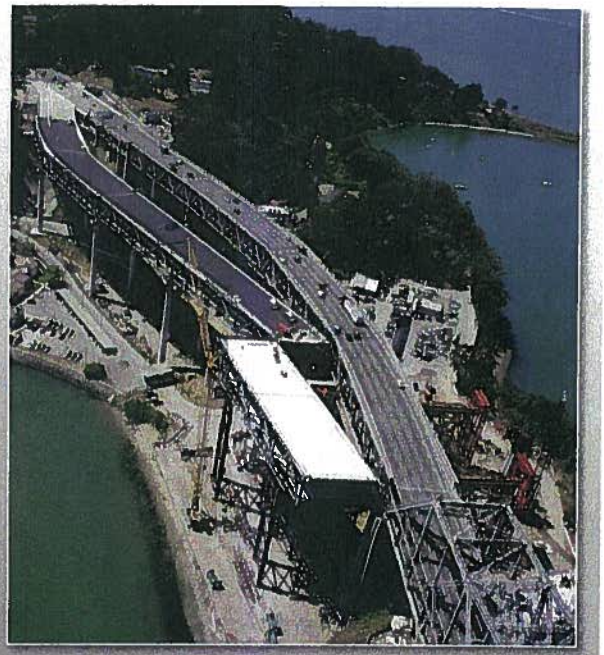
	Contract Status	a AB 144/SB 66 Budget (September 2005)	b TBPOC Approved Changes	a + b Current TBPOC Approved Budget (September 2013)	d Cost to Date (September 2013)	e Current Cost Forecast (September 2013)	f = e - a Cost Variance	Cost Status
SFOBB East Span Seismic Replacement								
Capital Outlay Construction								
Skyway	Completed	1,293.0	(55.8)	1,237.2	1,237.3	1,237.2		
SAS Marine Foundations	Completed	313.5	(38.7)	274.8	274.8	278.6	3.8	
SAS Superstructure	Construction	1,753.7	293.1	2,046.8	1,864.0	2,082.8	36.0	
YBI Detour	Completed	131.9	334.2	466.1	466.1	473.3	7.2	
YBI Transition Structures (YBITS)		299.3	0.1	299.4	212.1	323.7	24.3	
YBITS 1	Completed			203.7	200.1	210.6	6.9	
YBITS 2 Cantilever Dismantling	Awarded			92.4	12.0	109.8	17.4	
YBITS Landscaping	Design			3.3		3.3		
Oakland Touchdown (OTD)		283.8	35.9	319.7	267.6	331.4	11.7	
OTD 1	Completed			205.0	204.8	203.3	(1.7)	
OTD 2	Construction			62.0	29.4	73.6	11.6	
Detour	Completed			47.0	27.7	44.9	(2.1)	
OTD Electrical Systems	Construction							
Submerged Electric Cable	Completed			5.7	5.7	9.6	3.9	
Existing Bridge Dismantling	Design	239.2	(0.1)	239.1		241.0	1.9	
*Cantilever Section	Awarded			61.6		60.6		
*504/288 Sections	Design					66.4		
*Marine Foundations	Design					92.0		
Stormwater Treatment Measures	Completed	15.0	3.3	18.3	18.9	17.0	(1.3)	
Other Completed Contracts	Completed	80.4	(0.5)	89.9	90.6	90.5	0.6	
Capital Outlay Support		959.2	262.3	1,221.6	1,172.3	1,301.7	80.1	
Right-of-Way and Environmental Mitigation		72.4	-	72.4	51.7	80.4	8.0	
Other Budgeted Capital		35.1	(32.8)	2.3	0.7	7.7	5.4	
Total SFOBB East Span Replacement		5,486.6	801.0	6,287.6	5,853.5	6,465.3	177.7	
Antioch Bridge Seismic Retrofit								
Capital Outlay Construction and Mitigation	Completed		51.0	51.0	47.0	50.3	(0.7)	
Capital Outlay Support			31.0	31.0	23.6	23.8	(7.2)	
Total Antioch Bridge Seismic Retrofit			82.0	82.0	70.6	74.1	(7.9)	
Dumbarton Bridge Seismic Retrofit								
Capital Outlay Construction and Mitigation	Completed		92.7	92.7	63.6	68.2	(24.6)	
Capital Outlay Support			56.0	56.0	43.8	46.0	(10.0)	
Total Dumbarton Bridge Seismic Retrofit			148.7	148.7	107.4	114.2	(34.5)	
Other Program Projects		2,269.4	(63.6)	2,204.8	2,164.3	2,192.5	(12.3)	
Miscellaneous Program Costs		30.0	-	30.0	25.5	30.0		
Net Programmatic Risks		-	-	-	-	38.4	38.4	
Program Contingency		900.0	(571.1)	328.8	-	169.5	(159.4)	
Total Toll Bridge Seismic Retrofit Program[3]		8,686.0	397.0	9,082.0	8,021.3	9,082.0	-	

