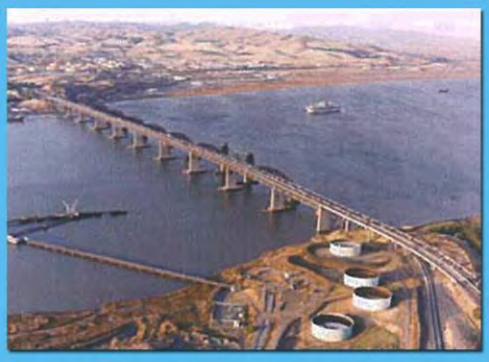
Toll Bridge Seismic Retrofit Program Report

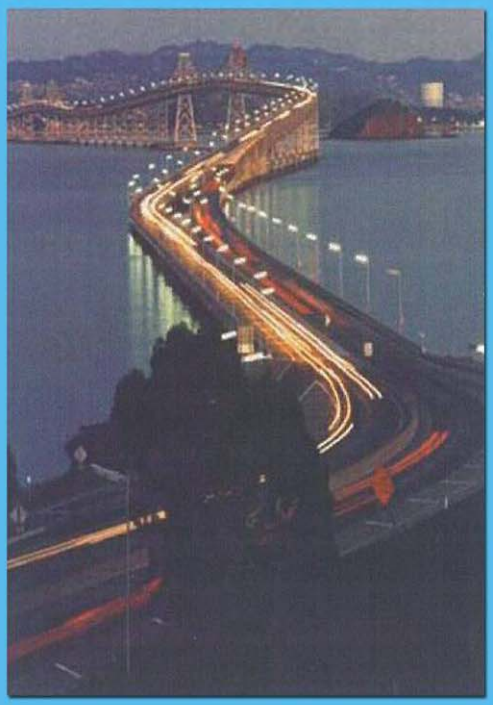
Third Quarter Report

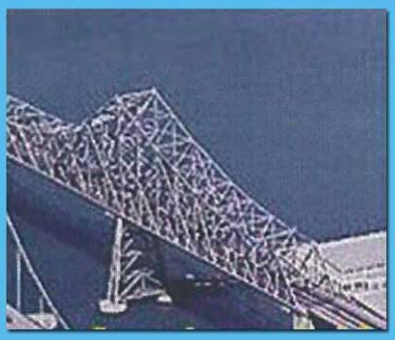
Ending September 30, 2005

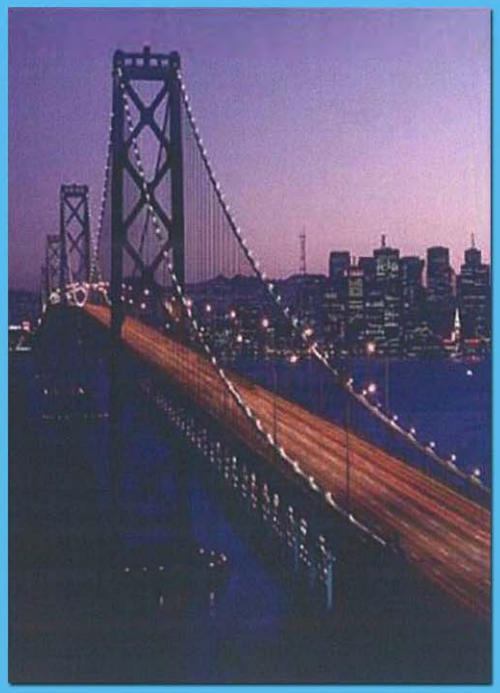
Submitted by

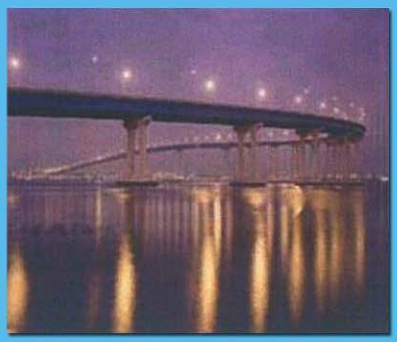
Toll Bridge Program Oversight Committee











Toll Bridge Program Oversight Committee
C/O Department of Transportation
Office of the Director
1120 N Street
P.O. Box 942873
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November 14, 2005

Mr. Gregory Schmidt
Secretary of the Senate
State Capital, Room 3044
Sacramento, CA 95814

Mr. E. Dotson Wilson
Chief Clerk of the Assembly
State Capital, Room 3196
Sacramento, CA 95814

Dear Messrs. Schmidt and Wilson:

The Toll Bridge Program Oversight Committee (TBPOC) is pleased submit the 2005 Third Quarter "Toll Bridge Seismic Retrofit Program Report," prepared pursuant to California Streets and Highways Code Section 30952.2.

California Streets and Highways Code Section 30952.1 established the TBPOC as a means to implement oversight and control over the Toll Bridge Seismic Retrofit Program. The TBPOC is comprised of the Director of the Department of Transportation, the Executive Director of the Bay Area Toll Authority, and the Executive Director of the California Transportation Commission. The TBPOC's program oversight and control activities include review and approval of contract bid documents, review and resolution of project issues, evaluation and approval of project change orders and claims, and issuing monthly and quarterly program progress reports. Over the past several months the TBPOC has met regularly to carry-out its oversight responsibilities.

The TBPOC is committed to providing the Legislature with comprehensive and timely reporting on the Toll Bridge Seismic Retrofit Program. If there are any questions or if any additional information is required, please do not hesitate to contact the members of the TBPOC.

Sincerely,

Will Kempton
Director
California Department of Transportation
Chair, Toll Bridge Program Oversight Committee

Diane C. Eidam
Executive Director
California Transportation Commission

Steve Heminger
Executive Director
Bay Area Toll Authority

Enclosure

c: Senate Transportation and Housing Committee
Assembly Transportation Committee
Senate Budget and Fiscal Review Committee

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Executive Summary

The Toll Bridge Program Oversight Committee (TBPOC) submits the 2005 Third Quarter Report ending September 30, 2005, for the Toll Bridge Seismic Retrofit Program (TBSRP) in accordance with SB 66 and AB 144. This report provides the following:

1. Information on the progress of each project in the program.
2. Baseline budget for Capital Outlay (CO) and Capital Outlay Support (COS).
3. Current projected costs for CO and COS.
4. Expenditures to date.
5. Comparison of the baseline schedule to the September 2005 projected schedule.
6. Summary of the milestones achieved during the quarter.
7. Major risk assessment for the remaining projects.

Major Milestones and Program Activities

The most significant action that occurred during this last quarter was that the Legislature passed Assembly Bill (AB) 144 and Senate Bill (SB) 66, which were signed into law by Governor Schwarzenegger on July 18, 2005 and September 29, 2005 respectively. AB 144 provides a comprehensive financial plan for the TBSRP, including the consolidation and financial management of all toll revenues collected on the state-owned bridges in the San Francisco Bay Area under the jurisdiction of the Bay Area Toll Authority (BATA). The bill provides $630 million in additional state funding and authorizes BATA to increase tolls on the state-owned bridges in the Bay Area by $1.00 no sooner than January 1, 2007 to provide adequate funding for the completion of the TBSRP.

AB 144 and SB 66 significantly strengthen the program and project oversight activities for the TBSRP and the Benicia-Martinez Bridge New Span project (which is not subject to this report). The bill created the Toll Bridge Program Oversight Committee to implement a project oversight and project control process for the TBSRP. The TBPOC is comprised of the Department of Transportation (Caltrans) Director, the BATA Executive Director, and the Executive Director of the California Transportation Commission (CTC). The TBPOC's program oversight activities include reviewing and approving contract bid documents, reviewing and resolving project issues, evaluating and approving project change orders and claims, reviewing project staffing levels and structures, and reviewing and approving monthly and quarterly reports. Since AB 144 and SB 66 were signed into law, the TBPOC has met several times to implement the project oversight and control activities for the TBSRP.

Significant progress on the completion of the seismic retrofit projects continued during this past quarter. Appendix E includes a gallery of photos of construction activities on the bridge projects. Only one of the seven Toll Bridges in the TBSRP remains to be retrofitted. The major milestones achieved during the quarter include:

- Seismic Safety of the Richmond-San Rafael Bridge was achieved on July 29, 2005. All remaining cleanup construction activities on the project will be completed on October 17, 2005. Caltrans is currently in discussions with regulatory agencies concerning mitigation measures for negative impacts on fish in the project area. It is currently estimated that the project will have a savings of approximately $89 million from the baseline budget contained in AB 144 and SB 66.

- The San Francisco-Oakland Bay Bridge (SFOBB) West Approach project is approximately 56 percent complete and on schedule for completion in August 2009.

- The SFOBB East Span Skyway contract is 80 percent complete and is projected to be completed in 2007.

- On August 1, 2005, Caltrans advertised the $1.5 billion Self Anchored Suspension (SAS) Bridge portion of the SFOBB East Span Seismic Replacement project. Bids for the project are due in February 2006.

AB 144 also requires Caltrans to develop and implement an expanded comprehensive risk management plan for the TBSRP to augment the established risk management protocols and mitigation measures already in place. An update on these risk management activities is included in this report. Appendix C includes the risk management plan for the SFOBB East Span Seismic Replacement project.

Governor Schwarzenegger signs AB 144 on July 18, 2005.

Program Overview

Seven of the nine state-owned toll bridges were identified for seismic retrofit in the TBSRP:

1. Benicia-Martinez Bridge
2. Carquinez Bridge
3. San Mateo-Hayward Bridge
4. Vincent Thomas Bridge
5. San Diego-Coronado Bridge
6. Richmond-San Rafael Bridge
7. San Francisco-Oakland Bay Bridge (SFOBB) (West Span, West Approach, and construction of the new East Span).

Seismic retrofit of these complex structures presents an extremely difficult engineering challenge and nowhere in the world has a bridge seismic safety program of this size been undertaken. Although the Dumbarton and the Antioch bridges were not included in the program, Caltrans is continuing work on seismic vulnerability studies to assess potential for necessary retrofit work on these structures. See discussion on page 22.

As shown in Table 1, a significant portion of the TBSRP is complete. The Richmond-San Rafael Bridge seismic retrofit work was completed on July 29, 2005. Currently, it is anticipated that there will be a cost savings of approximately $89 million from the project cost included in the AB 144/SB 66 baseline budget.

The SFOBB West Approach and new East Span Seismic Replacement projects are currently under construction. The 3rd Quarter forecast for those projects indicates that they will be completed within the AB 144/SB 66 baseline cost and schedule estimates.

The total budget outlined in AB 144/SB 66 is $7.785 billion, plus $900 million in program contingency funds. This represents $6.322 billion for CO, $1.463 billion for COS, and $900 million for program contingency for a total of $8.685 billion.

Table 1. TBSRP Project Status

Toll Bridge Seismic Retrofit Projects	Seismic Safety Status
San Francisco-Oakland Bay Bridge East Span Replacement	Construction
San Francisco-Oakland Bay Bridge West Approach Replacement	Construction
San Francisco-Oakland Bay Bridge West Span Seismic Retrofit	Complete
San Mateo-Hayward Bridge Seismic Retrofit	Complete
Richmond-San Rafael Bridge Seismic Retrofit	Complete
Eastbound Carquinez Bridge Seismic Retrofit	Complete
Benicia-Martinez Bridge Seismic Retrofit	Complete
San Diego-Coronado Bridge Seismic Retrofit	Complete
Vincent Thomas Bridge Seismic Retrofit	Complete

Risk Management

Caltrans has prepared and is implementing risk management plans (RMP) for all remaining TBSRP projects.

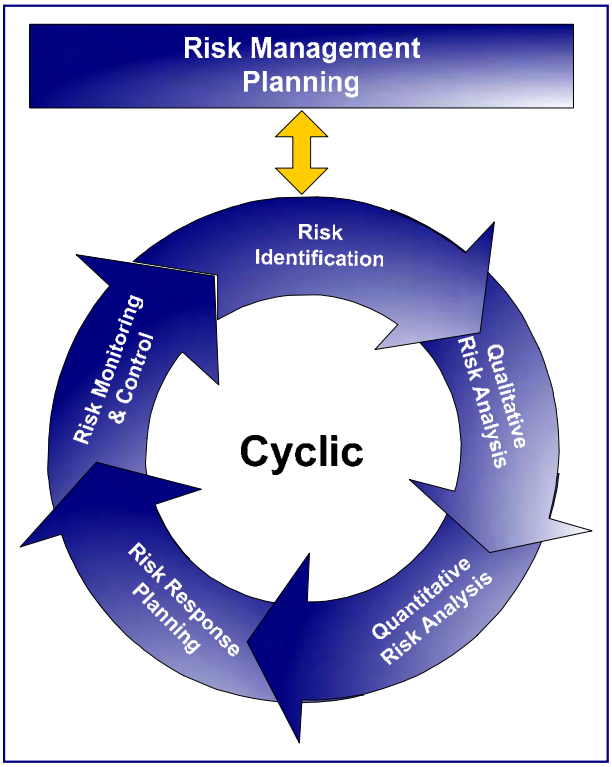
Caltrans' RMPs provide for a systemic process of identifying, analyzing, and responding to project risk. Implementation of the RMPs provides for maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives (e.g., cost, schedule and quality).

