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## **Timeline of the San Francisco-Oakland Bay Bridge Seismic Retrofit: Milestones in Decision-Making, Financing, and Construction**

*By Daniel Pollak*

*Prepared at the Request of  
Assemblymember Wilma Chan, Chair  
Joint Legislative Audit Committee*

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C A L I F O R N I A

R E S E A R C H B U R E A U

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San Francisco-Oakland Bay  
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## **TIMELINE OF THE SAN FRANCISCO-OAKLAND BAY BRIDGE SEISMIC RETROFIT**

This annotated timeline on the history of the San Francisco-Oakland Bay Bridge was requested by Assemblymember Wilma Chan in her capacity as Chair of the Joint Legislative Audit Committee. In August 2004, the Committee requested that the California State Auditor perform an audit of the implementation of the California Department of Transportation's Toll Bridge Seismic Retrofit Program.

The following chronology begins in 1929, but emphasizes the period from 1989 to the present, beginning with the Loma Prieta earthquake of October 1989. That earthquake revealed the seismic vulnerability of the Bay Bridge. This timeline focuses on the efforts to seismically retrofit the Bay Bridge, especially the project to rebuild its eastern span (the portion running from Oakland to Yerba Buena Island).

### **1 9 2 9**

#### **October 1929**

*President Hoover appoints commission to investigate bridge feasibility.*

President Herbert Hoover and California Governor C. C. Young appoint the Hoover-Young San Francisco Bay Bridge Commission, to investigate the feasibility of constructing a San Francisco-Oakland bridge.<sup>1</sup>

### **1 9 3 0**

#### **August 1930**

*Bridge Commission reports that bridge is feasible and necessary.*

The Hoover-Young Commission concludes that construction of the bridge is both feasible and necessary to the development of the region.<sup>2</sup>

### **1 9 3 3**

#### **July 9, 1933**

*Construction begins.*

The California Department of Public Works begins construction of the San Francisco-Oakland Bay Bridge, the world's longest steel structure.<sup>3</sup>

## 1936

**November 12, 1936**

*The Bay Bridge opens.*

The San Francisco-Oakland Bay Bridge, built at a cost of \$77.6 million, opens to auto traffic six months ahead of schedule.<sup>4</sup> At that time, auto tolls on the bridge are collected in both directions, and are 65 cents each way (the \$1.30 round-trip toll is equivalent to \$17.86 in 2004 dollars).<sup>5</sup>

## 1947

**1947**

*Bond financing of bridge construction authorized.*

The California Toll Bridge Authority Act authorizes the California Transportation Commission to issue revenue bonds to acquire, rehabilitate or improve toll bridges. Tolls and other revenues received from vehicles using the bridges will be used to pay the principal and interest on these bonds.<sup>6</sup>

## 1958

**1958**

*Train service on Bay Bridge ends.*

The train tracks on the lower deck of the Bay Bridge are removed to make way for auto and truck traffic.<sup>7</sup>

## 1971

**February 9, 1971**

*Sylmar earthquake prompts Caltrans retrofit program.*

The magnitude 6.6 Sylmar Earthquake causes \$500 million in damage in the San Fernando Valley and claims 65 lives.<sup>8</sup> This spurs Caltrans to establish a program to seismically retrofit bridges throughout the state.<sup>9</sup>

## 1977

**1977**

*Financing of bridge maintenance shifts from tolls to State Highway Account.*

Maintenance of the three transbay bridges is transferred from toll revenues to the State Highway Account. Toll revenues from these bridges will be used henceforth to support capital programs of transit systems, as well as bridge operating and administrative expenses.<sup>10</sup>

## **1 9 7 8**

### **1978**

*State relinquishes control of toll bridges.*

The California Toll Bridge Authority is abolished. Operation of the Bay Bridge now falls under the joint jurisdiction of the California Transportation Commission and the Metropolitan Transportation Commission (MTC).<sup>11</sup>

## **1 9 8 6**

### **November 1986**

*Bay Bridge re-named the Rolph Bridge.*

The San Francisco-Oakland Bay Bridge is officially renamed the “James “Sunny Jim” Rolph Bridge,” in honor of the late governor of California who died in office in 1934.<sup>12</sup>

## **1 9 8 8**

### **November 5, 1988**

*Bay Area approves \$1 bridge tolls.*

Bay Area voters approve Regional Measure 1, raising tolls on the state-owned toll bridges to a uniform \$1 and pledging the proceeds to improvements such as new spans on the Carquinez and Benicia bridges and the widening of the San Mateo bridge.

## **1 9 8 9**

### **October 17, 1989**

*Loma Prieta earthquake.*

An earthquake measuring 7.1 on the Richter scale strikes the Bay Area. The earthquake causes 62 deaths and \$5.6 billion in property damage. Most of the deaths are due to the collapse of the Cypress Structure on I-880 in Oakland. On the Bay Bridge, one motorist is killed after a 50-foot section of the upper deck collapses and causes the collapse of the

deck below it. At the time of the earthquake, the Bay Bridge is the nation's most traveled bridge, carrying 243,000 vehicles per day.<sup>13</sup>

**November 6, 1989**

*Governor orders board of inquiry to examine bridge and highway collapses.*

Governor Deukmejian creates an independent board of inquiry to investigate the collapse of the Cypress Structure on I-880 and the damage to the east span of the Bay Bridge.<sup>14</sup>

**November 16, 1989**

*Repair of the bridge celebrated.*

Ceremony to celebrate the repair of the gap in the bridge and the rejoining of San Francisco and Oakland.

## 1990

**May 31, 1990**

*Study urges faster seismic retrofits.*

“Competing Against Time,” a report by an independent expert panel, recommends that the state put a higher priority on its seismic retrofitting program.<sup>15</sup>

**June 2, 1990**

*Governor forms Seismic Advisory Board.*

Governor Deukmejian orders creation of a Seismic Advisory Board to advise Caltrans on seismic safety issues.<sup>16</sup>

## 1991

**January 7, 1991**

*Governor Pete Wilson inaugurated.*

## 1992

**September 10, 1992**

*UC Berkeley team estimates Bay Bridge east span retrofit will cost \$150-200 million.*

Caltrans reports the results of a preliminary study on the east span. The report, prepared for Caltrans by a UC Berkeley team, estimates that the east span could be retrofitted at a

cost \$150-200 million. Replacement is estimated to be more costly - in excess of \$1 billion.<sup>17</sup>

## 1993

### **October 1993**

*Treasure Island Naval Station targeted for closure.*

The federal Base Realignment and Closure Commission recommends to the Department of Defense the closure of the Treasure Island Naval Station in 1997.<sup>18</sup>

## 1994

### **January 17, 1994.**

*Northridge earthquake strikes Southern California.*

A 6.7 magnitude quake shakes the metropolitan Los Angeles area at 4:30 a.m. The earthquake causes 57 fatalities and extensive structural damage, including the collapse of several freeway sections.<sup>19</sup> Governor Wilson soon orders an urgent rebuilding of damaged LA-area freeway overpasses. In addition, Caltrans assigns new personnel to the bridge retrofit program and increases efforts to design a retrofit strategy for the Bay Bridge's east span.<sup>20</sup>

### **October 1994**

*Seismic Advisory Board calls for accelerated retrofitting of toll bridges.*

An independent advisory board submits a report to Caltrans about the Northridge Quake, entitled "The Continuing Challenge." It reports that while Caltrans' retrofit program is basically sound, it is proceeding too slowly due to budgetary, administrative, legal, and personnel constraints. The report notes that Caltrans has 12,176 bridges, three-fourths of which were designed under inadequate seismic standards.<sup>21</sup>

## 1995

### **Summer 1995**

*Advisory Board suggests Caltrans consider replacing rather than retrofitting the Bay Bridge.*

Caltrans' Seismic Advisory Board suggests that Caltrans should consider replacing rather than retrofitting the Bay Bridge, due to the likely high costs of retrofitting. Caltrans subsequently begins work on a "30 percent design" study for a replacement bridge (a study that carries the design work to 30 percent of completion).<sup>22</sup>

**August 3, 1995**

*Caltrans notifies the Navy that it needs to use land on Yerba Buena Island for the Bay Bridge retrofit.*<sup>23</sup>

**September 1995**

*Legislature approves \$650 million toll bridge seismic retrofit plan for March ballot.*

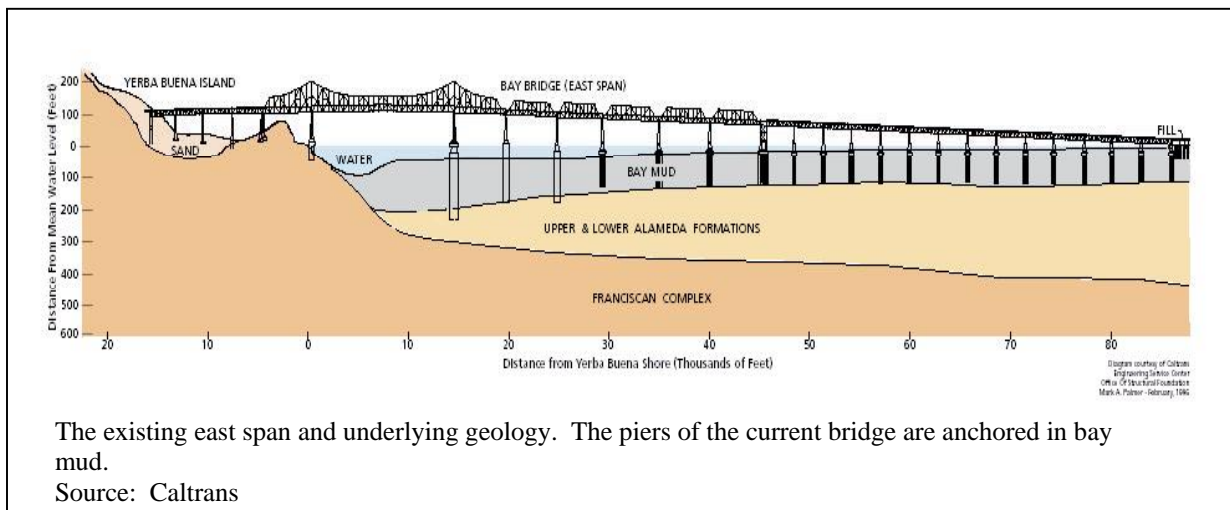
The legislature approves placement of Proposition 192 on the March 1996 ballot. The \$2 billion general obligation bond measure will include \$650 million earmarked for seismic retrofit of state-owned toll bridges, based on what Caltrans says is the best available estimate of costs.<sup>24</sup>