THE SAN FRANCISCO-OAKLAND
BAY BRIDGE
SEISMIC SAFETY PROJECTS

Why does the new East Span cost so much more than the old one?

1. Detours and Demolition ($ millions)	
YBI Detour	$473
OTD Detour	45
Old Span Demolition	241
Subtotal	$759

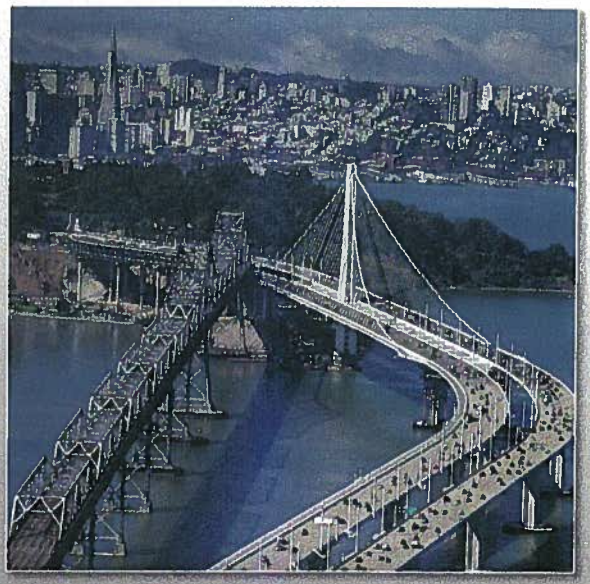
2. COS Comparison	
1936 East Span (@20%)	$ 100
2013 East Span (@20%)	1,302
DELTA	$1,202



Why does the new East Span cost so much more than the old one?

3. Width Comparison ($ millions)	
▪ New east span is 50% wider than 1936 bridge, with addition of 4 traffic shoulders and the bike/pedestrian path	
New east span net capital cost (Less previous items 1 & 2)	**$ 4,504**
X 50%	**$ 2,252**

4. Political Delays	
Design (3% net cost x 2 years)	**$270**
Construction (x1 year)	**135**
Subtotal	$405

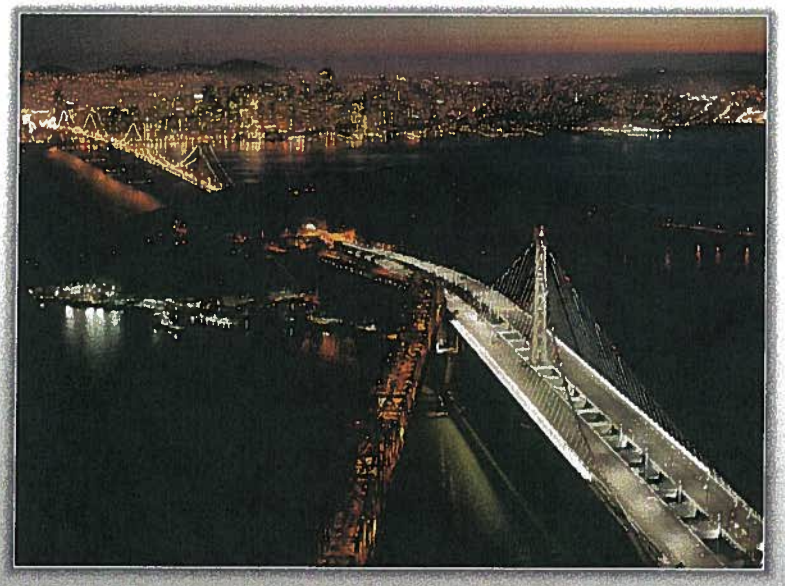


Why does the new East Span cost so much more than the old one?