Each element of the RMP is explained below and shown in *Figure 1 - Risk Management Planning*:

1. Risk Management Planning – deciding how to approach, plan and execute the risk management activities for the project.
2. Risk Identification – determining which risks might affect the project and documenting their characteristics.
3. Qualitative Risk Analysis – prioritizing risks for subsequent further analysis or action by assessing and combining their probability and impacts.
4. Quantitative Risk Analysis – analyzing numerically the effect of identified risks on overall project objectives.
5. Risk Response Planning – developing options and actions to enhance opportunities and to reduce impact to project objectives.
6. Risk Monitoring and Control – tracking identified risks, monitoring residual risks, identifying new risks, executing risk response plans, and evaluating their effectiveness throughout the project life cycle.

Although the risk management processes above are presented as discreet elements with well-defined interfaces, in practice they often overlap and interact with each other. This report identifies potential risk items ("Major Risk Issues") for each of the TBSRP projects and proposed actions to mitigate the risks. Appendix C includes the risk assessment and risk management plan for the SFOBB East Span Seismic Replacement project.

Figure 1 – Risk Management Planning



Program Costs

Baseline and Projected Budget

The 2005 AB 144/SB 66 baseline budget is $7.785 billion for Capital Outlay (CO) and Capital Outlay Support (COS) plus $900 million for the program contingency, for a total baseline budget of $8.685 billion. The 3rd quarter forecast for the program is within the $8.685 billion budget. As highlighted above, an approximate $89 million cost savings is projected for the Richmond-San Rafael Bridge project. As shown in Table 2 below, the 3rd Quarter forecast shifts the projected cost savings from the Richmond-San Rafael project into the available program contingency funds, resulting in an increase in program contingency to $989 million.

Additional cost estimate and expenditure detail for the TBSRP is included in Appendix A. The details of the cost estimates and expenditures for the SFOBB East Span are shown in Appendix B.

Table 2 - Toll Bridge Seismic Retrofit Program Baseline (AB 144 / SB 66) And Forecasts ($ million)

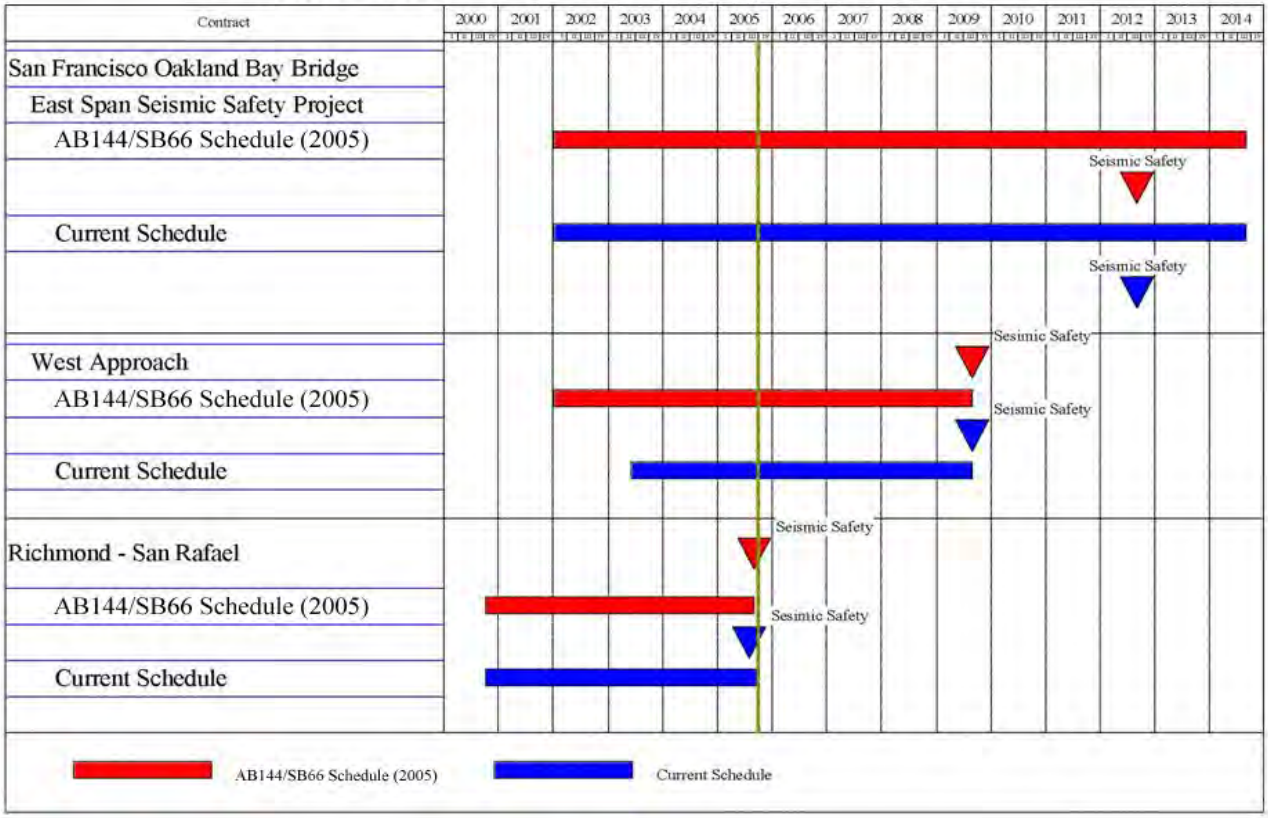
Contracts	AB 144 / SB 66 Baseline Budget	3rd Quarter 2005 Forecast	Difference from Baseline
Completed Projects			
Benicia-Martinez	177.83	177.83	-
Carquinez	114.13	114.13	-
San Mateo-Hayward	163.51	163.51	-
Vincent Thomas	58.51	58.51	-
San Diego-Coronado	103.52	103.52	-
SFOBB West Span	307.90	307.90	-
Ongoing Projects			-
Richmond-San Rafael	914.00	825.00	(89.00)
SFOBB West Approach	429.00	429.00	-
SFOBB East Span	5,486.60	5,486.60	-
Subtotal	7,755.00	7,666.00	(89.00)
Program Indirect	30.00	30.00	-
Program Contingency	900.00	989.00	89.00
Total Program	8,685.00	8,685.00	-

Program Schedule

Baseline and Projected Schedule

The seismic retrofit on six of the seven toll bridges in the TBSRP is complete. These structures include the Benicia-Martinez, Carquinez, Richmond-San Rafael, San Mateo-Hayward, Vincent Thomas, and San Diego-Coronado bridges. Seismic retrofitting of the SFOBB West Span was completed in June 2004 and the Richmond-San Rafael Bridge seismic retrofit work was completed on July 29, 2005. The SFOBB West Approach and East Span Seismic Replacement projects are currently under construction. The September 2005 schedule calls for achieving seismic safety and opening to traffic the SFOBB new East Span in 2012. This opening schedule is based on the contract working days projected by Caltrans. It is estimated that all of the construction activities for the SFOBB East Span Seismic Replacement project will be completed by 2014, marked by the planned demolition of the existing SFOBB East Span. The schedule for the SFOBB East Span Seismic Replacement project does not include the schedule risks that have been projected by the risk management activities (Appendix C). *Chart 1 - Toll Bridge Seismic Retrofit Program Schedule*, shows the baseline AB 144/SB 66 project schedule versus the projected completion schedules for the TBRSP projects under construction. As shown in the table, the forecasted schedules for achieving seismic safety remain consistent with the baseline schedules for AB 144/SB 66.

Chart 1. Toll Bridge Seismic Retrofit Program Schedule
Baseline AB 144/SB66 vs. Projected Schedule



Program Funding and Financing

AB 144 established a funding level of $8.685 billion for the TBSRP. The bill specifies funding sources for the program, as shown in *Table 3 - Program Budget*.

Table 3. Program Budget
As of September 30, 2005
($ in Millions)

Fund		
AB 1171 Funding	**Budgeted**	**Allocated**
Proposition 192	$790.00	$789.00
Toll Bridge Seismic Retrofit Account (TBSRA)		$3,143.73
Seismic Surcharge Revenue	$2,282.00	
San Diego Coronado Toll Bridge Revenue Fund	$33.00	
Vincent Thomas Bridge	$15.00	
State Highway Account (SHA)(1)	$795.00	
Public Transportation Account (PTA)(2)	$80.00	
ITIP/SHOPP/Federal Contingency	$448.00	
Federal Highway Bridge Replacement and Rehabilitation (HBRR)	$642.00	$635.50
AB 144 Funding		
Seismic Surcharge Revenue	$2,150.00	
BATA Consolidation	$820.00	
SHA(3)	$430.00	
Redirect Spillover	$125.00	
Motor Vehicle Account	$75.00	
Total	**$8,685.00**	**$4,568.23**

(1) To date, $354.6 million has been transferred from the SHA to the TBSRP. An additional $104 million has been expended directly from the account. Caltrans anticipates receipt of the remaining balance in Fiscal Years 2005-06 and 2006-07, as directed by the California Transportation Commission.

(2) To date, $10 million has been transferred from the PTA to the TBSRP. Approximately $70 million remains to be transferred. Caltrans anticipates receipt of such balance in Fiscal Years 2005-06 and 2006-07, as directed by the California Transportation Commission.

(3) Includes $300 million direct SHOPP contribution for demolition of existing SFOBB East Span.

Note: Program budget includes $900 million program contingency.
Due to the rounding of numbers, the totals shown above are within $0.02.

Funding Status

The program's financial status of revenues and expenditures is summarized in the table below, *Table 4 – Toll Bridge Seismic Retrofit Program Financial Status.* The figures include the surcharge revenues collected, transfers from the SHA and the Public Transportation Account (PTA), and expenditures from the Toll Bridge Seismic Retrofit Account (TBSRA) and the Seismic Retrofit Bond Act of 1996 (Proposition 192). Through September 2005, $789 million provided by Proposition 192 has been allocated by the California Transportation Commission (CTC).

Table 4. Toll Bridge Seismic Retrofit Program Financial Status
As of September 30, 2005
($ in Millions)

Revenues:	
Toll Surcharge[1]	$687.90
SMIF Interest	$80.19
Bond Revenue (Seismic Bond of 1996)	$790.00
Bond Revenue (Toll Revenue Bonds)	$1,062.00
Commercial Paper[2]	$80.00
SANDAG	$33.00
Vincent Thomas	$6.90
Federal Highway Bridge Replacement and Rehabilitation	$300.00
Transfers to TBSRA:	
State Highway Account (SHA)[3]	$458.76
Public Transportation Account (PTA)[4]	$10.00
Total Revenues and Transfers	**$3,508.75**
Expenditures:	
Capital Outlay	$2,630.95
State Operations	$818.64
Total Expenditures	**$3,449.59**
Encumbrances:	
Capital Outlay	$1,090.06
State Operations	$28.58
Total Encumbrances	**$1,118.64**
Total Expenditures and Encumbrances	**$4,568.23**

(1) The Toll Surcharge is dedicated to repayment of bonds beginning September 1, 2003. Toll Surcharge shown here is only toll revenue collected prior to that date.

(2) $80 Million in Commercial Paper issued on or about April 5, 2005.

(3) To date, $354.6 million has been transferred from the SHA to the TBSRP. An additional $104 million has been expended directly from the account. Caltrans anticipates receipt of the amount remaining of the $795 million in SHA funds authorized under AB 1171 will be transferred in Fiscal Years 2005-06 and 2006-07, as directed by the California Transportation Commission.

(4) To date, $10 million has been transferred from the PTA to the TBSRP. Approximately $70 million remains to be transferred. Caltrans anticipates transfer of the remaining PTA funds authorized under AB 1171 in Fiscal Years 2005-06 and 2006-07, as directed by the California Transportation Commission.

Note: Due to the rounding of numbers, the totals shown above are within $0.02.

Program Financing

As discussed above, AB 144 consolidated the administration of all toll revenues collected on the state-owned Bay Area toll bridges and financing of the TBSRP under the jurisdiction of BATA. BATA has direct programmatic responsibilities for the administration of all toll revenues collected on the state-owned bridges in the Bay Area and responsibilities for financial management of the TBSRP program, including:

- Administrative responsibility for collection and accounting of all toll revenues.
- Authorization to increase tolls on the state-owned bridges by $1.00, effective no sooner than January 1, 2007.
- Project level toll setting authority as necessary to cover additional cost increases beyond the funded $900 million program contingency in order to complete the toll bridge seismic retrofit program.
- Assumption of funding all of the roadway and bridge structure maintenance from Caltrans once bridge seismic retrofit projects are completed.