**1996**

**January 30, 1996**

*Caltrans announces east span replacement needed and cost estimates have doubled.*

Caltrans announces that it could be more cost effective to replace the east span of the bridge. The costs for fixing the Bay Bridge could go as high as \$1.3 billion.<sup>25</sup> Caltrans engineers say it may take a year to determine whether to build a new east span or retrofit the old one. Governor Wilson and Southern California legislators say that toll funds should be used to finance much of the work.<sup>26</sup>



**March 26, 1996**

*Voters approve seismic retrofit bonds.*

California voters approve Proposition 192, the Seismic Retrofit Bond Act of 1996, which authorizes \$650 million for seismic retrofit of state-owned toll bridges.



**March 28, 1996**

*Caltrans requests an easement on Yerba Buena Island from the Navy.*

Caltrans informs the Navy that it needs a 100 meter wide right of way along the route of the existing bridge for the retrofit project, as well as several additional easements for other construction activities on the island.<sup>27</sup>

**May 15, 1996**

*Navy voices concern about impacts on historic buildings.*

The Navy tells Caltrans that it is concerned about the impacts the Bay Bridge project could have on historic buildings on Yerba Buena Island such as the Nimitz House.<sup>28</sup>

**July 9, 1996**

*Caltrans requests permission from the Navy to enter Yerba Buena Island for land surveys and other field investigations.*<sup>29</sup>

**July 25, 1996**

*City and County of San Francisco adopt plan for Treasure Island.*

San Francisco adopts a draft reuse plan for Naval Station Treasure Island and Yerba Buena Island. The plan envisions a variety of possible uses, including nonprofit organizations, hotels, theme park attractions, film production, entertainment facilities, parks, plazas, expansion of the marina, a federal employment training center, development of housing and live/work units.<sup>30</sup>

**August 26, 1996**

*Navy rejects Caltrans proposal for mitigating historic building impacts.*

The Navy asks for changes in a proposed memorandum of agreement with Caltrans, saying it does not adequately address impacts on historic buildings on Yerba Buena Island.<sup>31</sup>

**December 1996**

*Consultant report recommends replacement over retrofit.*

A study by Ventry Engineering of Florida recommends replacing rather than retrofitting the east span of the Bay Bridge. It estimates the cost at \$843 million for a bridge that includes a cable-stayed suspension span.<sup>32</sup>

**December 10, 1996**

*Experts recommend Bay Bridge replacement.*

Two expert panels, the Seismic Advisory Board and the Peer Review Panel for the Seismic Safety Review of the Toll Bridge Retrofit Designs, “strongly recommend” that

Caltrans build a new east span rather than retrofit the old one. They say that in the long run a new bridge will be both safer and more economical.<sup>33</sup>

Meanwhile, Caltrans' head bridge engineer recommends that Caltrans "proceed immediately" with the design and construction of a replacement east span and conduct an interim retrofit in the meantime.<sup>34</sup> His cost-benefit analysis notes that prior estimates place the cost of replacing the bridge at an average of \$987 million, depending on the chosen design. He estimates the cost of retrofit without replacement at \$909 million. He estimates a 90 percent probability that a replacement span could be completed within eight and a half years (by mid-2004).<sup>35</sup>

## 1997

### **January 15, 1997**

*Navy tells Caltrans it plans to transfer Yerba Buena Island to San Francisco.*

The Navy tells Caltrans it plans to transfer the entire island to the City. Caltrans opposes the move. Caltrans also disagrees with the Navy's contention that Caltrans is obligated to retrofit and maintain the ramps connecting the bridge to the island.<sup>36</sup>

### **January 29, 1997**

*Caltrans management decides on replacement of east span rather than retrofit.*<sup>37</sup>

### **February 13, 1997**

*Governor Wilson announces that the east span will be rebuilt rather than repaired.*

*Discussion begins of design and costs.*

Governor Wilson accepts the recommendation to replace rather than retrofit the east span.<sup>38</sup> A replacement span is recommended because its piers could be attached to bedrock, unlike the current wooden piers anchored in bay mud. It could last 150 years instead of the projected 65-year life of a retrofit. And the increasing cost estimates of the retrofit make a new bridge potentially more cost-effective.<sup>39</sup>

Bay Area officials are told that the state will pay for a basic concrete aqueduct-style bridge, which Caltrans says could be built north of the existing structure, would cost an estimated \$1.52 billion, and could be open to traffic within seven years.<sup>40</sup>

The Wilson administration says that if the Bay Area wants a more aesthetically pleasing design, it will have to pay the extra cost, most likely through new bridge tolls.<sup>41</sup> The Wilson administration gives the region until July to decide what kind of bridge to build, in order to meet a 2004 deadline to complete the project.<sup>42</sup>

The viaduct alternative is described by one leading expert as "just a typical overpass, but you stretch it for two miles ... Nobody is going to put it on a postcard of the Bay Area, I assure you."<sup>43</sup> Bay Area leaders soon indicate their inclination toward a more attractive

design. “It should make a statement about the beauty of our side of the bay,” says Berkeley Mayor Shirley Dean.<sup>44</sup>

Senate President Pro Tem Bill Lockyer says it is reasonable to ask for a local contribution to the cost.<sup>45</sup> He suggests that a task force of experts and regional officials be convened to consider design options.<sup>46</sup>

How this and other Bay Area bridge retrofits will be paid for is still uncertain. According to state officials, Bay Area motorists will be expected to pay higher bridge tolls to provide at least \$400 million of the cost of a new bridge regardless of the design.<sup>47</sup> Wilson says that the state can provide \$500 million in state highway funds.<sup>48</sup>

However, the total cost of retrofitting Bay Area bridges is expected to be well above \$2 billion. Caltrans is estimating the cost of a new Bay Bridge east span of the viaduct type at \$1.5 billion, and the cost of a two-towered cable-stayed bridge at \$1.7 billion.<sup>49</sup>



Artist's rendering of the basic viaduct-style east span proposed by Governor Wilson (sometimes referred to as the “skyway” design). Subsequent designs will incorporate a suspension section with tower over the navigation channel adjacent to Yerba Buena Island.

Source: Caltrans

## **February 24, 1997**

*Northern and Southern California lawmakers in dispute over funding bill.*

Inter-regional disputes over bridge funding are on display when legislators from Southern and Central California introduce AB 465. The bill caps the state highway fund

contribution to the bridge retrofits at \$300 million, while authorizing new Bay Area bridge toll hikes to pay for up to \$1.1 billion. The measure is strongly opposed by Bay Area legislators. “This is rejected out of hand,” says San Francisco Senator Quentin Kopp.<sup>50</sup>

### **February 26, 1997**

*Negotiations over bridge funding break down.*

Negotiations between Bay Area legislators and the Wilson administration break down over the share of bridge retrofit funding that should be paid out of state funds versus bridge toll revenues. Senate President Pro Tem Bill Lockyer threatens litigation. Wilson withdraws an offer of \$500 million in state highway funds to address the funding gap, estimated at \$1.2 billion.<sup>51</sup>

### **March 1997**

*Caltrans report produces new cost estimates.*

A Caltrans economic analysis concludes that the cost of a new, basic viaduct-style bridge would be \$1.3 billion. The cost of a cable-stayed span would be \$1.33-1.47 billion.<sup>52</sup>

### **March 1997**

*Metropolitan Transportation Commission (MTC) Appoints Bay Bridge Design Task Force.*

MTC appoints the Bay Bridge Design Task Force to forge a regional consensus on the design of the span replacement project. The Task Force consists of seven MTC commissioners representing Alameda, Contra Costa and San Francisco counties, as well as a representative of the Bay Conservation and Development Commission.<sup>53</sup>

The task force in turn appoints a 34-member Engineering and Design Advisory Panel (EDAP) to advise the Task Force. The EDAP will review engineering and design criteria, screen bridge design alternatives, and make recommendations on design.

### **March 10, 1997**

*Navy spurns Caltrans request for land on Yerba Buena Island.*

The Navy asks Caltrans to withdraw its application for land and access, saying there are too many unresolved issues, including construction impacts on historic buildings, funding of improved ramps onto the island, and lead contamination underneath the existing bridge. Three days later, the Federal Highway Administration asks the Navy to approve Caltrans' request.<sup>54</sup>

### **March 27, 1997**

*Bay Bridge Design Task Force begins work.*

The Bay Bridge Design Task Force holds its first of four public hearings to consider alternatives for replacing the east span.<sup>55</sup>

**April 9, 1997**

*First meeting of the Engineering and Design Advisory Panel.*

The first meeting is devoted to a set of draft engineering and design criteria developed by San Francisco Bay Conservation and Development Commission (BCDC), Caltrans, and MTC staff.<sup>56</sup>

**April 21, 1997**

*Environmental review process begins.*

Caltrans and Federal Highway Administration begin the environmental review for the east span project by filing a Notice of Intent to prepare a Final Environmental Impact Statement in the Federal Register.<sup>57</sup>

**May 8-9, 1997**

*Bicycle lane cost estimated.*

Caltrans reports that a bicycle lane added the full length of the bridge would cost up to \$167 million. The next day, the Santa Clara County Valley Transportation Authority endorses a bicycle lane in a letter to the Design Task Force.<sup>58</sup>

**May 12-14, 1997**

*Bay Bridge Design Task Force holds workshop to review proposals.*

The Engineering and Design Advisory Panel (EDAP) holds a workshop to review design proposals for the eastern span of the Bay Bridge. The panel reviews four designs proposed by Caltrans, and 10 other designs submitted by outside firms.