5. Grand Total	($ millions)
1936 East Span Escalated Cost	$ 500
2013 East Span Projected Cost	6,465
DELTA	5,965
Less Items 1-4	4,618
1. Detours and Demolition	
2. Higher COS Costs	
3. Increased Width	
4. Political Delays	
Revised DELTA	$1,347

Outcomes not Monetized

- Superior Seismic Performance
- Superior Architectural Design
- 150 vs. 75 year Lifespan
- Bicycle/Pedestrian Access
- 0 vs. 24 Construction Fatalities



For more information:

http://bata.mtc.ca.gov/reports.htm

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Flex your power!
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February 4, 2014

The Honorable Mark DeSaulnier
Chair, Senate Transportation and Housing Committee
State Capitol, Room 5035
Sacramento, CA 95814

Dear Senator DeSaulnier:

As promised on January 24, the Department of Transportation is submitting documentation regarding items mentioned during the Senate Transportation and Housing Committee hearing. I appreciate the opportunity to clarify and provide additional details about the Bay Bridge project.

Caltrans Process to Address Weld Issues

We agree that there were challenges that had to be overcome with the welding operation on the Self-Anchored-Suspension (SAS) bridge deck components. In 2008, these challenges led to ever-increasing levels of quality assurance. Everyone working on the project knew that issues had to be addressed. Caltrans staff collaborated with the contractor and the fabricator to ensure that specifications were met and that a quality product was produced, which ultimately was the case. Welding issues were never dismissed and were consistently and thoroughly analyzed throughout the project. During early stages of the operation we were experiencing cracks in welds that required repair, and the American Welding Society code allows for that. The contract does reference the American Welding Society code, which makes those standards part of the contract.

To put some context to the weld issue, here is a timeline that shows the issue was widely recognized five years ago, taken seriously and resolved:

- American Bridge/Fluor (ABF) Contract Approved: May 3, 2006
- Shanghai Zhenhua Heavy Industry Company, LTD (ZPMC), ABF's fabricator , started mock panel work: Late 2006
- ZPMC started production work: Fall 2007
- Caltrans Quality Assurance officials begin to see nonconforming products: 2008
- Caltrans Quality Assurance officials intensified inspections: 2008

- Caltrans notifies ABF that products are not conforming and acceptable repair procedures are established: 2008
- MacTec to Caltrop transition: December 2008-September 2009
- ABF sends more quality control personnel to China: 2009
- ZPMC continues to repair the flaws identified by QA and QC inspectors: 2009
- Welding procedures are modified to reduce occurrence of flaws: November 2009
- First shipment left China: December 31, 2009
- Quality Assurance / Quality Control (QA/QC) Expert Panel formed: November 2010
- ZPMC implements a new welding process involving wire and shielding gas for affected welds, which resolves most problems: 2010
- Original Project Team Report produced: March 2011
- Last shipment from China: August 5, 2011
- QA/QC Panel endorses Final Project Team Report: November 3, 2011
- Caltrop to Alta Vista transition: December 2011

Caltrans and Contractor Form Team to Reduce the Incidence of Faulty Welds

To address these weld quality issues, Caltrans gathered a team of welding experts—including the chairs of the committees that set national welding standards—and brought in ZPMC and ABF to figure out what was going wrong and how to fix it.