In accordance with its responsibilities provided under the law, in September 2005, BATA adopted a finance plan for the TBSRP. The major components of the finance plan include:

- Issuing $6.2 billion in debt, including defeasance of $1.5 billion in outstanding State Infrastructure Bank bonds and commercial paper;
- Increasing tolls on the state-owned bridges by $1.00, (from $3.00 to $4.00 for two-axle vehicles), effective January 1, 2007;
- Securing the maximum amount of state funding early in the construction schedule to most efficiently use toll funds (see discussion below); and,
- Locking in current interest rates to the extent possible in order to improve the chances that the entire toll program construction and the operations and maintenance can be delivered within the $4.00 auto toll level.

Pursuant to AB 144, on September 29, 2005, the CTC adopted a schedule for the transfer of state funds to BATA to fund the TBSRP. The schedule contains the timing and sources of the state contributions, which begin in FY 2005-06 and distributes the contributions over the years of project construction to ensure a timely balance between state sources and the contributions from toll funds. The CTC's adopted schedule for the transfer of funds allows BATA to pledge the state fund contribution to the financing of the TBSRP per BATA's adopted finance plan. The CTC schedule is included in Appendix D.

Furthermore, with the passage of SB66 on September 29, 2005, the bill appropriates $75 million of specified Motor Vehicle Account funds and $125 million of other specified funds and would modify certain provisions to be enacted by AB 144 of the 2005-06 Regular Session relative to the financing of seismic repair and replacement work on the Bay Area State-owned toll bridges per SB 66 Chapter 375 Legislative Counsel Digest.

BATA will hold two public hearings, one in October and one in November 2005, to receive public testimony regarding the proposed $1.00 seismic surcharge toll increase beginning on January 1, 2007 on the state-owned toll bridges in the Bay Area. BATA is expected to consider and act on the seismic surcharge increase in January 2006. BATA is acting well in advance of the statutory effective date for the toll increase in order to provide the bond rating agencies and financial institutions with clear assurances that BATA has taken the necessary steps to have the financial capacity to fund the seismic retrofit program.

Project Status

Completed Projects

Seismic retrofit and project close-out has been completed on the Benicia-Martinez, Carquinez, San Mateo-Hayward, Vincent Thomas, San Diego-Coronado toll bridges and on the West Span of the SFOBB. As discussed above, the seismic retrofit work on the Richmond-San Rafael Bridge is complete. However, project expenditures have not been completely closed because Caltrans is in discussions with regulatory agencies regarding potential mitigations for impacts on fish in the project area. The total CO and COS expenditures for these six completed projects and the SFOBB West Span as of the end of September 2005 total $920 million ($701 million for CO and $219 million for COS). See *Table 5 - Cost Comparison AB 144/SB 66, 3rd Quarter 2005 Forecast and Expenditures through September 2005for Completed Bridges.*

Table 5. Cost Comparison AB 144/ SB 66, Third Quarter Forecast and Expenditures through September 30 for Completed Bridges ($ million)

Project	AB 144/ SB 66 Budget	Approved Changes	Current Budget	Cost To Date (9/05)	Estimate at Completion	Variance
a	b	c	d = b + c	e	f	g = f - d
San Francisco-Oakland Bay Bridge West Span Seismic Retrofit Project	308	-	308	305	308	-
Carquinez Bridge Retrofit Project	114	-	114	114	114	-
Benicia-Martinez Bridge Retrofit Project	178	-	178	178	178	-
San Mateo-Hayward Bridge Retrofit Project	163	-	163	163	163	-
Vincent Thomas Bridge Retrofit Project	58	-	58	58	58	-
San Diego-Coronado Bridge Retrofit Project	104	-	104	102	104	-
TOTAL	925	-	925	920	925	-

Note: Details may not sum to totals due to rounding effects. Capital Outlay Support and Capital Outlay have been combined.

On-going Construction Projects

Richmond-San Rafael

The Richmond-San Rafael bridge project includes seismic strengthening of the existing bridge, replacement of the existing west trestle portion of the bridge, rehabilitation of the bridge deck structure, and construction of a public access lot at the west end of the bridge. The Richmond-San Rafael Bridge seismic retrofit was completed on July 29, 2005. All construction activities for the project will be completed in October 2005. See *Table 6 – AB 144/SB 66 Baseline and 3rd Quarter Forecasted TBSRP Budget Need for Richmond-San Rafael Bridge.*

Table 6 – AB 144/SB 66 Baseline and Third Quarter Forecasted TBSRP Budget Need for Richmond-San Rafael Bridge ($ million)

	AB 144/ SB 66 Budget	3rd Quarter Forecast	Difference
COS	134	127	(7)
CO	780	698	(82)
Total	914	825	(89)

The current cost forecast for the Richmond-San Rafael Bridge project includes approximately $89 million in savings from the $914 million project cost budgeted in the AB 144/SB 66 forecast, as projected in Caltrans' August 2004 cost reporting. The total budget estimate for the project includes $16.9 million for the deck joint rehabilitation work, which is an eligible component of the overall seismic retrofit work for the bridge. The entire deck joint project was originally funded from RM 1 toll funds. In July 2005, with concurrence from Caltrans, BATA rescinded $16.9 million in RM 1 funds from the deck joint project. To backfill the RM 1 funding, Caltrans committed an equivalent amount of seismic retrofit funding to the deck joint portion of the project. This action was taken to make additional RM 1 funds available for the Benicia-Martinez Bridge New Span project. The budget for the Richmond-San Rafael Bridge Seismic Retrofit project, shown in Table 6, includes $16.9 million of costs for the deck joint rehabilitation work.

Final savings for the Richmond-San Rafael Bridge project will be based on the resolution of pending negotiations with environmental permitting agencies regarding cost of pile driving mitigation. The project cost forecast allows the project budget to be reduced by $82 million in CO and $7 million in COS. Since the project is under budget, the $54 million of the total $900 million Program Contingency budgeted for the Richmond-San Rafael project will not be required for that project and will remain available for other program expenditures. As shown in Table 2, the $89 million savings for the project adds to the total Program Contingency for the TBSRP (See Appendix A).

Milestones Achieved

As stated above the major milestone achieved during the quarter was the completion of the seismic retrofit and rehabilitation work on the bridge on July 29, 2005.

Project Funding

As mentioned above, in addition to the $914 million in funding from the TBSRA, the project also includes work funded by the State Highway Operation and Protection Plan (SHOPP) and RM 1 toll funds provided by BATA. There are $58 million in SHOPP funds for the trestle replacement and fender work and about $38 million in BATA RM 1 toll fund contributions for the deck joint repair work on the bridge. The total of all fund types applied to the Richmond-San Rafael Bridge is $1.01 billion.

Through September 2005, the total TBSRP expenditure for the Richmond-San Rafael Bridge project is $779 million, including $657 million for CO and $122 million for COS.

Major Risk Issues

To close out the project, Caltrans faces potential exposures concerning the environmental mitigation for negative impacts on fish, which is currently being discussed with regulatory agencies.

Richmond-San Rafael Toll Bridge

Richmond-San Rafael Bridge Westbound

Richmond-San Rafael Bridge ribbon cutting.

SFOBB West Approach

The SFOBB West Approach seismic retrofit project will remove and replace the west approach to the SFOBB, which includes all of the westbound mainline and most of the eastbound mainline from 4th Street to the SFOBB West Anchorage, and all of the connecting entrance and exit ramps in downtown San Francisco. The construction work, which began in June 2003, is approximately 57 percent complete. Completion of this project is scheduled for 2009.

Upon completion of the retrofit project, the West Approach mainline and ramps will have the same number of traffic lanes as before, but with improved highway geometrics. The mainline eastbound and westbound structures will be adjacent to each other at 4th Street and transition to their own independent support system configuration from Rincon Hill to the anchorage in order to tie into the existing SFOBB.

Milestones Achieved

On April 1, 2005, Caltrans completed construction of the new permanent Fremont Street off-ramp. This off-ramp is the major connector to downtown San Francisco and the south of Market Area from westbound Interstate 80.

Following the re-striping of the new Fremont Street off-ramp to accommodate three lanes, the Harrison Street off-ramp was closed for reconstruction on September 6, 2005. The ramp will remain closed for three years. Demolition of the ramp is scheduled to take place in November.

With the new westbound structure already substantially completed, Caltrans was able to switch westbound mainline traffic on the new structure on September 9, 2005. This traffic switch was necessary to allow for demolition and reconstruction of the anchorage spans.

Prior to the implementation of this crossover, Caltrans launched an outreach campaign to inform the media and the public of the upcoming activities, including the demolition work on the anchorage spans. Caltrans has also established a real-time media response team to disseminate up-to-date information to the public on all time-sensitive activities.

After shifting westbound mainline traffic, Caltrans completed the technically challenging demolition of the first of four anchorage areas on October 16, 2005. Completed over five weekends, this complicated work presented significant construction staging and traffic control issues and risks that were successfully mitigated by Caltrans. Lessons learned by Caltrans during these demolition operations will help to reduce future risks during future similar operations need for the demolition of the remaining three anchorage areas.

Following demolition of this anchorage area, the contractor has begun the erection of falsework for construction of new frame. This work operation is critical to the completion of the west approach.

Project Funding

The AB 144/SB 66 baseline budget totals $429 million for the project with $309 million for CO and $120 million for COS. See *Table 7 - Baseline and Estimated Budget Need for SFOBB West Approach.*

Table 7 - Baseline and Estimated Budget Need for SFOBB West Approach ($ million)

	AB 144/ SB 66 Budget	3rd Quarter Forecast	Difference
COS	120	120	-
CO	309	309	-
Total	429	429	-

Major Risk Issues

Caltrans' West Approach risk management team has fully implemented all aspects of the project's risk management plan. No new significant risks have surfaced during this quarter. The team is continuing with its efforts to manage project risks. Resources are applied to the risks that pose the greatest threat to the project's successful completion. The following are some of the risk response plans that have been implemented.

- To manage the traffic delays associated with complex demolition procedures, an aggressive informational campaign has been launched. In addition, Caltrans procured Bay Area Rapid Transit (BART) services to provide increased travel capacity during impacted weekends. This strategy reduced the demand for the freeway and subsequently reduced delays to the public. This same strategy, modified with any lessons learned, will be implemented for the upcoming operations.
- To manage the costs associated with pile installation difficulties resulting from unknown ground conditions, Caltrans and the Contractor have worked together to expedite and enhance pile construction quality control and quality assurance processes.

Based on this effort, the projected cost, including identified risks, is currently within the budget needs forecasted in AB 144/SB 66 (See Appendix A).

West Approach: New I-80 Westbound Crossover.

Diagram of New Lane Configuration for Westbound Interstate 80 in San Francisco.

SFOBB East Span Seismic Replacement

The SFOBB East Span Seismic Replacement project will be seismically retrofitted through the complete replacement of the existing span. The project includes construction of the Skyway portion of the bridge, which consists of two parallel concrete structures, each approximately 1.3 miles in length; a Self-Anchored Suspension (SAS) Bridge consisting of a 510 foot tower supporting a bridge deck connecting the Skyway bridge to Yerba Buena Island (YBI), transition structures on YBI and on the east end of the bridge connecting to the toll plaza area, and demolition of the existing east span. The SFOBB East Span project now consists of 19 contracts. Note that the East End connection to the toll plaza, also known as the Oakland Touchdown contract, was split into four contracts by the TBPOC to facilitate construction flow. The 19 SFOBB East Span contracts are identified below:

Eight contracts are **complete**:

- Interim Retrofit (Existing Bridge)
- East Span Retrofit (Existing Bridge)
- Pile Installation Demonstration
- Oakland Touchdown Geofill
- Yerba Buena Island (YBI) Archaeology
- USCG Road Relocation
- SAS Land Foundations (W2)
- YBI Electrical Substation

Three contracts are under **construction**:

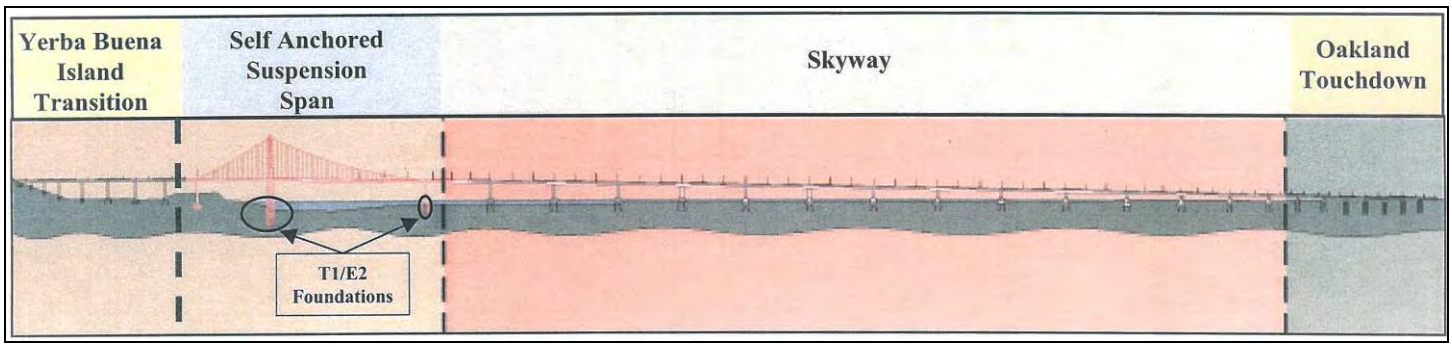
- Skyway contract (80 percent complete).
- South/South Detour (32 percent complete).
- SAS Marine Foundations (E2/T1) (This contract was re-started on July 29, 2005 and is 29 percent complete.)