**May 18, 1997**

*Engineering and Design Advisory Panel (EDAP) endorses two possible designs.*

The EDAP votes unanimously to narrow the choices to two: a single-tower, self-anchored suspension span and a single-tower, cable-stayed span. EDAP says that only relatively minor construction cost differences exist among the alternatives, so the decision hinges largely on aesthetics.<sup>59</sup> The panel postpones making a final decision for a year, but recommends that Caltrans hire two or more world-class engineering/design firms to further develop both design options.<sup>60</sup>



Artist's rendering of a cable-stayed design for the east span, viewed from the south with Yerba Buena Island on the left. In the cable-stayed design, the cables radiate directly from the tower to the bridge deck.

Source: Caltrans

### **May 15, 1997**

*Oakland official calls for "world-class design."*

Oakland's public works director writes to the design task force and asks that the new bridge include a bicycle/pedestrian path, be capable of accommodating rail, and have a "world-class design." The bridge should be capable of "creating an inspirational identity for Oakland and the East Bay."<sup>61</sup> The City of Oakland also expresses preference for a northern alignment of the bridge, so as to minimize impacts on the City's port.<sup>62</sup>

### **June 2, 1997**

*Engineering and Design Advisory Panel (EDAP) narrows design choices to three.*

EDAP narrows the possible design choices from four to three, eliminating a proposed single tower "curved cable stayed" bridge design. Remaining under consideration is a single tower cable stayed bridge, a single tower self-anchored suspension bridge, or the baseline "viaduct" design with no suspension span. At this time, Caltrans estimates the baseline viaduct bridge would cost \$1 billion. Choice of a cable stayed bridge would add eight percent to the cost, and the self-anchored suspension choice is estimated to add 34 percent over the baseline cost.<sup>63</sup>

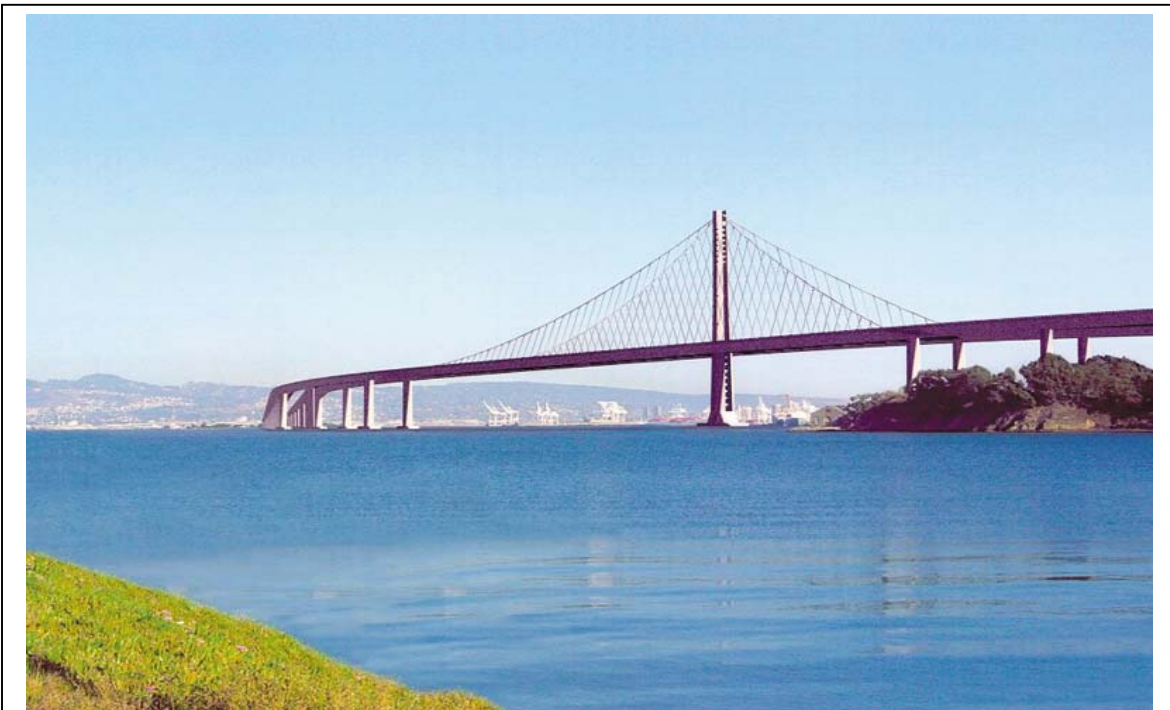
**June 12, 1997**

*Mayor Brown opposes northern alignment.*

In a letter to the Design Task Force, San Francisco Mayor Willie Brown says that he opposes the proposed northern alignment because it “precludes development of most of the flat, developable land on Yerba Buena Island.” He also calls for the new bridge to provide better access ramps for the island and a new Transbay Terminal.<sup>64</sup>

**June 13, 1997**

*Coast Guard voices preference for northern alignment in order to avoid impacts on their facilities on Yerba Buena Island.*<sup>65</sup>



Artist's rendering of the self-anchored suspension (SAS) design for the east span. It differs from the cable-stayed design in having its straight vertical support cables attach to long curving suspension cables, instead of radiating directly from the tower. It differs from other Bay Area suspension bridges because the suspension cables themselves are anchored to the bridge deck, rather than to anchorages on either side of the bridge.

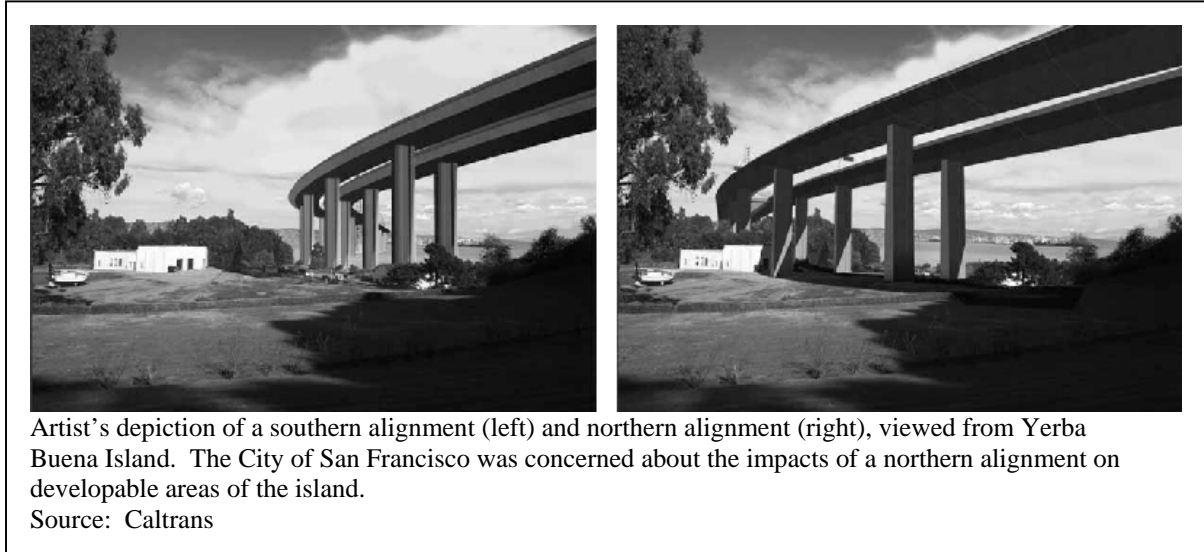
Source: Caltrans

**June 20, 1997**

*Metropolitan Transportation Commission (MTC) director says July design decision not possible.*

The Executive Director of the MTC says that it will not be possible to select a bridge design by July, despite the expectations to that effect expressed by the Governor and Legislature when the process was began. “Additional engineering is required to define a

specific bridge type, alignment and budget because of the complex interactions between the geometric transition to Yerba Buena Island, the geology of the bay, the structure types and the tower configuration.” He says if Caltrans moves forward with 30 percent design studies of different alternatives, this will provide needed information without delaying the overall project.<sup>66</sup>



### **June 24, 1997**

*Bicycle advocates make their voices heard.*

A summary of public comments received so far is presented to the Bay Bridge Design Task Force. During the prior three months, a total of 179 people have commented on the options for the overall design of the bridge. During the same period, 6,674 people commented in favor of including a bicycle lane.<sup>67</sup>

### **July 18, 1997**

*Caltrans director urges Design Task Force to make decision soon.*

Caltrans Director James W. van Loben Sels urges the Design Task Force to complete its deliberations and choose a bridge design this month. “Every day of delay increases the risk of a temblor striking ... A design competition, as recommended by EDAP, is unneeded.”<sup>68</sup>