We sought outside expertise to ensure that we have the smartest people helping us review, determine, and conclude the best path forward: On the team were the following individuals:

- Dr. John Barsom (Fracture Mechanics Specialist and Metallurgist)
- Mr. David McQuaid, P.E. (Chair of the American Welding Society Code Committee for Bridge Steel Welding)
- Mr. Don Rager (Chair of the American Welding Society Code Committee for Structural Steel Welding)
- Mr. Alan Cavendish-Tribe, CEng., FWeldI. (Professional Welding Engineer)

The QA/QC Panel reviewed the Caltrans Project Team's report on the welds, and endorsed the Project Team's final report[i] with a letter to the Project Team with their signatures[ii].
After a review of all the data, the investigated welds were found in general to be of high quality and with very low rejection and repair percentages. In all cases, any bad welds were removed and repaired. After this extensive investigation, the steel fabrication advanced and was

[i] http://baybridgeinfo.org/sites/default/files/pdf/UpdatedFinal-QAQC-Rpt-2011Nov-v1.pdf
[ii] Page 303 in the above link

completed in compliance with the American Welding Society bridge welding code, which allows for the repair of welds as an alternative to outright rejection. These American Welding Society code standards were part of the contract. ABF also implemented a new welding process involving wire and shielding gas for affected welds which resolved many of the production problems.

In general, the timeline shows that Caltrans continued to find cracks in welds, ABF continued to fix them and eventually we reached a solution that solved the underlying issues. Getting to that resolution certainly involved a great deal of professional debate. These concerns and differing views were taken seriously and included in the investigation and final report published in November 2011. The review of the welding issue and the resolution of the matter relied on engineering and welding experience. Caltrans engineers did their job and worked with ABF and ZPMC engineers to solve a problem and get the project back on track.

As Caltrans fulfilled its QA role and worked with ABF to improve their QC operations, the team required the repair of all non-conforming cracks in welds and called for changes in welding processes to ensure higher quality welds the first time.

Audits of ZPMC Facility

For clarification regarding the ZPMC facility audit, in February 2006, before awarding the SAS bridge contract to ABF, an audit was done by the Caltrans' Materials and Engineering Testing Services (METS) consultant (MacTec) on the ZPMC facility to evaluate the overall capability of ZPMC to fabricate the SAS Orthotropic Box Girder (OBG) and tower. That audit resulted in a "contingent pass" being given to the ZPMC facility. After awarding the contract and prior to the start of fabrication, the METS consultant (MacTec) conducted a follow up audit in August 2007 and ZPMC was given a full "pass". The final audit stated "In a pre-bid audit, METS stated 'ZPMC generally demonstrated to the audit team they have the engineering support and transportation capacity to perform the fabrication of the Orthotropic Box Girder (OBG), cross means, and steel tower (ST)', and 'During our audits the team sensed the company has a strong commitment to producing a quality product.'" This fact was not made clear during the hearing that ZPMC was given a pass to conduct work needed for the Bay Bridge. A copy of the final audit is in Appendix A.

MacTec Contract

A statement was made during the hearing, that MacTec was removed from the project for calling out bad welds that were discovered, but that would not be an accurate rendition of events. As with all of our Architectural and Engineering (A&E) contracts, MacTec's contract was awarded through a competitive process and had limits both in time and money. The original contract began on April 1, 2005 was to end on March 31, 2009, and was initially for $39 million. This

contracted was amended four times; three of the amendments changed the cost which ultimately was increased to a total of $67 million and one amendment changed the final date from March 31, 2009 to September 30, 2009. It was absolutely appropriate to renew the contract services through a competitive process.

Allegations that Caltrans – and Tony Anziano in particular - sought to get rid of MacTec as a retalitatory act are false, in fact Mr. Anziano drafted a request in 2008 to the Director trying to retain the company by once again extending the schedule and value. Due to the nature of how much the contract scope changed and the continuously increasing cost, the Department's Executive Management Team determined it was prudent for the Department to re-advertise the contract through a competitive process. Appendix B shows the A&E Amendment Pre-Approval document for Amendment Number 2 that was initialed by the Department's Executive Manager's for approval. It should be noted from the document that as early as April 2008, the Executive Managers wanted a new contract in place. However, Mr. Anziano wanted to maintain continuity and minimize disruptions to the operation. In 2008, Mr. Anziano submitted a memorandum to the Caltrans Director recommending the award of a sole source contract to MacTec, thereby allowing for MacTec to continue providing services to the Toll Bridge Program (see Appendix C). As stated above, it was decided by the Executive Management Team that a new contract would be competitively procured.