One **advertised**:

- Self-Anchored Suspension (SAS) (advertised August 1, 2005 with bids to be opened February 1, 2006).

Seven contracts are in **design**:

- Oakland Touchdown Contract 1 (construction for westbound structure, eastbound marine foundation, eastbound detour, and electrical substation): The OTD original design is complete. However, pursuant to the TBPOC recommendation, preparation to split the contract from the original OTD contract for advertising is in process. The contract is planned to be advertised in fall 2006 (newly split contract). Splitting the contract will remove elements of the Oakland Touchdown construction from the critical path for completion of the new East Span.
- Oakland Touchdown Contract 2 (construct



SFOBB East Span Replacement Project.

eastbound superstructure, landscaping and maintenance road): The contract is to be advertised in winter 2010 (newly split contract).

- Oakland Touchdown Submarine Cable (newly split, scheduled to be advertised for construction in early 2006).
- Oakland Touchdown Portions of the Corridor Electrical Contract (newly split work).
- YBI Transition Structure design (80 percent complete).
- Stormwater Treatment Measures design is complete and the contract is to be advertised in early 2006.
- Existing Bridge Demolition design (10 percent complete).

The forecasted completion date as compared to the AB 144/SB 66 Baseline completion date for each of the major components of the SFOBB East Span Seismic Replacement project is as follows. As discussed in the SFOBB East Span Seismic Replacement Project Risk Management Plan (Appendix C), there is a potential delay to the Skyway contract schedule due to issues with the fabrication of the hinge pipe beams that connect the major frames of the bridge.

Table 8. SFOBB East Span Seismic Replacement Project Schedule Summary

Contract	AB 144/SB 66 Baseline Project Completion Date	3rd Quarter Forecast Project Completion Date	Variance (Months)
Skyway	April 2007	April 2007	-
YBI South / South Detour	July 2007	July 2007	-
Stormwater Treatment Measures	March 2008	March 2008	-
SAS E2/T1 Foundations	June 2008	June 2008	-
Open to Traffic: West Bound	September 2011	September 2011	-
SAS Superstructure	March 2012	March 2012	-
Open to Traffic: East Bound	September 2012	September 2012	-
Oakland Touchdown	November 2013	November 2013	-
YBI Transition Structures	November 2013	November 2013	-
Existing Bridge Demolition	September 2014	September 2014	-

Note: The New East Span is currently scheduled to be fully open to traffic in 2012. Construction activities will continue beyond that date to complete the project, including demolition of the existing structure.

Milestones Achieved

- Significant work has been completed on the Skyway contract. The Skyway construction contract is 80 percent complete. Pile driving for the foundation and the footing boxes are 100 percent complete. The pier columns are 89 percent complete and the pier tables are 61 percent complete. Also, 361 pre-cast segments of the 452 castings to be fabricated in Stockton, California are complete (80 percent), 220 segments have been erected (49 percent).

- On July 29, 2005, the SAS Marine Foundation E2/T1 contract was re-started. Caltrans is currently discussing the project cost and schedule with the contractor. At present, about 29% of the work on the E2/T1 contract is completed. Most of that work entails the fabrication of the materials (steel casings, etc.) for the project. The original contract amount for the E2/T1 foundations was approximately $177 million. The cost to restart the project will be negotiated, but is expected to increase substantially from the original contract amount. The AB144/SB66 baseline budget includes funding for the estimated cost increases for this project. The E2/T1 foundation work clears the way for the construction of the SAS contract.

- On August 1, 2005, Caltrans released the bid documents and contract specifications for re-bidding the SAS contract. Bids for the project are due on February 1, 2006. In order to increase competition and in an attempt to avoid potential added costs, a number of revisions recommended by the TBPOC and BATA were incorporated into the bid documents since the original bid opening for the SAS in May 2004, including:

    - Incorporating all the addenda that were previously issued into the bid documents.
    - De-federalizing the contract, which removes the Buy America requirements from the contract. This will relieve prospective contractors of the obligation to bid both a foreign and domestic steel alternative.
    - Paying a stipend of $3.0 million to the three lowest responsive bidders.
    - Increasing the share of the savings to the contractor from the Cost Reduction Incentive Program (CRIP), under which the contractor identifies areas of potential cost savings in constructing the project.

Caltrans and the TBPOC have issued two addenda and are expected to issue additional addenda to the bid documents for clarifications to the contract specifications and to respond to bidder comments and inquiries.

Project Funding

Baseline and Projected Budget and Schedule

The AB 144/SB 66 baseline budget for the SFOBB East Span is $5.487 billion with $4.528 billion for CO and $959 million for COS. This amount does not include program contingencies. See *Table 9. SFOBB East Span Replacement Cost Summary.*

Caltrans re-evaluates project and contract cost forecasts continuously. The Estimate-at-Completion as of September 30, 2005 includes revised forecasts from AB 144/SB 66 budget, as follows:

- A forecasted $13 million increase for the Self-Anchored Suspension (SAS) Superstructure Contract to cover actions taken to encourage additional bidders for the project, including the increase to the bidder's stipend to $3 million for the lowest three responsive bidders.
- A forecasted $19 million increase for the Yerba Buena Island (YBI) Transition Structure Contract due to a higher estimate for electrical work and scheduling.
- A forecasted $11 million decrease in the capital outlay for the Oakland Touchdown (OTD) Contract due to the split of the OTD contract into multiple contracts to accelerate work and to reduce schedule risks. The capital outlay

support for the contract was increased to cover the additional work to split the contract and to administer four separate contracts over a longer duration rather than the original single contract.

- A forecasted $2 million increase for the Yerba Buena Island (YBI) South-South Detour Contract due to a potential extension of contract to integrate with the schedule of the SAS contract.
- A forecasted $17 million decrease for the Bridge Demolition Contract due to a re-evaluation of the cost escalation rates for the project.

All of the variances discussed above can be funded from Other Budgeted Capital and do not reflect an overall change in forecast for the SFOBB East Span project.

The AB 144/SB 66 baseline schedule for seismically retrofitting the structure and opening the bridge to traffic in both directions is 2012. The completion of the East Span is 2014. This schedule does not provide for the estimated schedule risk associated with the construction of the East Span.

Completion of the TBSRP will occur approximately two years after the new East Span bridge is open to traffic, marked by the planned demolition of the existing SFOBB East Span.

The comparison of the AB 144/SB 66 baseline schedule and the current projected schedule is shown in *Chart 2 -SFOBB East Span Corridor Schedule, Baseline AB 144/SB 66 vs. Current Projected.* It should be noted that the schedules shown in Chart 2 do not at this time account for the issues with the fabrication of the hinge pipe beams on the Skyway contract and the potential issues that may affect the schedule identified in the SFOBB East Span Seismic Retrofit Project Risk Management Plan (Appendix C).

Table 9. SFOBB East Span Replacement Cost Summary ($Millions)

Contract a	AB 144/ SB 66 Budget b	Approved Changes c	Current Budget d = b + c	Cost To Date (09/2005) e	Estimate at Completion f	Variance g = f - d
Capital Outlay Support	960	-	960	385	977	17
Capital Outlay Construction						
Skyway	1,293	-	1,293	911	1,293	-
SAS Superstructure	1,754	-	1,754	-	1,767	13
SAS E2/T1 Foundations	314	-	314	66	314	-
YBI Structures	299	-	299	-	318	19
Oakland Touchdown	284	-	284	-	273	(11)
YBI South/South Detour	132	-	132	28	134	2
Existing Bridge Demolition	239	-	239	-	222	(17)
Stormwater Treatment Measures	15	-	15	-	15	-
East Span Completed Projects	90	-	90	89	90	-
Right-of-Way and Environmental Mitigation	72	-	72	39	72	-
Other Budgeted Capital	35	-	35	-	11	(24)
TOTAL	5,487	-	5,487	1,517	5,487	-

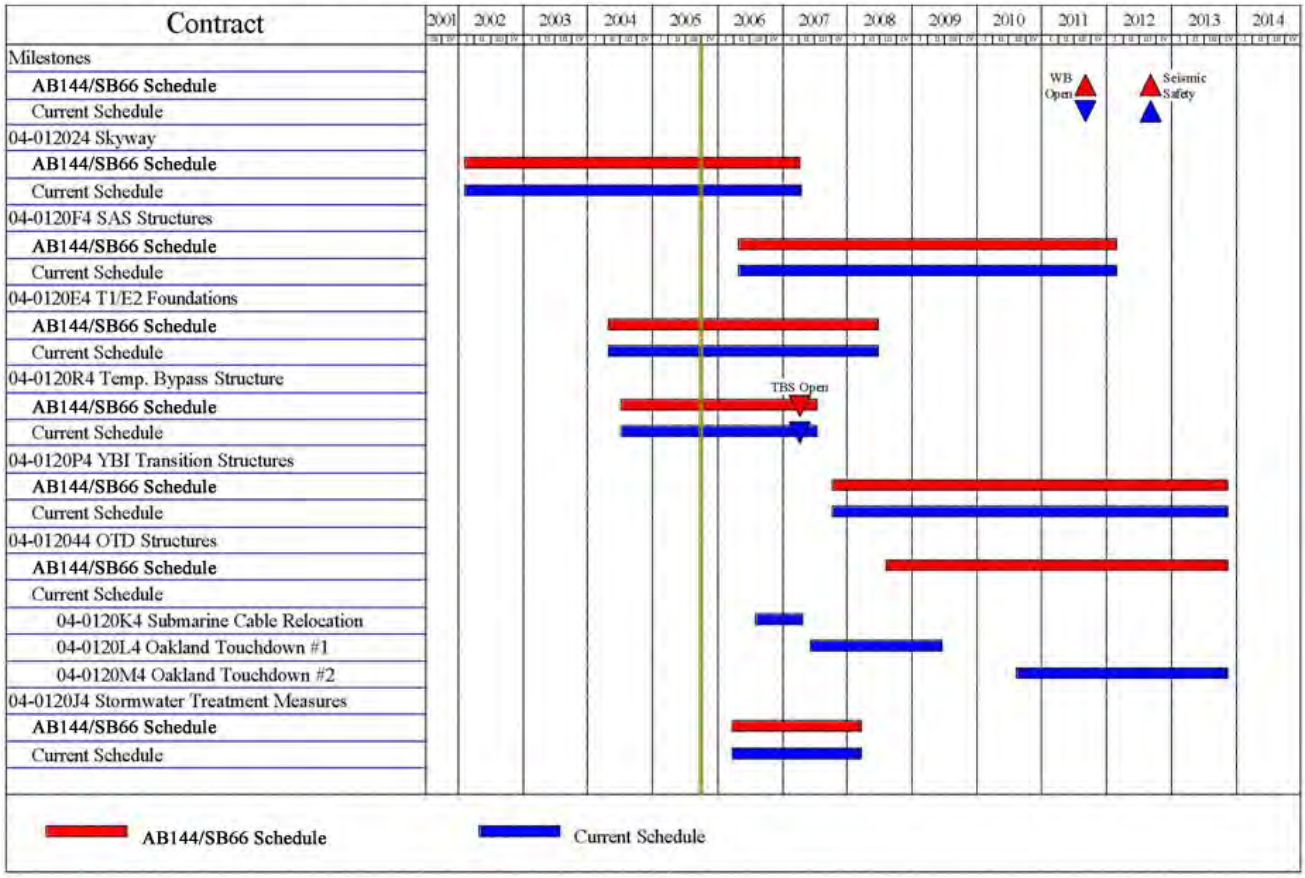
Note: Details may not sum to totals due to rounding effects.