### **July 21, 1997**

*Mayor Brown voices support for northern alignment.*

In a letter to the Design Task Force, San Francisco Mayor Willie Brown reverses his earlier position and expresses support for a northern alignment. “It is my feeling that the economic development opportunities to the Port of Oakland outweigh the economic opportunities to San Francisco at Yerba Buena Island ... I am willing to support the



efforts of the majority of this task force to support a northern alignment.” He also argues the case for replacing the Transbay Terminal and improving the ramps leading to and from Treasure and Yerba Buena Islands.<sup>69</sup>

### **July 23-24, 1997**

*Design Task Force endorses northern alignment and narrows design choices; says it cannot make final selection yet.*

The Task Force says it needs more time for analysis and cannot meet the deadline to pick a final design for another year. But it endorses a northern alignment and says the east span will include a single tower span of the cable stayed or self-anchored suspension (SAS) type. It says that in order for it to choose a final design, the state needs to conduct 30 percent design studies for each of the two recommended designs. In addition, the Legislature must produce a plan that determines the state-regional cost sharing for the bridge.<sup>70</sup>

### **July 30, 1997**

*Metropolitan Transportation Commission (MTC) makes design recommendations and identifies bridge amenities that may be funded.*

The MTC recommends replacing the east span on a northern alignment adjacent to the existing bridge.<sup>71</sup> It also recommends that Caltrans should develop two design types to the 30 percent completion stage: a self-anchored suspension span and a cable-stayed span. This would provide more information about the relative seismic performance, cost and aesthetics of each type before a final decision was made.<sup>72</sup>

MTC recommends that the bridge be built to a “lifeline” standard<sup>73</sup> (which would ensure that the bridge is usable by emergency crews after a large earthquake).<sup>74</sup>

MTC also identifies a list of three priority amenities that may be funded with toll revenues: 1) a cable-supported main span across the shipping channel adjacent to Yerba Buena Island (as opposed to a continuous causeway from Oakland to the Island); 2) renovation or relocation of the Transbay Transit Terminal; 3) building a bicycle/pedestrian path on the new span.<sup>75</sup>

### **August 5, 1997**

*Legislators, Wilson reach agreement on funding; accord to raise bridge tolls by \$1.*

After negotiations between Bay Area and Southern California representatives, legislative leaders announce an agreement that Bay Area bridge tolls will be raised by \$1 to pay for Bay Area toll bridge retrofits. The toll increase will raise about \$920 million over an eight-year period.<sup>76</sup> Bay Area lawmakers opt for the toll increase in order to prevent the state from paying for the bridge retrofits using funds from Measure 1, an earlier \$1 toll increase intended to fund other Bay Area projects.

**August 20, 1997**

*Legislation for Bridge funding plan signed (SB 60 and SB 226).*

In a ceremony on Treasure Island, Governor Wilson signs SB 60 and SB 226, a pair of bills funding the toll bridge retrofit projects. “By building a new (Bay Bridge), we are bringing peace of mind to the 280,000 motorists who depend on this span every day,” Wilson says.<sup>77</sup>

At this time, the state estimates that the Bay Bridge west span retrofit will cost \$553 million, and the east span replacement will cost \$1.28 billion. The latter figure does not yet take into account the cost of a “signature” suspension span like the ones recommended by MTC.

In all, the legislation addresses \$2.6 billion worth of expected funding needs for toll bridge retrofits. Under SB 60, Bay Area bridge tolls can be raised from \$1 to \$2. The surcharge, set to expire no later than 2008, is intended to raise \$907 million. It can be extended to raise additional funds if MTC chooses a bridge design that includes a suspension span, relocation of the Transbay Terminal, or a bicycle lane.

The remainder of the costs are to be financed through a combination of sources, including: at least \$745 million in State Highway Account funds, \$650 million from the Seismic Retrofit Bond Act of 1996, and \$140 million from surplus bond revenues previously designated to the state’s seismic retrofit program.

Bay Area representatives wanted to protect funds raised when Bay Area voters increased tolls by \$1 in 1988. SB 226 gives the MTC control of Bay Area bridge toll revenues.\*

At this time, Caltrans estimates that replacement of the east span can be completed as early as 2004.<sup>78</sup>

**September 5, 1997**

*Mayor Brown promises cooperation on Yerba Buena Island.*

San Francisco Mayor Willie Brown sends Caltrans a letter stating that if the Navy conveys Treasure and Yerba Buena Islands to the City, the City will provide Caltrans with needed easements for the Bay Bridge.<sup>79</sup>

**September 30, 1997**

*Naval Station Treasure Island closes; operations and maintenance turned over to City of San Francisco.<sup>80</sup>*

**October 8, 1997**

*San Francisco Transbay Terminal proposal meets heavy East Bay opposition.*

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\* This involves creating a new entity, the Bay Area Toll Authority (BATA), which is the same as Metropolitan Transportation Commission (MTC).

Dozens of East Bay officials voice opposition to a plan proposed by the City of San Francisco that would use at least \$80 million in Bay Bridge toll money to help pay for a new Transbay Transit Terminal in the City. East Bay officials want the terminal upgraded rather than moved.<sup>81</sup>

**October 12, 1997**

*Treasure Island Development Authority created.*

Governor Wilson signs AB 699, creating the Treasure Island Development Authority. This law will give San Francisco control over Yerba Buena and Treasure Islands once the Navy leaves. Eight days later, the City of San Francisco unveils a \$12 million marina development plan.<sup>82</sup>

**November 1997**

*Caltrans hires team to conduct 30 percent design studies on alternatives.*

Caltrans retains the joint-venture team of T.Y. Lin International/Moffatt & Nichol Engineers to develop designs for the self-anchored suspension and the cable-stay bridge types to the 30 percent stage.<sup>83</sup>

## 1998

**January 1, 1998**

*Bridge tolls go up to \$2.*

Tolls on state-owned bridges go up to \$2, with \$1 going into the state's seismic retrofit fund.<sup>84</sup>

**February 5, 1998**

*East span interim retrofit set to commence.*

Caltrans awards the contract for an interim seismic retrofit of the east span of the Bay Bridge.<sup>85</sup>

**April 1998**

*Proposed bridge designs drawing criticism.*

An article in the San Francisco Chronicle notes, "A month after they were unveiled, the designs for a new eastern half of the Bay Bridge are receiving less than rave reviews from a group of leading Bay Area architects, engineers and urban planners. The critics say that the four proposals being developed by a team of designers headed by T.Y. Lin International, while admittedly still in the rough early stages, lack the elegance and grace of the bay's other signature spans."<sup>86</sup>

**May 1998**

*West span retrofit begins.*

Work begins on the retrofit of the west span with the strengthening of foundations in the water.<sup>87</sup> Eventually, the retrofit will include, among other things, the installation of dozens of shock absorbers to allow the deck to move 2-4 feet in an earthquake. Hundreds of thousands of old rivets and bolts will be replaced, and stronger cross-braces will be installed in the deck. The San Francisco freeway approaches will also be replaced. The work is expected to cost \$550 million and take seven years.<sup>88</sup>

**May 11, 1998**

*Thirty percent design document released; costs are higher.*

Caltrans' 30 percent design report estimates the cost of the east span with the self-anchored suspension (SAS) design at \$1.50-\$1.56 billion, and the cost of the cable stayed option at \$1.45-1.5 billion.<sup>89</sup> The estimated cost for the east span when the Legislature passed the funding plan in August 1997 had been \$1.28 billion.

**May 14, 1998**

*City of Oakland reiterates objections to bridge design.*

Oakland's Director of Public Works writes to the Design Task Force that the viaduct portion of the bridge, constituting 85 percent of the span, has "no more design flair than a freeway overpass." She asks that more consideration be given to additional design elements.<sup>90</sup>

**May 29, 1998**

*Engineering and Design Advisory Panel (EDAP) recommends self-anchored suspension (SAS) span.*

The 33 architects and engineers on the Bay Bridge EDAP recommend a single-tower, SAS span. The design will include the original viaduct design recommended by Governor Wilson with a "signature" suspension section near Yerba Buena Island.<sup>91</sup>

**June 1998**

*Mayor Brown withdraws support for northern alignment.*

San Francisco's mayor indicates he opposes a northern alignment, which he previously endorsed, saying it will interfere with the City's reuse plans for Yerba Buena Island.<sup>92</sup>

**June 17, 1998**

*Metropolitan Transportation Commission (MTC) staff recommends that Transbay Terminal not be funded at this time.*

Staff recommends to the Commission that it defer a decision on relocating or replacing the San Francisco Transbay Transit Terminal “until such time as sufficient consensus has been achieved.”<sup>93</sup>

**June 18, 1998**

*East Bay leaders criticize bridge design.*

Several East Bay leaders write to the Bay Bridge Design Task Force to complain that the process has “not produced a world class design that establishes a sense of gateway and place for the East Bay.” They call for further analysis of alternative designs, as well as inclusion of a bicycle/pedestrian lane, rail, and other features. The signers include the mayors of Oakland, Berkeley, Emeryville, Alameda, Piedmont, and Albany, as well as Assemblymembers Don Perata and Dion Aroner, and the president of the Alameda-Contra Costa (AC) Transit Board.<sup>94</sup>

**June 24, 1998**

*Design Task Force chooses bridge design.*

The Bay Bridge Design Task Force accepts the recommendation of the Engineering and Design Advisory Panel on the design of the east span. The east span design will actually consist of four distinct parts: a low-rise “Oakland Approach;” the longest section, a pier-supported “Skyway;” a signature single tower, self-anchored suspension span; and a fourth section connecting to the east side of Yerba Buena Island. The new east span will have two side-by-side bridges with five lanes each, plus shoulders and a bicycle/pedestrian path.<sup>95</sup> If built, it will be the world’s longest single tower, self-anchored suspension bridge.