When the new contract was put out to bid, a selection panel of seven individuals was created for the contract. Members of this panel included the following:

- Andrew Fremier – Bay Area Toll Authority
- Stephen Maller – California Transportation Commission
- Brian Maroney – Caltrans, Toll Bridge Program
- Peter Siegenthaler – Caltrans, Toll Bridge Program
- Prakash Siva – Caltrans, District 4
- Phil Stolarski – Caltrans, Materials and Engineering Testing Services (METS)
- Ken Terpstra – Caltrans, Toll Bridge Program

Mr. Anziano was not a member of the panel and the majority of the panel was outside of the Toll Bridge Program chain of command. The panel selected Caltrop for the new contract with a 4-3 vote (see the voting results of the selection panel in Appendix D).

The decision to re-advertise this work was repeated three years later, after two amendments more than doubled the original contract amount on the Caltrop contract from $40 million to $99 million. These decisions were made because of the nature of the work and the continuously increasing costs, not because of any attempt to "get rid of" one of the consultant teams doing quality assurance work on Bay Bridge projects.

Caltrop Personnel Not Qualified

It was also stated that the Mayes Testing Engineers, Inc. evaluation of Caltrop was "kept draft" in order to avoid it being available to the public. This also was not an accurate statement. That finalized document and a subsequent memo internally between METS and District 4 is in Appendix E.

California Public Records Act

Testimony during the hearing discussed that staff were instructed to not put anything in writing to avoid the California Public Records Act. The enclosed documents (see Appendix F) clearly show that Mr. Anziano advised staff to make sure communications were accurate. There are millions of pages of documentation regarding welding in China, which includes discussions of all issues raised at the hearing. Additionally, hundreds of thousands of documents pertaining to the Bay Bridge project can be found on www.baybridgeinfo.org.

Mr. Anziano's email was precipitated by an event in which a member of Caltrans staff sent an e-mail stating "cracks" had been found in tower welds at a specific location. In fact, at the time the e-mail was sent, the testing had only indicated the potential for some type of flaw in tower welds. A subsequent joint inspection by the Department and ABF determined that there were NO cracks in the tower welds. In a later conversation back in Oakland, a member of staff who had seen the e-mail, expressed serious concerns about the cracks in the tower welds. That staff member, however, had never been advised that the original e-mail was incorrect. Mr. Anziano followed-up on this inaccuracy by sending an e-mail to the Construction Manager in China, asking that staff be reminded "that words do matter and to make sure we stick to the facts."

2008 Rods

There was also a discussion during the hearing that METS recommended rejecting the 2008 rods and that Mr. Anziano himself accepted the 2008 rods. In fact, neither of these things happened. The three METS documents referenced by the De Wolk report and presented at the hearing that METS recommended rejection of the 2008 rods make no such statement. These documents note that some of the rods did not meet elongation requirements. One document specifically notes that the rods were accepted by bridge designer James Duxbury of TY Lin / Moffatt & Nichol. (See Appendix G)

There were comments made in the hearing last week regarding the cause of failure of the A354 Grade BD Rods that were manufactured in 2008 and installed on Pier E2 of the SAS Bridge. A statement was confidently made that, contrary to the July 8, 2013 TBPOC Report on the A354 Grade BD High-Strength Steel Rods on the New East Span of the San Francisco-Oakland Bay

Bridge With Finding and Decisions[iii], the 2008 rods failed because they sat in water and that the failure was due to environmental hydrogen embrittlement. The insinuation was made that Caltrans and the authors of the report completely overlooked this possibility, which is not accurate. While no conclusion has yet been reached regarding the cause of the failure of the 2008 rods, the report states on page 45, "The presence of water may have been a contributing source of hydrogen contamination in the rods."