Major Risk Issues

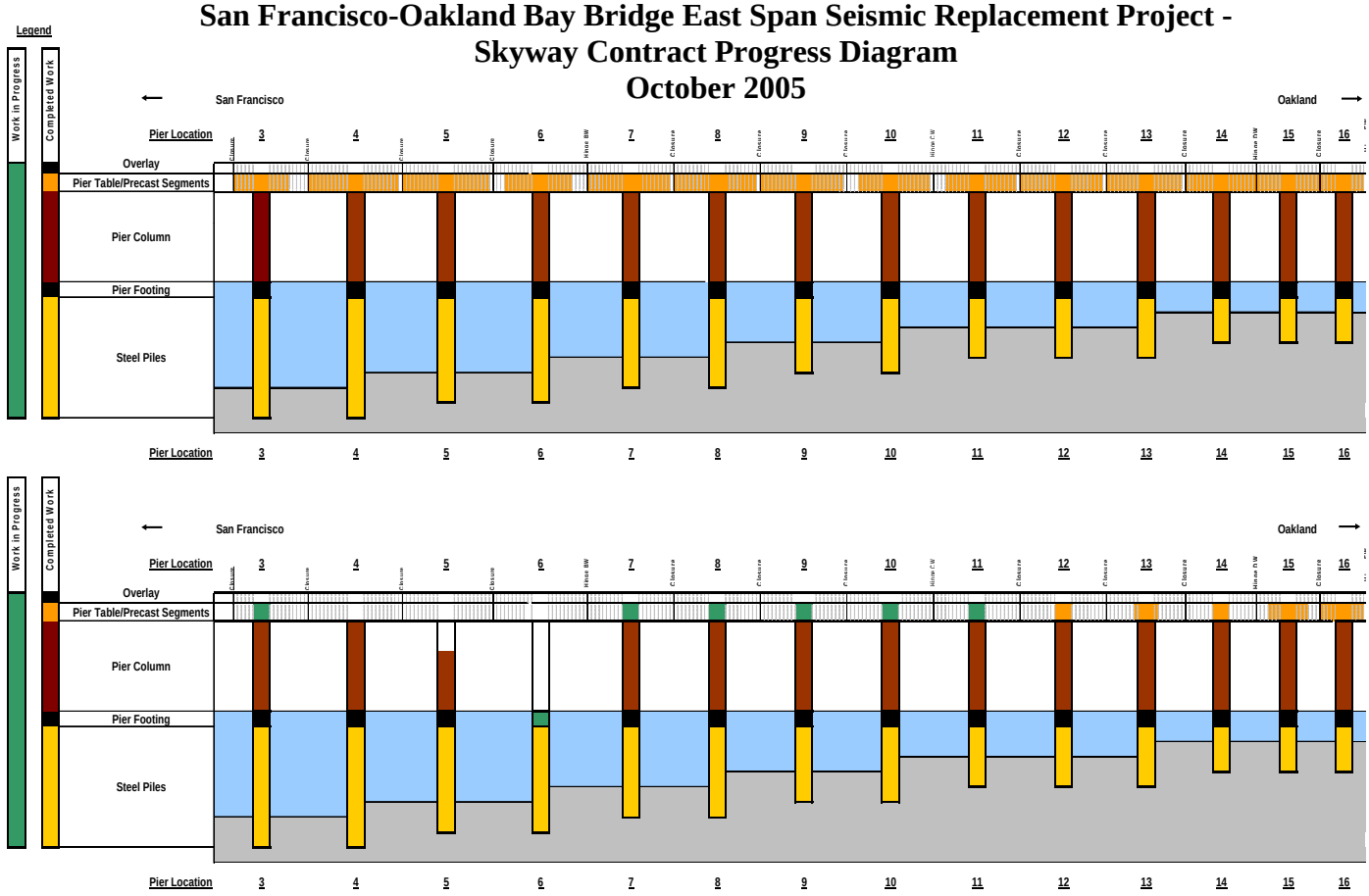
SFOBB East Span Project Replacement Risk Management Plan

Caltrans is implementing comprehensive risk management on all SFOBB East Span Seismic Replacement Project contracts in accordance with its SFOBB risk management plan. Currently, managing SAS and E2/T1 contract risks is receiving special emphasis because a risk sensitivity analysis indicates that timely risk responses on these contracts will result in the greatest benefit to SFOBB East Span Seismic Retrofit Project and TBSRP costs and schedules. The Risk Management Plan for the SFOBB East Span project is included in Appendix C, which also discusses the previously mentioned potential schedule impact posed by fabrication issues on the Skyway hinge pipe beams.

Chart 2. San Francisco-Oakland Bay Bridge East Span Corridor Schedule Baseline AB 144/SB66 vs. Current Projected



San Francisco-Oakland Bay Bridge East Span Seismic Replacement Project - Skyway Contract Progress Diagram
October 2005



Other Project Issues/Activities

Welding Issues on the Skyway Foundations

The investigations of defective welding allegations on the Skyway contract as reported in the media in April 2005 are near completion.

In February 2005, a group of 15 contractor welders claimed they performed substandard welding in the pile head connection plates inside the foundation structure. Subsequently, the Federal Bureau of Investigation initiated an investigation into welding quality in conjunction with the United States Department of Transportation Office of the Inspector General and the Federal Highway Administration (FHWA). The technical field investigations were led by the FHWA. The investigations removed and examined completed welds at three locations, including two locations alleged by the welders as containing substandard welds.

Following an exhaustive review by the FHWA, all welds examined were found to be of high quality and to exceed contract specifications. No evidence of substandard welding was found. In addition, FHWA stated that the QC/QA process for the East Span Seismic Replacement project met or exceeded that found in most other states. FHWA has completed final analyses of the allegations, and Caltrans is awaiting written confirmation concluding the investigation.

In addition to the federal investigation, the California Attorney General has initiated a separate investigation of the matter. The result of this investigation is pending. Caltrans is actively working with all agencies to conclude all investigations related to the welding quality on the Skyway contract.

Quarterly Environmental Compliance Highlights

SFOBB East Span Seismic Replacement Project environmental tasks for the current quarter are focused on mitigation monitoring. All weekly, monthly, and annual compliance reports to resource agencies were delivered on time with no comments from receiving agencies. Key successes this quarter include:

- All participating agencies approved the North Basin Pilot Eelgrass Program, and sandflat construction was completed May 2005. Planting of eelgrass was completed July 2005. Assuming the pilot program is successful; 13 acres of eelgrass habitat will be planted at North Basin.

- The peregrine falcon pair has left the bridge for the season. Mitigation commitments to ensure that project construction does not interfere with bird nesting were successful and no delays to project construction resulted. The pair is expected to return in December 2005.

- The mitigation project committed to addressing 155 acres of storm water run-off has completed 100 percent design and is expected to go out to bid in winter 2005. The project will capture and treat 143.3 acres of storm water run-off. Caltrans is working with the Regional Water Quality Control Board to transfer funds for the remaining 11.3 acres of mitigation to be constructed by others within the same watershed. National Marine Fisheries Services, U.S. Fish and Wildlife Service (USFWS), and California Caltrans of Fish and Game (CDFG) granted approval of final design for this project during this quarter.

- Negotiations are underway with the USFWS, CDFG, and the Navy toward a January 2007 land transfer for the Skaggs Island Mitigation Program.

- Bay Conservation and Development Commission approved final design of the Shorebird Roosting Habitat Mitigation Project with Amendment No. 12 in April 2005. USFWS and CDFG also granted approval of final design for this project during this quarter.

Skyway Structure looking East from YBI.

Other Toll Bridges

The Department has completed its seismic vulnerability studies work for the Antioch and Dumbarton toll bridges.

A Seismic Vulnerability Study is not a complete seismic analysis of the structure, but is an investigation of a few representative bents to determine the likelihood of the need for seismic retrofit. Given the limitations of the vulnerability studies, there is insufficient evidence to conclusively determine the performance of the bridges during a Maximum Credible Event (MCE). A comprehensive seismic analysis based on complete and accurate geotechnical soil data must be performed in order to make a final determination of the level of retrofit required.

Background:

Antioch Bridge. Located 25 miles upstream from the Benicia-Martinez Bridge, the Antioch Bridge on State Route 160 is the only northerly highway connection across the San Joaquin River linking east Contra Costa County to the delta communities of Rio Vista and Lodi. In 1978, a high-level fixed-span structure 1.6 miles long and 40 feet wide with a narrow shoulder in each direction for bicyclists, pedestrians and emergency use replaced the original bridge constructed in 1926. The Antioch Bridge spans the 3,600-foot wide San Joaquin River and extends 4,000 feet onto Sherman Island in Sacramento County to the north and 1,000 feet in Contra Costa County to the south. The Antioch Bridge has a navigational clearance of 135 feet vertically and 400 feet horizontally. Traffic lanes consist of two 12-foot wide lanes for motor vehicles and two 8-foot lanes for pedestrians and bicyclists.

Dumbarton Bridge. In 1978, construction began on the existing Dumbarton Bridge on State Route 84, which was opened to traffic in 1982 at a cost of $70 million. The Dumbarton Bridge crosses the southern region of San Francisco Bay between the cities of Newark to the east and East Palo Alto to the west, connecting San Mateo and Alameda Counties. It is situated approximately 10 miles south of the San Mateo-Hayward Bridge and 27 miles south of the San Francisco-Oakland Bay Bridge.

The Dumbarton Bridge is a six-lane reinforced concrete structure that is 1.6 miles long with a pedestrian/bicycle lane. The center span, which has a length of 340 feet, provides 85 feet of vertical clearance for the passage of ships.

Need for Study

In 1971, a major earthquake occurred in the San Fernando Valley near Los Angeles and severely damaged several bridges in the area. Following the 1971 Southern California earthquake, Caltrans revised its seismic design practice in order to fully incorporate the experience gained from this event. Past reviews of historic bridge performance during subsequent large California earthquakes indicate bridges designed after 1971 have performed very well and significantly better than pre-1971 bridge designs.

The original designs of the Antioch and Dumbarton Bridges were based on design criteria developed after the 1971 San Fernando Earthquake. In the early 1990's, Caltrans determined that these two structures had the seismic resistant features required by the post 1971 codes and were not likely to be vulnerable during a major seismic event. Since that time, Caltrans has pursued an aggressive seismic research program, and based on the results of this program, again significantly revised its seismic practice. Consistent with recommendations by the Caltrans Seismic Advisory Board, Caltrans regularly reassesses the seismic hazard and performance of its bridges. Due to the tremendous changes in seismic design practices that have occurred since the design of the Antioch and Dumbarton Bridges, a comprehensive assessment of the potential need and scope for seismic retrofit based on current knowledge is prudent.

Seismic Vulnerability Study

The results of the Seismic Vulnerability Studies indicate that the foundation response governs the performance of the bridges during an MCE and this could result in large foundation rotations. These rotations may result in damage to the superstructure and possible damage to the piles.

A cost estimate, schedule, and risk management plans for a comprehensive seismic analysis is being determined at this time.

Appendices

A. TBSRP All Bridges AB 144/SB 66 Baseline Budget, Forecasts, and Expenditures through September 30, 2005 Comparison.

B. TBSRP East Span Only AB 144/SB 66 Baseline Budget, Forecasts, and Expenditures through September 30, 2005 Comparison Appendix B).

C. San Francisco-Oakland Bay Bridge East Span Seismic Replacement Project Risk Management Plan.

D. California Transportation Commission 3rd Quarter Schedule.

E. Project/Contract Photographs.

Appendix A.

Toll Bridge Seismic Retrofit Program
AB 144/SB 66 Baseline Budget, Forecasts and Expenditures Through September 2005

($ millions)

Bridge		AB 144/SB 66 Baseline	3rd Quarter 2005 Forecast	Expenditures Through September 2005
Benicia-Martinez				
	Capital Outlay Support	$38.14	$38.14	$38.09
	Capital Outlay	$139.69	$139.69	$139.72
	Total	$177.83	$177.83	$177.81
Carquinez				
	Capital Outlay Support	$28.67	$28.67	$28.80
	Capital Outlay	$85.46	$85.46	$85.41
	Total	$114.13	$114.13	$114.21
San Mateo-Hayward				
	Capital Outlay Support	$28.14	$28.14	$28.09
	Capital Outlay	$135.37	$135.37	$135.32
	Total	$163.51	$163.51	$163.41
Vincent Thomas				
	Capital Outlay Support	$16.42	$16.42	$16.37
	Capital Outlay	$42.09	$42.09	$42.04
	Total	$58.51	$58.51	$58.41
San Diego-Coronado				
	Capital Outlay Support	$33.50	$33.50	$33.20
	Capital Outlay	$70.02	$70.02	$69.39
	Total	$103.52	$103.52	$102.59
Richmond-San Rafael				
	Capital Outlay Support	$134.00	$127.00	$121.50
	Capital Outlay	$780.00	$698.00	$657.17
	Total	$914.00	$825.00	$778.67
West Span Retrofit				
	Capital Outlay Support	$75.00	$75.00	$74.75
	Capital Outlay	$232.90	$232.90	$230.38
	Total	$307.90	$307.90	$305.13
West Approach				
	Capital Outlay Support	$120.00	$120.00	$67.85
	Capital Outlay	$309.00	$309.00	$156.94
	Total	$429.00	$429.00	$224.79
SFOBB East Span				
	Capital Outlay Support	$959.30	$977.00	$385.10
	Capital Outlay	$4,492.19	$4,498.60	$1,131.58
	Other Budgeted Capital	$35.11	$11.00	
	Total	$5,486.60	$5,486.60	$1,516.68
	Program Indirect	$30.00	$30.00	$24.90
	Subtotal Capital Outlay Support	$1,433.17	$1,443.87	$793.75
	Subtotal Capital Outlay	$6,321.83	$6,222.13	$2,647.95
	Subtotal Toll Seismic Retrofit	$7,785.00	$7,696.00	$3,466.60
	Program Contingency	$900.00	$989.00	
	Total Toll Seismic Retrofit Program	$8,685.00	$8,685.00	$3,466.60

Notes:
(Due to the rounding of numbers, the totals above are show within $0.02).