**June 24, 1998**

*Metropolitan Transportation Commission (MTC) approves bridge design.*

The MTC votes 11-1 to adopt the design recommended by the Design Task Force.<sup>96</sup>

Annemarie Conroy, executive director of the San Francisco’s Treasure Island Development Authority threatens to sue over the design, saying that the northern alignment will undermine the city’s efforts to develop Treasure Island.<sup>97</sup>

Oakland Mayor Elihu Harris, the only dissenting vote on the Commission, derides the aesthetics of the structure. Other Bay Area officials follow suit. Oakland’s Assemblymember Don Perata says he hopes to place a measure on the November ballot that would allow voters to rescind the MTC decision and establish an open design competition. Oakland Mayor-elect Jerry Brown says “This battle is by no means over,” and expresses hope that a new Legislature and governor in October will open another opportunity to seek “excellence” rather than “mediocrity” in the bridge design. In Brown’s opinion, the design review process was “fatally flawed” by conflicts of interest and “must be rejected.”<sup>98</sup>

According to Caltrans, the choice of the self-anchored suspension (SAS) design, along with the inclusion of a bicycle/pedestrian path increases the cost of the bridge by \$141 million beyond the projected cost of a baseline viaduct-style bridge originally recommended by Caltrans. The MTC will approve a 15-month extension of the \$1 seismic retrofit surcharge on bridge tolls to generate the needed additional funds.<sup>99</sup>

### **June 26, 1998**

*Legislation authorizes bicycle path funding.*

Governor Wilson signs into law AB 2038 (Migden), which adds a bicycle/pedestrian path on the existing west span of the Bay Bridge as a fourth “amenity” eligible for funding from the \$1 bridge toll increase.<sup>100</sup>

### **July 1998**

*Navy denies Caltrans access to conduct geological study on Yerba Buena Island.*

Caltrans is denied permission from the Navy to perform test drillings of 4-inch holes on Yerba Buena Island. The Navy informs Caltrans that before they will consider granting Caltrans engineers access, Caltrans will have to first prepare an environmental impact statement under National Environmental Policy Act (NEPA). The Navy will continue to block Caltrans’ access for these tests for another year.<sup>101</sup>

### **September 24, 1998**

*Draft Environmental Impact Statement released.*

The Federal Highway Administration (FHWA) releases the draft Environmental Impact Statement (EIS) required under the National Environmental Policy Act (NEPA). Highway seismic retrofits such as the Bay Bridge project are statutorily exempt from the requirements of California Environmental Quality Act (CEQA), so there is no Caltrans Environmental Impact Report.<sup>102</sup>

In the Draft Environmental Impact Statement, the total time necessary to complete the construction of a new east span is 51 months.<sup>103</sup>

### **November 3, 1998**

*Bay Area voters recommend Bridge rail.*

Voters in San Francisco, Oakland, Berkeley and Emeryville pass identical ballot initiatives recommending Metropolitan Transportation Commission (MTC) and Caltrans include passenger rail service on the Bay Bridge.

### **November 20, 1998**

*Lawsuit over contracting out engineering services settled in favor of state employees.*

The Wilson administration and the union representing Caltrans engineers settle a 13 year-old lawsuit over how the state contracts out engineering services. The state agrees to

significantly limit its use of outside engineers on the Bay Bridge project and have Caltrans hire 1,000 new employees.<sup>104</sup>

**November 22, 1998**

*Study by San Francisco consultant advocates southern alignment.*

An engineering study commissioned by the City of San Francisco finds that a southern alignment would be “superior to all of the alignment alternatives proposed” in the environmental impact statement, in terms of cost, environmental impacts, and impact on other development plans.<sup>105</sup>

**November 23, 1998**

*San Francisco and Navy voice criticisms of project and Draft Environmental Impact Statement (EIS).*

In comments on the Draft EIS, the City of San Francisco says that Metropolitan Transportation Commission (MTC) and Caltrans have biased the process toward selection of a northern alignment by proceeding with design and site investigations while neglecting to fully assess other alternatives. The City and the Navy fault the Draft EIS as deficient in its analysis of several categories of impacts, including land use, visual impacts, historic resources, bicycle safety, geology, and noise.<sup>106</sup>

**December 7, 1998**

*Bay Area leaders call for rail study and a halt to design work.*

A letter to the MTC and Caltrans requests a “thorough and comprehensive” study of the passenger rail service options for the bridge. During this time, design work for the bridge “should cease.” The mayors of Berkeley, Emeryville, Oakland, and San Francisco sign the letter.<sup>107</sup>

**December 28, 1998**

*Caltrans officially chooses northern alignment.*

Caltrans announces that after reviewing the public comments on the Environmental Impact Statement, it has identified the northern alignment as the preferred alternative for the Bay Bridge project.<sup>108</sup>

**December 30, 1998**

*Seismic Advisory Board appeals to Senator Boxer to intervene in dispute with Navy.*

The Caltrans Seismic Advisory Board asks Senator Barbara Boxer to assist in obtaining the Navy’s permission for Caltrans to do geological testing on Yerba Buena Island. They say that delays in the bridge’s progress “undoubtedly will jeopardize public safety.”<sup>109</sup>

## 1999

### **January 4, 1999**

*Governor Gray Davis inaugurated.*

### **February 1999**

*Governor Davis asks for advice on realigning the bridge.*

Governor Davis asks his new Caltrans Director, Jose Medina, to review estimates regarding the cost of changing the alignment of the Bay Bridge.<sup>110</sup>

### **February 1999**

*Bridge Design Task Force reconvenes.*

The Bay Bridge Design Task Force reconvenes to hear San Francisco's objections to the design. Supporting the City's opposition to the current plans is UC Professor Abolhassan Astaneh-Asl, who led the UC Berkeley team that supported seismically retrofitting the existing bridge back in 1992. He tells the panel about his concern that the new bridge wouldn't withstand a major earthquake.<sup>111</sup>

### **February 8, 1999**

*City of San Francisco boycotts meetings to protest northern alignment.*

Annemarie Conroy, executive director of the San Francisco's Treasure Island Development Authority, tells Caltrans the City will no longer participate in memorandum of agreement meetings because the state will not reconsider the northern alignment of the bridge.<sup>112</sup>

### **February 11, 1999**

*The Mayors Brown asks Governor Davis to reconsider choice of alignment.*

A letter from Mayors Jerry and Willie Brown urges Governor Davis to consider a southern alignment, provide for rail on the bridge, and hold an international design competition.<sup>113</sup>

### **February 16, 1999**

*Oakland City Council endorses redesign.*

The Oakland City Council unanimously resolves that the bridge design process should be reopened, and should include rail and possibly a park at the bridge's base.<sup>114</sup>

### **February 19, 1999**

*Bridge engineering design firm alleges that design competition was unfair and fraudulent.*



In a letter to Caltrans Director Jose Medina, Coman Feher Associates complain that the bridge design competition was rigged and that the chosen design is faulty and unsafe. They point out that several members of the Engineering Design Advisory Panel (EDAP) were themselves participants in the competition. They allege that the EDAP only gave cursory consideration to most submissions, and that they did not employ any explicit criteria in evaluating them.<sup>115</sup>

**February 22, 1999**

*Navy says it won't sign memorandum of agreement.*

Navy tells Caltrans in a letter that it will not sign a memorandum of agreement that assumes the northern alignment of the east span.<sup>116</sup>

**February 23, 1999**

*Association of Bay Area Governments urges end to bridge debate.*

The Association of Bay Area Governments sends a letter to Metropolitan Transportation Commission (MTC) saying that “a significant majority of cities and counties around the Bay would agree that the cost of any delays and the seismic safety risk preclude any consideration of delaying the bridge.” The bridge design process was, it says, sufficiently open and democratic to “stop the commotion and proceed with bridge construction.”<sup>117</sup>

**February 24, 1999**

*Bay Bridge Design Task Force and engineering panel reconvene for alignment debate.*

In a special joint session, the Design Task Force and EDAP meet to hear a briefing by the City of San Francisco on its proposal for a southern alignment.<sup>118</sup>

**March 11, 1999**

*Governor Davis says build it now.*

Governor Gray Davis expresses opposition to the proposals to re-do the Bay Bridge design process. “It’s been 10 years since the earthquake, and we need to fix the bridge,” Davis says.<sup>119</sup>

**July 28, 1999**

*Governor Davis protests to the Secretary of the Navy.*

Governor Davis writes to the Secretary of the Navy objecting to the Navy’s refusal to allow Caltrans access to Yerba Buena Island for geological testing.<sup>120</sup>

**August 27, 1999**

*Meeting of conflicting stakeholders convened in the White House.*

Officials from Caltrans, the City of San Francisco, the Navy, the U.S. Department of Transportation, and the Federal Highway Administration, meet in Washington D.C. with

White House aides to discuss disputes about the bridge. The Navy agrees to act on Caltrans' request for access to Yerba Buena Island, and the parties agree to meet again to discuss impacts of construction on Navy facilities.<sup>121</sup>

### **September 1999**

*Key environmental review meeting cancelled.*

A key part of the National Environmental Policy Act (NEPA) process, a meeting between Caltrans and federal agencies to identify the "Least Environmentally Damaging Practicable Alternative" under the Clean Water Act, is canceled due to disputes and requests for information among the various agencies. Issues to be resolved included Navy concerns about the environmental impact of drilling on Yerba Buena Island, concerns about the economic impacts of construction on Yerba Buena Island development plans, and Oakland Mayor Jerry Brown's questions about the alignment. The meeting will be delayed until October 2000.<sup>122</sup>

### **September 23, 1999**

*Navy grants permission to drill on Yerba Buena Island.*

More than a year after first requested, the Navy gives Caltrans permission to bore holes on Yerba Buena Island to collect geological information for east span design.<sup>123</sup>

### **October 17, 1999**

*10<sup>th</sup> Anniversary of the Loma Prieta earthquake.*

On the 10<sup>th</sup> anniversary of the Loma Prieta earthquake, the U.S. Geological Survey releases a study predicting a 70 percent chance of a major (6.7+) earthquake striking the Bay Area in the next 30 years.<sup>124</sup>

### **December 8, 1999**

*Consultant study tells MTC that adding rail to the bridge would cost \$3 billion.*<sup>125</sup>

### **Mid-December 1999**

*Governor Davis appeals to White House to intervene in dispute with Navy.*<sup>126</sup>

Governor Davis asks White House Chief of Staff John Podesta to help Caltrans acquire Navy property on Yerba Buena Island. In hopes of resolving the disputes, the White House orders the U.S. Army Corps of Engineers to carry out an independent analysis of the project.<sup>127</sup>

## **2 0 0 0**

### **January 2000**

*Senator Feinstein proposes new bridge south of the Bay Bridge.*

Noting that a repaired Bay Bridge will not carry more traffic than the original span, and that it will be unlikely to carry rail, Diane Feinstein writes a letter to Governor Davis endorsing the idea of a new bridge to connect southern Alameda County with San Francisco and San Mateo Counties.