There was also a statement in the hearing that Caltrans did not have a metallurgist involved in the beginning of the project and still does not have metallurgist expertise at our disposal. This also is incorrect. In fact, Mr. Rosme Aguilar, a licensed Caltrans engineer with expertise in metallurgy, has been involved with the design team since the beginning. Mr. Aguilar holds a Master of Science degree in Metallurgy and a Bachelor of Science degree in Metallurgical Engineering. Also, the design team has been advised as needed by Doug Williams, a welding expert and licensed professional metallurgical engineer, Dr. Alan Pense, an expert in metallurgy, welding and fracture analysis, and Dr. Karl Frank, an expert in design and behavior of structural steel bridges as well as fracture and fatigue behavior of metal structures. Finally, in April 2013, other experts in metallurgy and fracture mechanics were added to the Bay Bridge Design Team to help assess the disposition of A354 Grade BD rods currently in service on the SAS bridge. Those experts include:

- Dr. Herbert Townsend Jr. Ph.D., P.E.
  Expertise: Corrosion performance and testing of coated and low-alloy steels
- Sheldon W. Dean Jr., Sc.D.
  Expertise: Corrosion Engineering
- Dr. Bob Heidersbach, Ph.D., P.E.
  Expertise: Metallurgy and corrosion, failure analysis oil
- Dr. Louis Raymond, Ph.D., P.E.
  Expertise: Failure analysis, fracture mechanics, coated alloy steel fasteners, hydrogen embrittlement testing, corrosion

The department has set a public forum for February 26, 2014 to discuss our process for testing the A354BD bolts and to hear input from outside experts, including Mr. Yun Chung and his team.

Confidentiality Clauses

A question was raised at the hearing about utilization of confidentiality language in all Caltrans contracts. There is confidentiality language included in our contracts with Architectural and

[iii]The report can be found at: http://mtc.ca.gov/projects/bay_bridge/A354_report.pdf

Engineering (A&E) consultants related to communications with the media. The history of this clause revolves around the following four reasons:

1. Caltrans may need to provide personal information to consultant(s) on projects or task orders that may not be disclosed pursuant to the Information Practices Act, Civil Code section 1798 et seq.

2. A&E Consultants and Caltrans may be working together opposing a claim by a construction contractor or on litigation. In these situations, the communications, particularly between the Consultant and the Caltrans attorney, represent an attorney/client work product and as such are protected as an evidentiary privilege.

3. The Consultant's role is an advisor to Caltrans, and so the Consultant may be privy to sensitive information. However, the work product belongs to Caltrans. Therefore, Caltrans needs to have control over the work product and any associated communications.

4. A&E Consultants may be working on part of a project and may not have all or sufficient information to fully inform the media. Communications from Caltrans should be coordinated through one (or a designated few) spokesperson(s) representing all sources to ensure an accurate and consistent message and to avoid any miscommunications.

These clauses are not included in construction contracts, do not prohibit responses to the Legislature, and there may be an opportunity to update the boilerplate language to support the concept of transparency and protect some of the critical issues outlined above. Caltrans is committed to transparency and cooperation with your committee. As we have demonstrated, where questions of confidentiality have been raised as barriers to communicating with the Legislature, we have acted to knock these barriers down.

Foundations

Testimony during the committee hearing called into question the quality of concrete in some of the foundation piles of the SAS tower. There are documents signed by licensed engineers responsible for the final product which accept the work and attest to its quality. We reviewed all the information pertaining to the quality of the piles in a prior legislative hearing, where I presented documents that show that QC/QA measures exceeded norms, and that materials and construction practices yielded high quality concrete in the foundation piles.

Constructing a bridge of this scope and complexity is a challenging human endeavor. As with any human undertaking, challenges will arise and mistakes will occur. However, an accurate history of this project should reflect that these challenges and mistakes were not ignored. They were confronted head-on and they were remedied. The decision to open the new span to traffic on September 3, 2013 was a decision made in the interest of public safety. We determined that the new structure was safe and provided a level of protection to travelers on the bridge exponentially higher than that offered by the bridge constructed in 1936. That is a decision I stand by. I assure you it was made based upon sound engineering judgments. I agree with the committee's call for greater transparency going forward on future endeavors and look forward to working with you on this important matter in the days ahead.

Sincerely,

MALCOLM DOUGHERTY
Director

Enclosure