Appendix A (cont.).

Toll Bridge Seismic Retrofit Program
AB 144/SB 66 Baseline Budget, Forecasts and Expenditures Through September 2005

($ in millions)

Bridge	Column B AB 144/SB 66 Baseline Budget	Column C Expenditures to date and Encumberances As of 9/30/2005 See Note [1]	Column D Estimated Costs not yet Spent or Encumbered As of 9/30/2005	Column E Total Forecast As of 9/30/2005 E = C + D	Column F Allocation of the Program Contingency Reserve By Others in August 2004. See Note [2].	Column G Total with Program Contingency As of 9/30/2005. See Note [2]. G = E + F
Other Completed Projects						
Capital Outlay Support	$144.87	$144.66	$0.21	$144.87		$144.87
Capital Outlay	$472.63	$473.10	-$0.47	$472.63		$472.63
Total	$617.50	$617.76	-$0.26	$617.50		$617.50
Richmond-San Rafael						
Capital Outlay Support	$134.00	$123.03	$3.97	$127.00	$9.00	$136.00
Capital Outlay	$780.00	$646.79	$51.21	$698.00	$45.00	$743.00
Project Reserves			$0.00		$89.00	$89.00
Total	$914.00	$769.82	$55.18	$825.00	$143.00	$968.00
West Span Retrofit						
Capital Outlay Support	$75.00	$75.08	-$0.08	$75.00		$75.00
Capital Outlay	$232.90	$239.95	-$7.05	$232.90		$232.90
Total	$307.90	$315.03	-$7.13	$307.90		$307.90
West Approach						
Capital Outlay Support	$120.00	$68.82	$51.18	$120.00	$6.00	$126.00
Capital Outlay	$309.00	$472.46	-$163.46	$309.00	$28.00	$337.00
Total	$429.00	$541.28	-$112.28	$429.00	$34.00	$463.00
SFOBB East Span -Skyway						
Capital Outlay Support	$197.00	$114.23	$82.77	$197.00	$38.00	$235.00
Capital Outlay	$1,293.00	$1,475.64	-$182.64	$1,293.00	$191.00	$1,484.00
Total	$1,490.00	$1,589.87	-$99.87	$1,490.00	$229.00	$1,719.00
SFOBB East Span -SAS- Superstructure						
Capital Outlay Support	$214.63	$16.87	$197.76	$214.63	$70.00	$284.63
Capital Outlay	$1,753.72	$0.00	$1,767.43	$1,767.43	$353.00	$2,120.43
Total	$1,968.35	$16.87	$1,965.19	$1,982.06	$423.00	$2,405.06
SFOBB East Span -SAS- Foundations						
Capital Outlay Support	$62.50	$18.46	$44.04	$62.50	$6.00	$68.50
Capital Outlay	$339.91	$217.39	$122.52	$339.91	$30.00	$369.91
Total	$402.41	$235.85	$166.56	$402.41	$36.00	$438.41
Small YBI Projects						
Capital Outlay Support	$10.58	$10.07	$0.51	$10.58		$10.58
Capital Outlay	$15.66	$16.11	-$0.45	$15.66		$15.66
Total	$26.24	$26.18	$0.06	$26.24		$26.24
South/South Detour						
Capital Outlay Support	$29.50	$13.78	$15.72	$29.50	$2.00	$31.50
Capital Outlay	$131.92	$90.02	$43.73	$133.75	$9.00	$142.75
Total	$161.42	$103.80	$59.45	$163.25	$11.00	$174.25
YBI - Transition Structures						
Capital Outlay Support	$78.65	$8.57	$70.08	$78.65	$8.00	$86.65
Capital Outlay	$299.36	$0.00	$318.49	$318.49	$39.00	$357.49
Total	$378.01	$8.57	$388.57	$397.14	$47.00	$444.14
Oakland Touchdown						
Capital Outlay Support	$74.40	$19.95	$72.15	$92.10	$8.00	$100.10
Capital Outlay	$283.80	$0.00	$272.70	$272.70	$38.00	$310.70
Total	$358.20	$19.95	$344.85	$364.80	$46.00	$410.80
East Span Other Small Project						
Capital Outlay Support	$212.32	$193.10	$19.22	$212.32		$212.32
Capital Outlay	$170.78	$89.55	$57.12	$146.67		$146.67
Total	$383.10	$282.65	$76.34	$358.99		$358.99
Existing Bridge Demolition						
Capital Outlay Support	$79.72	$0.19	$79.53	$79.72	$3.00	$82.72
Capital Outlay	$239.15	$0.00	$221.99	$221.99	$17.00	$238.99
Total	$318.87	$0.19	$301.52	$301.71	$20.00	$321.71
Program Indirect	$30.00	$40.41	-$10.41	$30.00		$30.00
Total Capital Outlay Support [3]	$1,433.17	$806.81	$637.06	$1,443.87	$150.00	$1,593.87
Total Capital Outlay	$6,321.83	$3,721.01	$2,501.12	$6,222.13	$839.00	$7,061.13
Program Total	**$7,785.00**	**$4,568.23**	**$3,127.77**	**$7,696.00**	**$989.00**	**$8,685.00**

1. Funds allocated to project or contract for Capital Outlay and Support needs includes Capital Outlay Support total allocation for FY 05/06.

2. BSA provided a distribution of program contingency in December 2004 based on Bechtel Infrastructure Corporation input.
This column has since been revised to relect changes to the Richmond-San Rafael Bridge Forecast.

3. Total Capital Outlay Support includes program indirect costs.
(Due to the rounding of numbers, the totals above are shown within $0.02).

Appendix B.

Toll Bridge Seismic Retrofit Program - SFOBB East Span Only
AB 144/ SB 66 Baseline Budget, Forecasts and Expenditures Through September 30, 2005

($ in millions)

East Span Contract		AB 144 Baseline	3rd Quarter 2005 Forecast	Expenditures Through September 30, 2005
SFOBB East Span -Skyway				
	Capital Outlay Support	$197.00	$197.00	$112.56
	Capital Outlay	$1,293.00	$1,293.00	$910.67
	Total	$1,490.00	$1,490.00	$1,023.23
SFOBB East Span -SAS- Superstructure				
	Capital Outlay Support	$214.63	$214.85	$14.21
	Capital Outlay	$1,753.72	$1,767.21	$0.00
	Total	$1,968.35	$1,982.06	$14.21
SFOBB East Span -SAS- W2 Foundations				
	Capital Outlay Support	$10.00	$10.00	$9.19
	Capital Outlay	$26.40	$26.40	$25.68
	Total	$36.40	$36.40	$34.87
SFOBB East Span -SAS- E2/T1 Foundations				
	Capital Outlay Support	$52.50	$52.50	$7.13
	Capital Outlay	$313.51	$313.51	$65.52
	Total	$366.01	$366.01	$72.65
YBI/SAS (Archeology)				
	Capital Outlay Support	$1.08	$1.08	$1.08
	Capital Outlay	$1.06	$1.06	$1.06
	Total	$2.14	$2.14	$2.14
YBI - USCG Rd Relocation				
	Capital Outlay Support	$3.00	$3.00	$2.67
	Capital Outlay	$3.00	$3.00	$2.81
	Total	$6.00	$6.00	$5.48
YBI - Substation & Viaduct				
	Capital Outlay Support	$6.50	$6.50	$6.31
	Capital Outlay	$11.60	$11.60	$11.18
	Total	$18.10	$18.10	$17.49
Oakland Touchdown (Total, including the following split contracts and prior-to-split expenses)				
	Capital Outlay Support	$74.40	$92.10	$18.72
	Capital Outlay	$283.80	$272.70	$0.00
	Total	$358.20	$364.80	$18.72
Oakland Touchdown Contract No. 1				
	Capital Outlay Support	$0.00	$49.90	$0.00
	Capital Outlay	$0.00	$196.73	$0.00
	Total	$0.00	$246.63	$0.00
Oakland Touchdown Contract No. 2				
	Capital Outlay Support	$0.00	$15.80	$0.00
	Capital Outlay	$0.00	$62.04	$0.00
	Total	$0.00	$77.84	$0.00
Oakland Touchdown Contract - Navy Cable				
	Capital Outlay Support	$0.00	$3.00	$0.00
	Capital Outlay	$0.00	$9.55	$0.00
	Total	$0.00	$12.55	$0.00
Oakland Touchdown Contract - Electrical Systems				
	Capital Outlay Support	$0.00	$1.40	$0.00
	Capital Outlay	$0.00	$4.38	$0.00
	Total	$0.00	$5.78	$0.00

Appendix B (Cont.)

Toll Bridge Seismic Retrofit Program - SFOBB East Span Only
AB 144/ SB 66 Baseline Budget, Forecasts and Expenditures Through September 30, 2005

($ in millions)

East Span Contract		AB 144 Baseline	3rd Quarter 2005 Forecast	Expenditures Through September 30, 2005
South/South Detour				
	Capital Outlay Support	$29.50	$29.50	$12.97
	Capital Outlay	$131.92	$133.75	$27.65
	Total	$161.42	$163.25	$40.62
YBI - Transition Structures				
	Capital Outlay Support	$78.65	$78.65	$7.06
	Capital Outlay	$299.36	$318.49	$0.00
	Total	$378.01	$397.14	$7.06
Oakland Geofill				
	Capital Outlay Support	$2.47	$2.47	$2.47
	Capital Outlay	$8.21	$8.21	$8.21
	Total	$10.68	$10.68	$10.68
Pile Installation Demonstration Project				
	Capital Outlay Support	$1.79	$1.79	$1.79
	Capital Outlay	$9.25	$9.25	$9.25
	Total	$11.04	$11.04	$11.04
Existing Bridge Demolition				
	Capital Outlay Support	$79.72	$79.72	$0.19
	Capital Outlay	$239.15	$221.99	$0.00
	Total	$318.87	$301.71	$0.19
Stormwater Treatment Measures				
	Capital Outlay Support	$6.00	$6.00	$3.51
	Capital Outlay	$15.00	$15.00	$0.00
	Total	$21.00	$21.00	$3.51
Right-of-way and Environmental Mitigation				
	Capital Outlay Support	$0.00	$0.00	$0.00
	Capital Outlay	$72.40	$72.40	$38.74
	Total	$72.40	$72.40	$38.74
Sunk Cost - Existing East Span Retrofit				
	Capital Outlay Support	$39.46	$39.46	$39.46
	Capital Outlay	$30.81	$30.81	$30.81
	Total	$70.27	$70.27	$70.27
Environmental Phase (Expended)				
	Capital Outlay Support	$97.70	$97.70	$97.67
Project Expenditures, Pre-splits				
	Capital Outlay Support	$44.90	$44.90	$44.88
Non-project Specific Costs				
	Capital Outlay Support	$20.00	$20.00	$3.23
Subtotal East Span Capital Outlay Support		$959.30	$977.00	$385.10
Subtotal East Span Capital Outlay and Sunk Costs		$4,492.19	$4,498.60	$1,131.58
Other Budgeted Capital		$35.11	$11.00	
Total SFOBB East Span		**$5,486.60**	**$5,486.60**	**$1,516.68**

(Due to the rounding of numbers, the totals shown above are within $0.02).
TBPOC approved the proposal to split the Oakland Touchdown contract to 4 smaller contracts on 09/23/05.

Appendix C.

San Francisco-Oakland Bay Bridge East Span Seismic Replacement Project Risk Management Plan

Provided below is a summary of Caltrans' comprehensive risk management assessment for the SFOBB East Span Seismic Replacement contracts in accordance with its SFOBB risk management plan.

SAS and E2-T1 Contract Risk Management

Current risk response efforts are focused on encouraging responsive bids for the SAS contract and mitigating potential E2-T1 contract schedule interface issues. A timely and aggressive risk response to these types of risks is prudent because there is a brief yet powerful opportunity to further enhance SAS contract provisions by addenda prior to bid opening. Implementing prudent risk responses by SAS contract addenda reduces one of the SAS contract's most significant risks – a potential limited bidding pool. This "on time" risk management strategy maximizes the opportunity for positive outcomes and minimizes the potential adverse effects on project objectives (cost, schedule and quality).