### **January 2000**

*Governor Davis activates “Buy America” provisions to exclude foreign steel.*

Governor Davis orders that federal funds be used in the Bay Bridge project. The move reportedly follows lobbying by labor unions unhappy with the use of foreign steel on the Carquinez Bridge retrofit. The use of federal funds triggers a federal law that will require Bay Bridge contractors to use domestic steel unless the use of foreign steel is at least 25 percent cheaper.<sup>128</sup>

### **January 2000**

*Mayor Willie Brown lobbies at the White House against building new bridge.*

San Francisco Mayor Brown meets with presidential advisors including White House Chief of Staff John Podesta. He says retrofitting the existing bridge will be quicker and safer than building a new span, and asks the White House to meet with UC Berkeley critic Dr. Abolhassan Astaneh-Al.<sup>129</sup>

### **February 11, 2000**

*Professor lobbies against bridge at White House.*

UC professor and bridge critic Astaneh-Asl meets with White House officials. He tries to persuade advisors to President Clinton that the bridge design is unsafe.<sup>130</sup>

### **April 2000**

*Federal Highway Administration (FHWA) commissions Army Corps study of bridge design.*

In an effort to mediate between the conflicting parties, the FHWA commissions the Army Corps of Engineers to study the design of the Bay Bridge east span project. By this time, Caltrans has reportedly spent \$70 million on design and engineering for the new span.<sup>131</sup>

### **April 17, 2000**

*California Transportation Commission takes Navy to task.*

The California Transportation Commission writes a strong letter to the Navy accusing it of jeopardizing safety by obstructing progress on the Bridge.<sup>132</sup>

### **April 14, 2000**

*Jeff Morales replaces Jose Medina as Director of Caltrans.*<sup>133</sup>

**May 2000**

*Caltrans completes retrofitting of 1,039 bridges; 1,155 left to go.*

Caltrans completes the so-called “Phase 1” of its two-phase bridge retrofit program. Phase 1 included 1,039 bridges identified in need of retrofitting after the Loma Prieta earthquake. Phase 2, in which an additional 1,155 bridges identified after the Northridge earthquake will be retrofitted, is still underway. The retrofit of the state-owned toll bridges is being managed separately from the bridges included in Phases 1 and 2.<sup>134</sup>

**May 5, 2000**

*Federal government forces Navy to give up disputed Yerba Buena Island land.*

White House Chief of Staff John Podesta, who had been lobbied by Governor Davis, orders the Navy to transfer the disputed land to Caltrans. The chief counsel of the Federal Highway Administration later says this was because “Safety was the issue ... they did it because the bridge could fall down and people could die.” However, the decision will not be announced for another five months, pending the result of a U.S. Army Corps of Engineers study into the bridge design.<sup>135</sup>

**July 12, 2000**

*Interim retrofit of east span completed.*

Caltrans completes interim retrofit of the existing Bay Bridge east span.<sup>136</sup>

**August 2000**

*Design of viaduct portion of the new east span completed.*<sup>137</sup>

**September 22, 2000**

*Army Corps of Engineers endorses northern alignment.*

U.S. Army Corps of Engineers releases a report endorsing the decision to rebuild rather than retrofit the existing east span.<sup>138</sup>

**October 2000**

*Caltrans initiates study on extending Bridge bike lane.*

Caltrans initiates a \$2 million study on the feasibility of having the planned bike lane run all the way from Oakland to San Francisco. The extended bike lane could cost \$100 million (as opposed to the expected \$50 million for the already-approved bike lane from Oakland to Yerba Buena Island).<sup>139</sup>

**October 10, 2000**

*Delayed environmental meeting finally held.*

A key environmental meeting involving Caltrans and the federal agencies finally occurs. The meeting, to identify a “Least Environmentally Damaging Practicable Alternative” under the Clean Water Act, was delayed for over a year due to disputes and questions

among various agencies about issues such as construction impacts and choice of a northern versus southern alignment. According to the California State Auditor, these disputes contributed nearly two years of delay in the design and environmental process for the east span replacement.<sup>140</sup>

### **October 22, 2000**

*Army Corps study gives qualified support to Bridge design.*

The Army Corps of Engineers releases its study on the bridge design, widely viewed as the arbiter of the design dispute between San Francisco, the Navy, and Caltrans. The study says that Caltrans is “moving toward a path to design a bridge that meets the seismic performance criteria.” However, it notes that the design is not complete and that the Bridge does not yet meet a “lifeline” standard guaranteeing its use ability by emergency crews after a large earthquake. The report recommends that Caltrans perform additional documentation, evaluation and testing of the replacement design as it nears completion.<sup>141</sup>

### **December 13, 2000**

*Metropolitan Transportation Commission (MTC) requests additional elements and changes for the bridge.*

In a letter to Caltrans, MTC requests various additional elements for the bridge. These include using costlier white cement; adding an aesthetic light pipe to run the entire length; and using steel rather than concrete for the entire bicycle/pedestrian path. These are to be paid for with bridge tolls, under MTC’s existing authority to use tolls to pay for “amenities” on the new bridge.<sup>142</sup>

## **2 0 0 1**

### **April 6, 2001**

*Higher Caltrans cost estimates released.*

Caltrans informs the Legislature that the toll bridge seismic retrofit work will incur cost overruns of about \$2 billion, including an increase of \$1.3 billion on the Bay Bridge. The total cost estimate for the Bay Bridge is now \$3.3 billion. The estimate for the east span has gone up – earlier estimates were \$1.4-1.5 billion, now the estimate is \$2.6 billion. Caltrans attributes the overruns to several factors, including inadequate original estimates, a rise in construction costs, delays caused by lack of cooperation from the Navy, and disagreements among local jurisdictions about the span’s alignment and design.<sup>143</sup>

Caltrans Director Jeff Morales expresses confidence that there will not be future additional overruns, calling the new estimates “high-end numbers.”<sup>144</sup>

The Senate Select Committees on Bay Area Infrastructure and Transportation requests that MTC perform an independent analysis of Caltrans cost estimates. MTC will contract with Bechtel Infrastructure Corporation to do the analysis.<sup>145</sup>

**May 8, 2001**

*Final Environmental Impact Statement (EIS) for the east span project released.*

The final EIS is released, slightly more than four years after the environmental review process was begun.

**July 2001**

*Independent cost review predicts further cost increases.*

A Bechtel study reviews Caltrans' toll bridge retrofit cost estimates. It concludes that in addition to the \$2 billion cost overruns identified by Caltrans, there could be yet further increases of \$250-630 million more. This includes potential increases of \$190-440 million on the east span project.<sup>146</sup>

**July 11, 2001**

*Record of Decision signed.*

The Federal Highway Administration (FHWA) approves the Record of Decision for the east span project. This occurs two years after the date originally predicted by Caltrans and the Federal Highway Administration. It clears the way for Caltrans to advertise for contractors.<sup>147</sup>

**September 11, 2001**

*Terrorist attacks set stage for higher costs.*

The September 11 terrorist attacks trigger increases in the costs of insurance and bonding for large construction projects.

**September 15, 2001**

*Legislature enacts new funding plan to deal with cost overruns.*

After weeks of difficult negotiations among legislators from Northern and Southern California and Caltrans, the Legislature approves AB 1171, a new funding plan for the bridge projects.<sup>148</sup> It caps funding for the entire toll bridge seismic retrofit program at \$5.085 billion. It allocates \$4.637 billion from various sources to pay for program projects.<sup>149</sup>

The package includes a \$448 million reserve. This is motivated by the potential additional cost overruns identified recently by Bechtel (although it falls short of the \$630 million in potential additional overruns estimated in the July 2001 Bechtel study).

The legislation uses Caltrans' recent estimate that the east span will cost \$2.6 billion. MTC disagrees with this estimate, favoring a more conservative estimate of \$3.1 billion.<sup>150</sup>

Of the total amount authorized under AB 1171, 45 percent is funded by tolls and 55 percent is state/federal funds.<sup>151</sup>

AB 1171 authorizes the state to issue bonds securitized by the seismic surcharge on bridge tolls. The toll surcharge is authorized to be extended by 30 years (through December 31, 2037), and may bring in up to \$4.72 billion (\$2.28 billion for the bridges, plus additional funds for debt service).<sup>152</sup>

The package also includes \$790 million from the Seismic Retrofit Bond Act of 1996, \$795 million from the State Highway Account, and \$642 million from the federal Highway Bridge Replacement and Rehabilitation Fund.<sup>153</sup>

At this time, Metropolitan Transportation Commission (MTC) reportedly sought greater control of the bridge project, but the administration and Caltrans Director Jeff Morales resisted.<sup>154</sup> In the end, AB 1171 stated that Caltrans "has full and sole responsibility for completion of all seismic retrofit projects on the bay area bridges."