Therefore Caltrans is implementing a focused cycle of risk management planning (risk identification, qualitative risk analysis, quantitative risk analysis, and risk response planning) specifically for the SAS and E2-T1 contracts. Risk identification, qualitative risk analysis, and a preliminary quantitative schedule risk analysis for SAS and E2-T1 contracts are now complete. Quantitative cost risk analysis and risk response planning are well underway and summarized below.

SAS and E2-T1 contract risks and risk responses are summarized in *Figure 2. Significant SAS and E2-T1 Contract Risks and Risk Responses.* The listed risks are limited to the most significant ones from the over 100 identified in the risk register. The footnotes following Figure 2 provide additional information about the responses.

Figure 2. Significant SAS and E2-T1 Contract Risks and Risk Responses.

Identified Risk Area	Risk Response
SAS Bidding Market Conditions	
• Potential limited bidding pool • Buy America constraints • Simultaneous mega-project Construction • "Hard" bonding and insurance markets • Potential financing of bidder's front-end costs passed through in bid • Hurricanes Katrina and Rita economic impacts • Oil price fluctuations • Escalation	• Increase SAS bidder compensation (stipend)[1] • Extend SAS advertisement to six months • Remove SAS Buy America provisions • Conduct multiple SAS industry and bidder outreaches • Solicit international competition • Enhance cost reduction incentive provisions (CRIP)[2] • Reassess and enhance SAS cash flow provisions • Enhance SAS contractor right of way provisions • Enhance SAS bonding provisions • Enhance SAS payment for offshore material fabrication • Assess potential indexing contract provisions • Analyze and modify SAS and E2-T1 contract in response to bidder inquiries • Update estimates for current prices and schedule
SFOBB Construction Duration	

• Adjacent project interface
• Technical complexity
  o Working drawing resolution
  o Tower erection
  o Temporary tower design
  o Cable/bridge saddle
  o Welding issues
  o Geotechnical conditions
• Force Majeure impacts
	• Perform schedule risk analysis, including E2-T1 interface
	• Analyze contract interfaces
	• Analyze constructability issues
	• Form fabrication improvement team (FIT)[3]
	• Provide incentives for early shop audits[4]
	• Implement "Campus" concept[5]
	• Pursue Jones Act waiver[6]
	• Enhance cost reduction incentive provisions (CRIP)[2]
	• Analyze and modify SAS and E2-T1 contract in response to bidder inquiries
	• Embark on capital outlay support risk analysis

Stakeholder and External Considerations	
• New stakeholder participation relationship • Timely decision making	• Develop stakeholder participation agreement • Implement project management team (PMT) to support stakeholder and program oversight committee

Footnotes to Risk Responses in Figure 2:

[1] The SAS bidder compensation (stipend) specification was enhanced to provide $3 million to the bidders who submit the three lowest responsive bids. This provision provides an incentive to encourage bidder competition.

[2] Caltrans' standard cost reduction incentive proposal (CRIP) specification was enhanced to provide incentives and to facilitate CRIP submittal and implementation by providing 1) a jointly beneficial development and CRIP review period and 2) granting the Contractor a larger portion of the shared incentive for approved CRIPs (60/40 in favor of contractor instead of 50/50 share).

[3] Caltrans has implemented the SAS fabrication action and solution team (FAST). The FAST ensures that material and fabrication issues, such as fit up and welding, are resolved as expeditiously as possible. The FAST has been assembled to provide timely final decisions on fabrication issues that may not be resolved at the project level or that have significant cost and schedule implications.

[4] Caltrans has implemented a specification that provides incentive payments to the Contractor for accelerating the development and set up of steel fabrication shops that receive passing audits by Caltrans. This contract provision will compel the Contractor to provide a timely and resource-focused effort in this critical area.

[5] Caltrans has implemented a specification to provide for the co-location on-site of engineers of the Contractor, Caltrans, and designer of record (i.e., the "Campus"). Having these people at the "Campus" will facilitate the timely resolution of complex technical issues arising from the review and approval of the Contractor's working drawings, thereby reducing the potential for delays. Use of the "Campus" concept on other TBSRP projects has proven that critical engineering issues, such as welding, fit up, and other fabrication issues, can be resolved expeditiously to avoid potential cost and schedule impacts.

[6] Provisions of the Jones Act currently constrain the use of large, foreign floating cranes in marine construction. Caltrans is assessing whether it should seek a clarification of whether these Jones Act provisions apply to the SAS construction or an exemption from these Jones Act provisions if they are found to apply. Several earlier risk responses, such as the addition of acceptable tower splices, have mitigated the cost and schedule risks associated with some of the heavy lifts contemplated in the SAS construction plan. The inapplicability of certain Jones Act provisions may result in significant additional cost and schedule benefits to the SAS contract and TBSRP.

The quantification of certain risks has been reassessed given recent market conditions and other considerations, most notably the effects of Hurricanes Katrina and Rita, as well as recent oil price trends. These conditions are considered in the schedule risk analysis and ongoing quantitative cost risk analysis. It should be noted that some risks identified in the risk register cannot be quantified because they are conditions or assumptions upon which the project has been planned. Any changes to the conditions or assumptions would materially change the nature of the project and its plans, and would require revisions to budgets, plans and other performance

measures. Some risks are external in nature, and as recent experience has demonstrated, represent possible policy changes imposed upon Caltrans. These risks or actions by external stakeholders and authorities have been excluded from the quantitative schedule and cost risk analyses but should be taken into consideration.

Caltrans is prudently managing risks by focusing on responses that have the greatest potential to positively affect cost and schedule, as determined by the quantitative risk analysis process. Figures 2 and 3 portray this relationship and summarize Caltrans' responses to the risks identified in Figure 2. This strategy maximizes the opportunity for positive outcomes and minimizes the potential adverse effects on project objectives.

The results of the preliminary SAS and E2-T1 quantitative schedule risk analysis indicate that there is approximately an eighty percent probability that the SAS contract date of completion may be extended (whether by contractor, third party, weather, owner, or other excusable delay) by up to 21 months from the AB 144 schedule. It should be noted that this preliminary probabilistic schedule analysis does not consider many of the schedule risk responses subsequently identified and implemented, such as implementation of the fabrication action and solution team (FAST), potential Jones Act clarifications, and ongoing SAS contract addenda enhancements. Moreover, about half of the contract extension potential relates to the submission and review of tower shop drawings, and the fabrication and delivery of the lower tower sections. Contentious issues regarding quality and code interpretations may arise during review of shop drawings. There is considerable welding involved in the fabrication of the tower sections, giving rise to possible issues due to tight tolerances and different interpretations of welding codes and welding sequences. While these delay potentials exist now, there are risk responses such as FAST, the campus concept for integrating supplier/fabricator/Caltrans teams, and a review of the COS resources that can mitigate many of the delay-causing possibilities. As these responses will be implemented, their effectiveness in reducing the delay risks will be reassessed, and the schedule delay risk will be adjusted accordingly. Caltrans and TBPOC is and will be taking affirmative actions to mitigate any potential issues that may lead to schedule delays as described in the risk management plan.

The results of the quantitative schedule analysis are being used to assess E2-T1 restart and construction schedule alternatives and to aid in effective restart negotiations with the E2-T1 contractor. While the E2-T1 and SAS contracts are critically linked to the completion of the SFOBB East Span, the quantitative schedule risk analysis indicates that the E2-T1 contract is unlikely to delay the SAS contract, because the risks associated with awarding and constructing SAS are significantly greater than the risks in restarting and constructing the E2-T1 contract. Caltrans has tailored its risk response strategy accordingly.

The SAS and E2-T1 quantitative cost risk analysis is ongoing and builds upon the results of the preliminary quantitative schedule risk analysis.

In accordance with the RMP, risk probability, potential impacts, and response strategies will be updated as conditions warrant, such as with the recent market fluctuations and the advent of the SAS bid opening.

South-South Detour Risk Management

Currently under construction (awarded in March 2004 well prior to the approval of Assembly Bill 144), and approximately 32 percent complete, the South-South Detour (SSD) contract has many unique technical and contract administration challenges. Initial project-level risk identification has been completed. The following is a summary of the risks identified: schedule interface with adjoining contracts, alignment and traffic impacts, quality control and assurance responsibility allocation associated with the SSD performance-based design, design issue resolution, and environmental (noise) restrictions. Several mitigating schedule and cost risk response actions have already been implemented as a result of changes to interfacing contract (most notably SAS) schedules after the SSD contract was awarded. One such risk response is the suspension to certain non-critical work that otherwise would have affected public traffic unnecessarily. A project-specific risk response plan is currently being prepared to further address SSD risks.

Skyway Contract Risk Management

A significant technical issue has developed on the Skyway construction contract, currently approximately 80 percent complete. The Skyway hinge pipe beams (HPB's) are designed to accommodate the thermal expansion and contraction in the bridge, and to transfer service and earthquake loads between the different sections (Frames) of the Skyway Bridge. The production of the HPB's has been difficult and is taking longer than anticipated. The Contractor has submitted a formal notice of potential claim and states that the materials, as specified, and the tight tolerances for roundness and curvature required by the contract caused the metal to crack during fabrication. Even though repairs are being made, the conditions causing the cracking have not been controlled. This has led to delays of the contract. Risk responses implemented to date (Contract Change Order Nos. 160, 164, and 165) have mitigated delays, reducing the current delay by an estimated 36 days. Another risk response implemented was the formation of quality control/quality assurance non-destructive testing "teams" to assist with ultrasonic testing at the fabrication site. Caltrans has also hired specialty consultants to review rolling procedures and the metallurgical properties of the material to understand the physics of the cracking problem.

Oakland Touchdown Contract Risk Management

Caltrans' ongoing constructability reviews have identified cost and schedule risks associated with the earlier planned single Oakland Touchdown (OTD) contract as it would be affected by construction delays from either the YBI or SAS contracts. Similarly, the OTD contract can potentially cause a construction delay to the YBI and SAS contracts. Upon identifying this risk, Caltrans performed an exhaustive corridor schedule analysis and quantitative risk assessment and concluded that splitting the Oakland Touchdown contract into four separate components will likely result in a savings to the interfacing SFOBB contracts and overall SFOBB project cost by reducing risk and the potential for cumulative contract delays during construction. Additionally, splitting the contract will result in overall reduction of contract duration and a lowered

dependency upon the SAS schedule. Moreover, early completion of the westbound structure and roadway approach contract will provide the SAS contractor access to the east end of the SAS via the completed westbound Skyway and OTD bridges thus reducing SAS construction risks. Caltrans is currently implementing the risk response of splitting the Oakland Touchdown project into separate contract components.