At this time, Caltrans estimates that the east span will be complete by May 2007.<sup>155</sup>

### **December 19, 2001**

*Skyway bids opened, come in high.*

Bids for the skyway section of the new east span are opened, and the low bid is about \$300 million over the official estimates.<sup>156</sup> The high bid uses up all but \$150 million of the contingency fund created earlier this year by the Legislature.<sup>157</sup>

## **2 0 0 2**

### **January 17, 2002**

*\$1.04 billion contract awarded for skyway portion of east span.*<sup>158</sup>

### **January 29, 2002**

*Groundbreaking for the new east span.*

As the state holds its official groundbreaking, Caltrans predicts the new bridge will be open in five years.<sup>159</sup>

### **March 25, 2002**

*Caltrans annual report to Legislature.*

Despite the higher-than-expected bids for the skyway section, Caltrans “remains committed to delivering the program as planned for in AB 1171.”<sup>160</sup> The cost estimate remains unchanged: “The Department will pursue cost saving measures aggressively to stay within the \$2.6 billion project budget.”<sup>161</sup>

Caltrans predicts that the bridge will be open to westbound traffic in late 2005, and eastbound traffic in 2007.<sup>162</sup>

### **June 2002**

*Predicted completion date pushed back.*

Caltrans project plans estimate that the east span will be open to traffic in 2009.<sup>163</sup> The previous projection had been for completion in 2007.

### **August 1, 2002**

*State auditor analyzes cost overruns.*

An auditor’s report cites several reasons for cost overruns, including: the Bay Area’s choice of a more expensive “signature” span; increases in support costs such as salaries and consulting fees; delays in the project, some of them caused by disagreements between Caltrans and other entities such as the U.S. Navy; and the overall complexity of the project.

### **November 2002**

*Caltrans begins taking bids for replacing the for west approach of the Bay Bridge’s west span.*<sup>164</sup>

### **December 2002**

*State runs out of money for highway projects.*

The state’s fiscal crisis forces the California Transportation Commission to freeze new spending on transportation projects. The freeze does not affect seismic retrofits, but stops work on highway interchanges, road repairs and new transit service.<sup>165</sup>

## **2 0 0 3**

### **January 21, 2003**

*Contract for the self-anchored suspension (SAS) tower marine foundation advertised for bidding.*<sup>166</sup>

The concrete and steel foundation for the 525-foot steel tower is called the T1 footing. Further out in the bay will be the “E2” support for the bridge’s twin road decks. These foundations are known as the “marine” foundations because they will be built in the bay.

### **February 2003**

*Heavy construction work begins on skyway portion.*



Workers and machinery begin pounding 160 piles into the bay floor. They will anchor the 28 columns that will hold up the twin concrete viaducts of the “skyway” portion. The viaducts will extend from Oakland to the bridge’s single-tower suspension span, which will stretch to Yerba Buena Island.<sup>167</sup>

### **February-March 2003**

*Contractors tell Caltrans its plans are unrealistic and will inhibit bidding.*

Leading bridge contractors warn that Caltrans is preparing to take bids on the project under a set of unrealistic expectations that will deter bidders. They say that the cost estimates are too low, and that the schedule is unrealistic for this unique bridge design. Among the issues noted are the large scale of the project and the limited market for barges, cranes, and labor. Additional problems include the difficulty of getting bond underwriters to make loans on jobs of this size in the post-September 11 environment. All in all, they are dubious about the feasibility of bidding on the project when bidding opens in June.<sup>168</sup>

### **March 2003**

*Caltrans’ annual report to the Legislature revises cost upwards.*

Caltrans’ annual report indicates higher costs than anticipated under the 2001 AB 1171 funding plan. The estimated cost of a new east span is up to \$2.95 billion (it had been \$2.6 billion). The estimated cost of the west span retrofit is \$30 million less (down to \$670 million). The cost remains within the contingency authorized under AB 1171.<sup>169</sup>

Among the factors cited as contributing to the mistaken estimates: the unique scale and complexity of the project, changes in the construction bonding and insurance markets, and fluctuations in the steel industry. The report also notes increased costs for public works contracts since September 11, 2001. The report notes concern that these trends may contribute to there being fewer bidders, less competition, and higher prices for the project.<sup>170</sup>

Caltrans estimates that the westbound lanes will be open to traffic in late 2006, with the eastbound lanes open in late 2007.<sup>171</sup>

### **May 14, 2003**

*Caltrans pushes back deadline for bidding on self-anchored suspension span.*

After outreach meetings and contractor feedback suggested there may be insufficient bidding, Caltrans makes several adjustments to the Self-anchored suspension (SAS) project and moves the deadline for bids from June 3 to August 5. Among the key issues addressed is a loosening of the “Buy America” requirements for steel.<sup>172</sup>

### **May 27, 2003**

*Contract awarded for the “W2 Land Foundation.”*

The W2 Land Foundation consists of the westernmost foundations and columns of the self-anchored suspension bridge, which are to be built on Yerba Buena Island.<sup>173</sup>

**June 2003**

*Construction begins on seismic retrofit of Bay Bridge west approach in San Francisco.*<sup>174</sup>

**July 2003**

*Caltrans alters contracting to encourage bidding competition.*

In an effort to increase bidding competition on Bay Bridge contracts, Caltrans divides the four contracts on the east span into 13 smaller contracts.<sup>175</sup>

**August 3, 2003**

*Legislation eases construction bonding requirements.*

The Governor signs AB 1745, which relaxes the minimum bonding required for contractors on large Caltrans construction projects. The bill is meant to address escalating costs in the construction bonding insurance market, which threaten to constrain bidding on projects such as the Bay Bridge.<sup>176</sup> The flux in the reinsurance market is blamed on diverse factors including the September 11 attacks and the Enron scandal.<sup>177</sup>

**August 19, 2003**

*Self-anchored suspension (SAS) tower marine foundation bid opened; is higher than expected.*

The single bid received for the marine foundation contract is opened, and is 63 percent higher than the Caltrans engineer's cost estimate (\$210 million bid versus a \$129 million estimate).<sup>178</sup>

**October 10, 2003**

*Caltrans rejects single bid on marine foundations; initiates independent review of procedures.*

Caltrans rejects the single bid on the SAS tower marine foundations as unacceptably high. Caltrans will instead repackage the project and re-bid it. It will also hire an independent review committee, chaired by Thomas R. Warne, former Director of the Utah Department of Transportation. The committee will analyze the bidding process and recommend changes to Caltrans' contracting and bidding processes.<sup>179</sup>

**October 17, 2003**

*Caltrans re-advertises self-anchored suspension (SAS) marine foundation contract.*<sup>180</sup>

**November 14, 2003**

*Caltrans reports financial plan to Federal Highway Administration (FHWA)*

Caltrans' annual financial report to the FHWA estimates the total cost of the toll bridge seismic retrofit program at \$4.96 billion. It reports that the current estimated cost of the east span is \$2.98 billion. Caltrans notes that the estimated completion date for the east span to be open to traffic has been pushed back to 2011.<sup>181</sup>

**November 17, 2003**

*Arnold Schwarzenegger inaugurated as Governor.*

## 2004

**Early January 2004**

*One of the foundations of the east span's suspension span is poured.*

The pouring of more than 5,300 cubic yards of concrete completes the first of two foundations on Yerba Buena Island.<sup>182</sup>

**March 2004**

*Contract awarded to design and build a temporary bridge structure.*

The temporary structure will connect the Yerba Buena Island Tunnel to the existing bridge, and allow removal of a portion of the bridge for installation of a permanent transition. The work is scheduled for completion in October 2005.<sup>183</sup>

**March 2, 2004**

*Bay Area votes to raise tolls for transit and highway projects.*

Bay Area voters pass Regional Measure 2. It will raise their bridge tolls from \$2 to \$3 in order to fund improvements including seismic strengthening of BART's Transbay tube, a new Transbay Terminal and downtown Caltrain extension in San Francisco, new ferry service for the East Bay and Peninsula, and a fourth bore for the Caldecott Tunnel.<sup>184</sup>

**April 1, 2004**

*Contract awarded for construction of suspension span marine's foundations.*

The contract is awarded more than a year after it was first advertised for bidding.<sup>185</sup> The new bid is \$50 million lower than the earlier bid.<sup>186</sup>

**April 5, 2004**

*Independent Review Committee warns that SAS costs will be high.*

The Independent Review Committee appointed in October 2003 warns that the cost of the self-anchored suspension (SAS) could be higher than currently planned. Caltrans' estimate of the SAS is \$800 million, but feedback from the construction industry indicates it could go up to \$1.5 billion. The review team says that Caltrans may not be able to significantly reduce the cost without choosing a different design.<sup>187</sup>

**May 26, 2004**

*Single bid for self-anchored suspension (SAS) portion is higher than expected.*

Caltrans discloses that it has only received a single bid to build the self-anchored suspension portion of the east span. The sole bid came in at \$1.4-1.8 billion (in contrast to the earlier prediction it would cost \$733 million). The bidder was a consortium led by American Bridge, Nippon Steel Bridge and Flour Enterprises. The bidders say the price could come down to \$1.4 billion if they are able to escape “Buy America” rules regarding steel supplies.<sup>188</sup> Caltrans has 60 days to review the bid, but will later extend the deadline until September 30.

**August 2004**

*Bechtel sees little benefit in re-bidding.*

A Bechtel review of Caltrans cost estimates, commissioned by Metropolitan Transportation Commission (MTC), echoes Caltrans in concluding that there is little opportunity for cost savings to be achieved by rebidding or redesigning the Bay Bridge east span. According to Caltrans, re-bidding the current self-anchored suspension (SAS) could delay the project up to 1.5 years and could add up to \$200 million in additional costs. Redesigning the SAS could save up to \$85 million, but could also end up costing an extra \$310 million. It could lead up to four years of delay. Bechtel’s review concludes that “Caltrans’ conclusions are reasonable.”<sup>189</sup>

**August 16, 2004**

*Bridge cost estimates rise to \$5.1 billion.*

The Schwarzenegger administration announces that the estimated cost of rebuilding the east span has gone up to \$5.1 billion from the estimate of \$2.6 billion used at the time of AB 1171. About half of the increase (\$1.3 billion) is blamed on cost increases for the self-anchored suspension (SAS) portion of the bridge.

But overruns are occurring on other sections and other bridges as well. For example, the estimated cost of the skyway section of the Bay Bridge east span is now \$1.46 billion, almost half a billion more than estimated when the contract was awarded. And the Richmond-San Rafael Bridge retrofit, estimated to cost \$665 million at the time of AB 1171, is now estimated to cost \$914 million.

Officials blame the cost increases on many factors, including increases in the costs of labor and materials; industry consolidation of suppliers, fabricators, and large construction project bidders; and higher insurance and bonding costs after September 11.<sup>190</sup> The administration has offered to pay \$300 million in state money to demolish the old bridge, but wants a new financial plan under which the Bay Area will pay for future bridge costs and overruns.<sup>191</sup>

Around the same time, an internal review by Caltrans discloses that design and engineering services contracted out to private firms have contributed \$500 million to costs on the Bay Bridge retrofit.<sup>192</sup>

Caltrans now calls the AB 1171 schedule to complete the East span by 2007 “unrealistic.” Caltrans says the new span will be open to traffic in 2010 and complete in 2011.<sup>193</sup>

#### **August 16, 2004**

*Schwarzenegger Administration proposals for bridge funding surprise Bay Area.*

The administration proposes that overruns be financed by diverting toll funds from the toll hike approved by Bay Area voters under Regional Measure 2. Those were originally intended to pay for other projects, including seismic retrofitting of BART’s Transbay tube. Administration officials blame the overruns on the Bay Area’s design choice of bridge design: “If they want a signature bridge, they are going to have to pay for it,” says an administration spokesman. Bay Area officials react with surprise and indignation. MTC officials propose their own plan under which the Bay Area pays for 57 percent of the overruns.<sup>194</sup>

The Governor also proposes an audit of the Bay Bridge project to investigate the delays and overruns, and proposes that oversight of the project be given to MTC.

#### **August 26, 2004**

*Legislature requests audit of the Bay Bridge project.*

The State Legislature directs the California State Auditor to conduct an audit of Bay Bridge cost overruns.

#### **August 27, 2004**

*Legislation to fund award of self-anchored suspension (SAS) contract dies in Senate.*

AB 2366, a stop-gap measure intended to allow the awarding of the contract for the SAS span, fails to get out of the Senate. The bill would have allowed the Bay Area to advance to Caltrans up to \$520 million in toll revenues in order to allow the SAS contract to be awarded before the bid expired.

#### **September 2004**

*Administration asks Federal Highway Administration (FHWA) to lead a new risk assessment.*

At the request of the Secretary of Business, Transportation and Housing, FHWA agrees to assemble a Peer Review Team to conduct a risk assessment of Bay Bridge project alternatives, ranging from building the current SAS design to starting over with a new design. The team will assess the risk that each of the main alternatives might not achieve its key objectives.<sup>195</sup>

**September 3, 2004**

*State activates Independent Review Team to address self-anchored suspension (SAS) span.*

The Independent Review Team that has advised the administration on other bridge issues in the past is tasked with looking at the single bid received on the SAS portion of the bridge.<sup>†</sup> The panel of construction and transportation industry experts is to assess the viability and risks of awarding the contract, rebidding the contract, or redesigning the span.<sup>196</sup>

**September 25, 2004**

*Bond agency predicts \$6 tolls.*

Fitch Ratings slightly downgrades the California Infrastructure and Economic Development Bank's bond rating, and said there is a "strong likelihood" of \$6 tolls in the Bay Area to pay for cost overruns on the bridge retrofit.<sup>197</sup>

**September 30, 2004**

*Expiration of sole Bridge bid.*

The administration's Independent Review Team recommends not awarding the contract to the current single bidder. Instead, the state should advance further analyze the redesign alternatives, and in case those don't prove feasible, it should also be preparing to rebid the SAS contract.<sup>198</sup>

Sunne Wright McPeak, Secretary of the Business, Transportation and Housing Agency, announces that Caltrans will not accept the single bid for construction of the SAS portion of the Bridge. Instead, the agency will engage in intensive consultations with the construction agency and explore whether to resubmit the original design in an attempt to attract more bids, or possibly reopen the design process to find a less expensive design. The administration will present its findings when the Legislature reconvenes in December.

**October 20, 2004**

*Work completed on the W2 Land Foundation.*

The foundation on Yerba Buena Island for the suspension span is completed.<sup>199</sup>

**November 1, 2004**

*Will Kempton appointed new Director of Caltrans.*<sup>200</sup>

**November 1-15, 2004**

*Various players begin gearing up for potential redesign of Bay Bridge.*

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<sup>†</sup> The panel, headed by Thomas Warne, was previously known as the Independent Review Committee.

On November 1, Caltrans sends a letter to dozens of construction firms soliciting ideas about alternative designs for the Bay Bridge. Several days later, more than 40 firms attend a Sacramento meeting to discuss the feasibility of six potential designs.

Meanwhile, Caltrans begins meeting with other government agencies to inquire about potential permitting requirements.<sup>201</sup>

Meanwhile, the Peer Review Team convened by the Federal Highway Administration (FHWA) begins its risk assessment. The multidisciplinary team consists mostly of FHWA officials, but also includes experts from state transportation departments in Nevada, South Carolina, Massachusetts, and academics. The team will examine six project alternatives identified by Caltrans. The alternatives include redesigning or re-bidding the SAS, various cable-stayed designs, and a skyway design.<sup>202‡</sup>

### **November 19, 2004**

*Independent Review Team issues a report endorsing a cable-stayed design.*

The Independent Review Team concludes that re-designing the bridge using a cable-stayed design is preferable to continuing to build the Self-anchored suspension (SAS) design. Their review finds that the cable-stayed alternatives can meet seismic objectives and would have environmental impacts virtually identical to the SAS design. It finds that the cable-stayed alternatives, being simpler to construct, present fewer risks of schedule delays than the SAS and could save over \$600 million. The team does not include the skyway alternative in its comparison.<sup>203</sup>

### **December 2004**

*U.S. Peer Review Team reports on risks of alternatives.*

The Peer Review Team convened by the Federal Highway Administration (FHWA) rates the risk of several alternatives. Overall, it concludes that the risks of not achieving project objectives would be the lowest if Caltrans continued to build the existing SAS design. Risks are judged to be considerably higher for a skyway redesign, and highest for a redesign using the cable-stayed alternative. The dominant factor contributing to higher risk for a redesign is public acceptance. However, in terms of cost overruns or delays associated with technical and management complexity, the self-anchored suspension (SAS) design is the riskiest and the skyway the least risky.<sup>204</sup>

### **December 8, 2004**

*Caltrans re-evaluates the alternatives.*

Caltrans completes its own review of six alternatives, including re-bidding or redesigning the SAS; switching to a cable-stayed design; or switching to a skyway design.

The Department recommends re-advertising the SAS contract with modifications and enhancements to encourage bidding and make it easier to build. Suggested changes

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‡ The “skyway” alternative is a viaduct style bridge with no suspension section or tower. The term “skyway” is also commonly used to refer to the viaduct portion of the SAS design already under construction.

include easing the rules on using domestic steel, a new approach to bonding and insurance, and hiring outside construction management expertise. At the same time, Caltrans also recommends further consideration of the skyway alternative because of its high potential for cost savings.<sup>205</sup>

### **December 10, 2004**

*Administration endorses skyway redesign; wants higher bridge tolls.*

Business, Transportation and Housing Secretary Sunne Wright McPeak announces that the Administration has decided to scrap the SAS design and redesign the bridge as a skyway (viaduct) structure all the way across (an approach originally proposed and rejected seven years earlier). The redesigned bridge would have no “signature” suspension span or tower. The Administration reiterates its intention of having higher Bay Area bridge tolls in order to pay a larger share of the cost overruns on the project.

Acknowledging that there is no consensus among the experts over which design is best, McPeak says the skyway option can deliver the bridge in the same amount of time as the SAS and save \$300-400 million. A decisive factor is the technical complexity of the SAS design, and the greater certainty that the skyway can be delivered within the projected budget and schedule. McPeak says the redesigned bridge can be completed by 2011-2012.<sup>206</sup>

Some Bay Area leaders are unhappy with the aesthetics of the skyway and the prospect of the Bay Area shouldering most of the cost overruns through higher bridge tolls.<sup>207</sup> However, Senate President Pro Tem Don Perata suggests the Bay Area should accept the redesign and focus on the financing.<sup>208</sup> Secretary McPeak says that while the skyway design is less eye-catching, it has the advantage of offering drivers “unfettered vistas of the bay.”<sup>209</sup>



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Box 4, Folder 1

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