Figure 3. Risk Response to SAS Cost Sensitivity

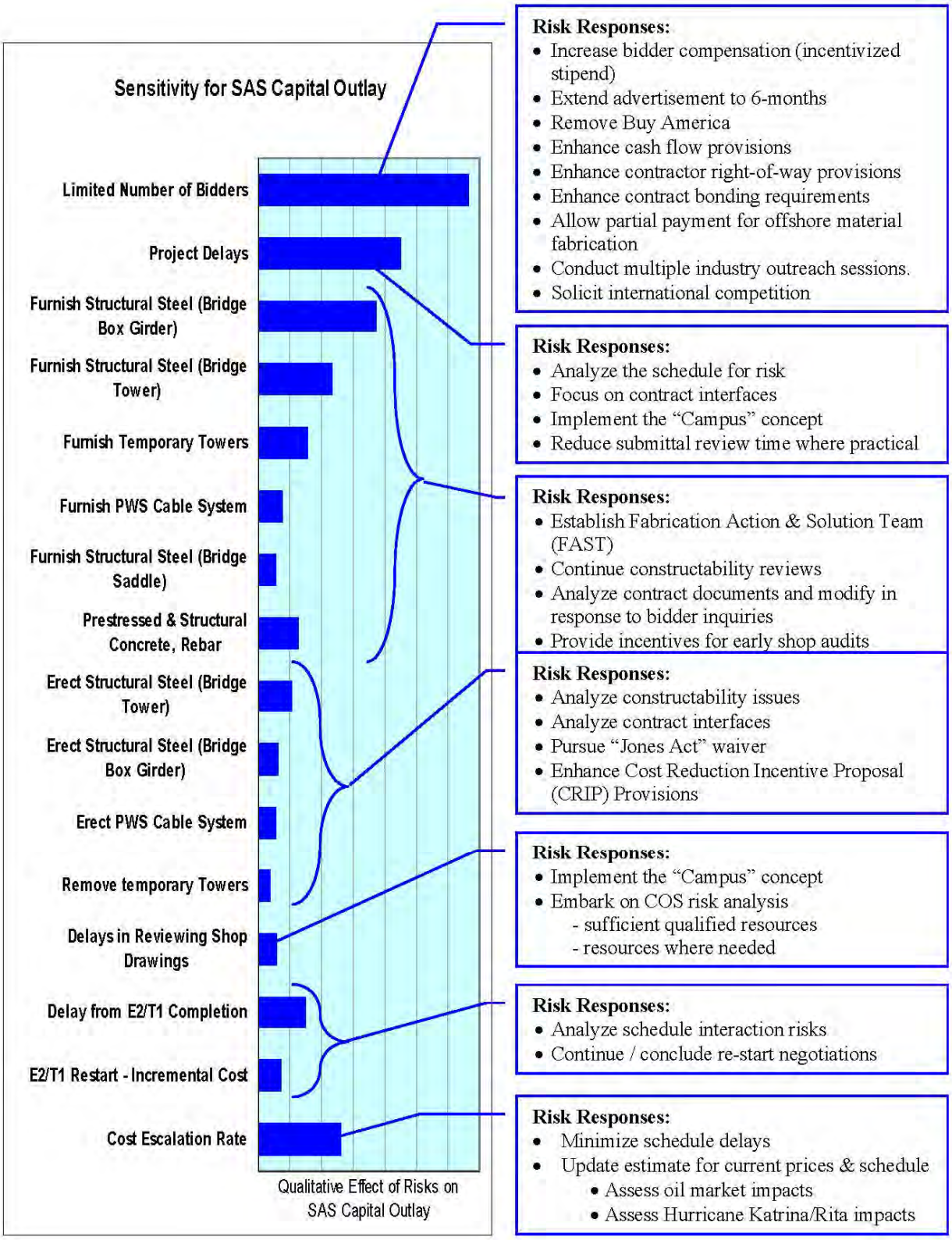
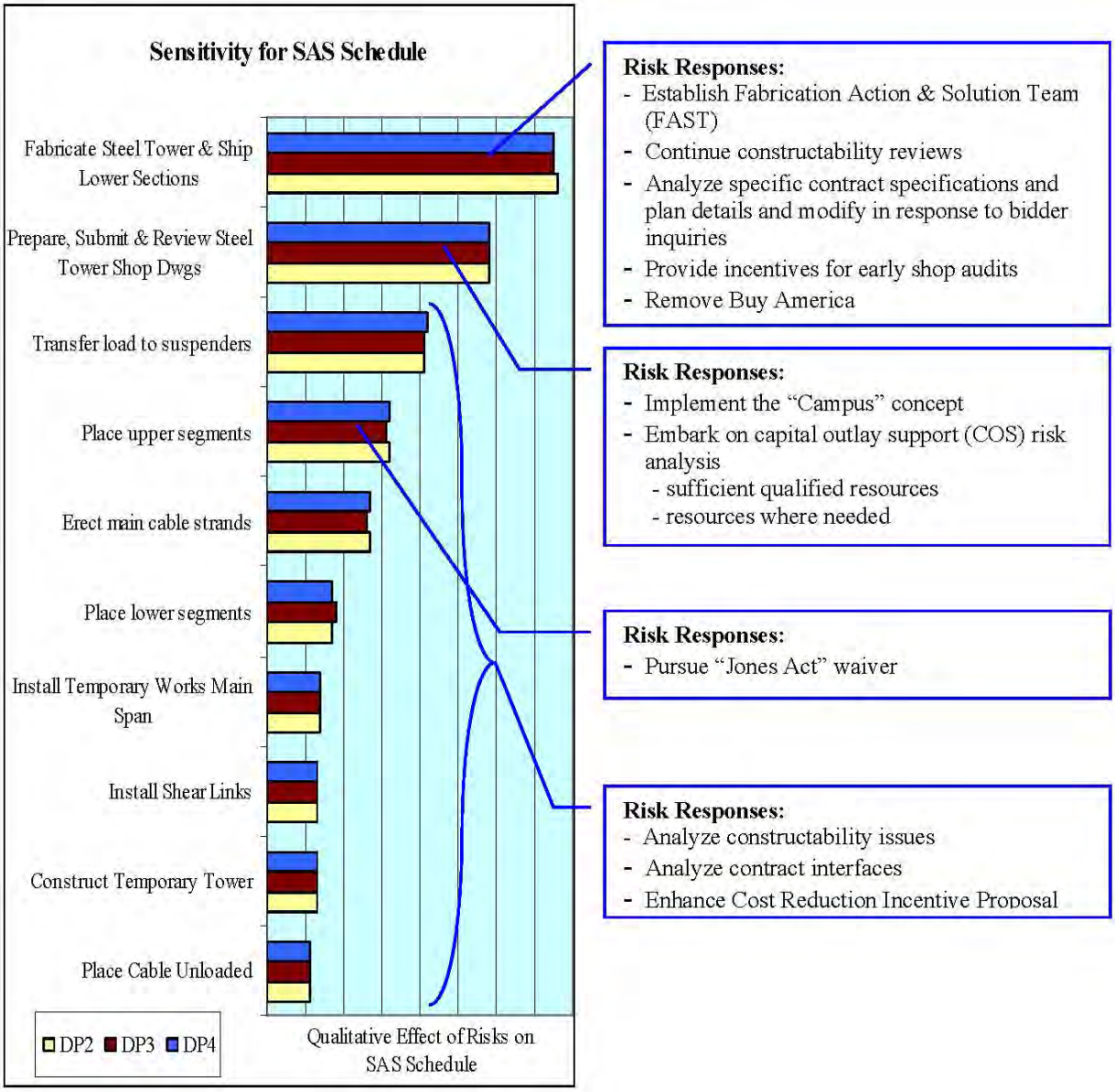


Figure 4. Risk Response to SAS Schedule Sensitivity



DP2, DP3, and DP4 are contract milestones specified in the SAS bid documents. DP2 is an interface milestone by which time the SAS contractor has completed all work necessary to allow the YBI Structures contractor to complete Hinge "K". The bridge opens to westbound traffic by DP3. The SAS contract is complete by DP4.

Appendix D.

California Transportation Commission TBSRP Contributions, Adopted September 2005.

Schedule of Contributions to the Toll bridge Seismic Retrofit Program ($ million)

Source	Description	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Total
AB1171	SHA Contribution	342	8								350
	PTA Contribution	30	40								70
	HBRR Contribution	100	100	100	42						342
	Contingency				1	99	100	100	148		448
AB 144	Efficiency Savings						53	50	27		130
	Motor Vehicle Fuel Account	75									75
	Spillover Transfer		125								125
	Demolition Cost									300	300
	Total	547	273	100	43	99	153	150	175	300	1840

Appendix E.

Project/Contract Photographs.

San Francisco-Oakland Bay Bridge (SFOBB) East Span Replacement Project

Skyway Contract

Construction of Eastbound-Westbound Bridge Segments (Looking East).

Pier tables for Westbound Roadway.

The Eastbound Roadway Section is to the left of the existing East Span (Looking East) 1.

The Eastbound Roadway Section is to the left of the existing East Span (Looking East) 2.

Skyway Contract (cont.)

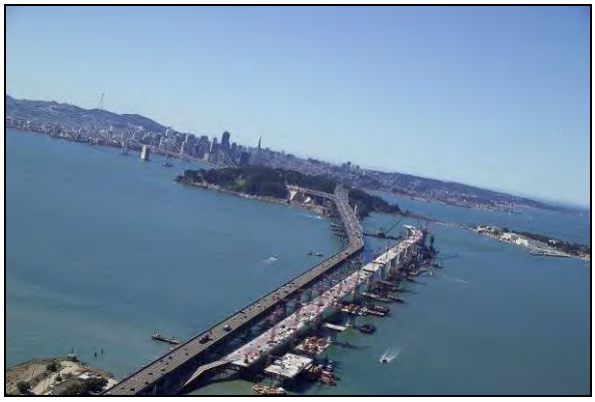
View of new Eastbound Roadway Looking West.

View of Skyway Construction from water level 1.

View of Skyway Construction from water level 2.

View of Skyway Construction from water level 3.

View of Skyway Piers from water level.



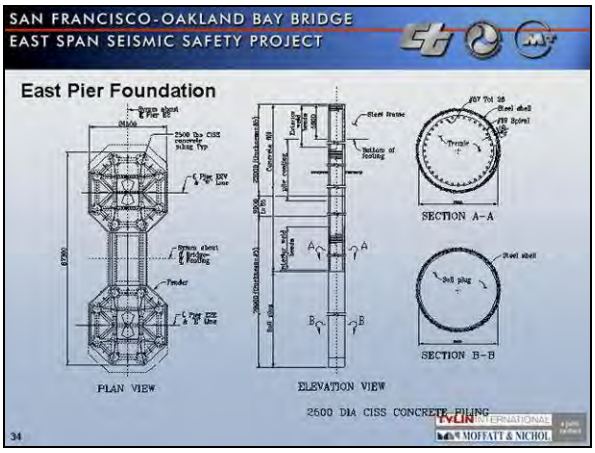
View of Skyway construction Looking West.

Self-Anchored Suspension (SAS) Superstructure Contract

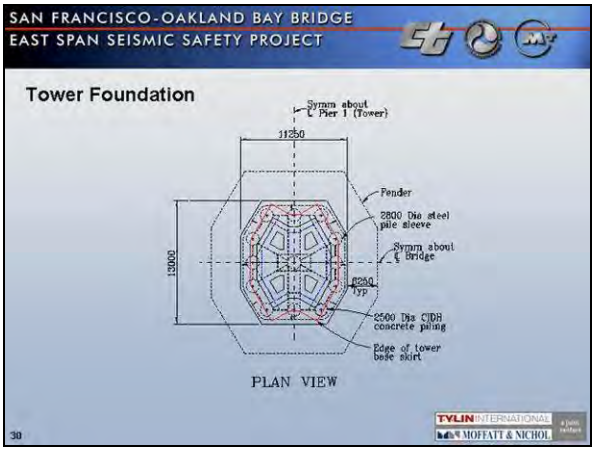
SAS Superstructure Artist Rendition.

SAS Superstructure Artist Rendition Night Shot.

Self-Anchored Suspension (SAS) E2/T1 Foundation Contract



East Pier Foundation.



Tower Foundation.

T1 = Foundation for the 530-foot steel tower.

E2 = Eastern Support of the suspension roadway.

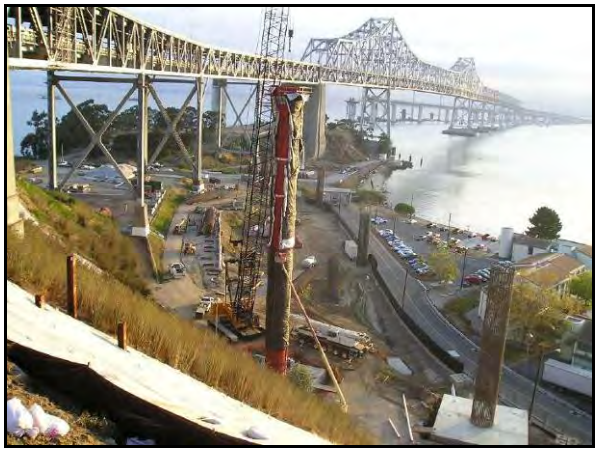
W2 = Western Support of the suspension roadway.

Yerba Buena Island (YBI) South/South Detour Contract

Pouring Concrete for New Pier Footing.

Aerial View of Pier Footing and Column Construction for the South-South Detour at YBI.

Pier Column Construction for the South-South Detour 1.



Pier Column Construction for the South-South Detour 2.

Pier Column Construction for the South-South Detour 3.

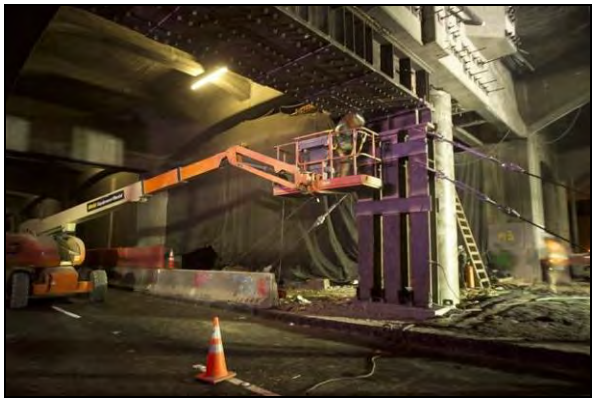
Pier Column Construction for the South-South Detour 4.

San Francisco-Oakland Bay Bridge (SFOBB) West Approach Replacement Project

West Approach Support Beam Installation 1.

West Approach Support Beam Installation 2.

West Approach Support Beam Installation 3.



West Approach Support Beam Installation 4.

West Approach Support Beam Installation 5.

West Approach Support Beam Installation 6.

San Francisco-Oakland Bay Bridge (SFOBB) West Approach Replacement Project (cont.)

West Approach Support Beam Installation 7.

West Approach Support Beam Installation 8.

West Approach Support Beam Installation 9.

West Approach Tendon Cutting 1.

West Approach Tendon Cutting 2.

West Approach Tendon Cutting 3.

San Francisco-Oakland Bay Bridge (SFOBB) West Approach Replacement Project (cont.)

West Approach Tendon Cutting 4.

West Approach Tendon Cutting 5.

West Approach Tendon Cutting 6.

West Approach Tendon Cutting 7.