

Toll Bridge Seismic Retrofit and  
Regional Measure 1 Programs



2009 Fourth Quarter Project Progress  
and Financial Update



TOLL BRIDGE PROGRAM  
OVERSIGHT COMMITTEE

CALTRANS BAY AREA TOLL AUTHORITY CALIFORNIA TRANSPORTATION COMMISSION

Released: February 2010



Photo courtesy of Tom Paiva

YBITS Columns W6 and W7 Looking West



# TOLL BRIDGE PROGRAM OVERSIGHT COMMITTEE

CALTRANS BAY AREA TOLL AUTHORITY CALIFORNIA TRANSPORTATION COMMISSION

Toll Bridge Program Oversight Committee  
Department of Transportation  
Office of the Director  
1120 N Street  
P.O. Box 942873  
Sacramento, CA 94273-0001

February 11, 2010

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

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

Dear Messrs. Schmidt and Wilson:

The Toll Bridge Program Oversight Committee (TBPOC) is pleased to submit the 2009 Fourth Quarter Toll Bridge Seismic Retrofit Program Report, prepared pursuant to California Streets and Highways Code Section 30952. The TBPOC is tasked to perform project oversight and control over the Toll Bridge Seismic Retrofit Program (TBSRP) and comprises the Director of the Department of Transportation (Caltrans), the Executive Director of the Bay Area Toll Authority (BATA), and the Executive Director of the California Transportation Commission (CTC). This fourth quarter report includes project progress and activities for the Toll Bridge Seismic Retrofit Program through December 31, 2009.

On the San Francisco-Oakland Bay Bridge East Span Seismic Replacement Project, the first eight deck sections for the Self-Anchored Suspension (SAS) Span left Shanghai, China on December 30, 2009 and arrived in the Bay Area on January 20, 2010. This initial shipment of deck sections is a major step forward, as fabrication has been delayed due to welding repairs and other issues. While the first shipment is more than a year late, we continue to actively mitigate these delays to achieve the opening of the new East Span in 2013.

Also as part of the new East Span, bids were opened for the Yerba Buena Island Transition Structure (YBITS) Contract #1 in December 2009. The low bid of \$81 million was \$53 million less than the engineer's estimate and was awarded on February 4, 2010. The bid savings will be made available to the program contingency. The YBITS contract involves building the superstructure and road decks from the SAS Span to the Yerba Buena Island tunnel. Currently, construction crews are working hard to demolish the original approach to the tunnel by spring 2010 to make way for the YBITS. Construction of the YBITS is anticipated to begin in the summer of 2010.

In October 2009, the short-term repair for the fractured eyebar discovered on the Bay Bridge during the September 2009 Labor Day Weekend bridge closure failed and fell to the upper deck of the bridge. Fortunately, there were no injuries. The bridge was again closed to allow construction crews to repair and enhance the short-term fix to increase its resilience until a long-term repair could be installed and to prevent pieces from falling should it fail again. By December, crews were out again on the bridge to install a long-term repair by splicing on a new head to the failed eyebar. Work was performed at night without requiring any bridge closure and completed on December 28, 2009. This long-term repair would not have been possible without the short-term repair in place, preserving the safety and integrity of the bridge until its planned closure in 2013 and requiring significantly less maintenance and inspection.

We continue to make progress on other bridges. The contract for the seismic retrofit of the Antioch Bridge has been advertised, and we anticipate advertising the seismic retrofit of the Dumbarton Bridge in March 2010. These projects were incorporated into the TBSRP effective on January 1, 2010 per AB 1175. BATA has taken action to raise tolls on the state-owned Bay Area toll bridges to fund these projects. The increases will go into effect in the summer of 2010 and for the first time will include tolls for carpoolers and congestion pricing on the Bay Bridge.

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

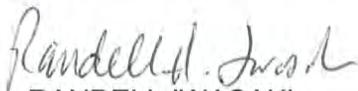
Sincerely,



STEVE HEMINGER  
TBPOC Chair  
Executive Director  
Bay Area Toll Authority  
Commission



BIMLA RHINEHART  
TBPOC Vice-Chair  
Executive Director  
California Transportation



RANDELL IWASAKI  
Director  
California Department of Transportation



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CALTRANS BAY AREA TOLL AUTHORITY CALIFORNIA TRANSPORTATION COMMISSION

Toll Bridge Program Oversight Committee  
Department of Transportation  
Office of the Director  
1120 N Street  
P.O. Box 942873  
Sacramento, CA 94273-0001

February 11, 2010

Mr. Bob Alvarado, Chair  
California Transportation Commission  
1120 N Street, Room 2221  
Sacramento, CA 95814

Mr. James Earp, Vice-Chair  
California Transportation Commission  
1120 N Street, Room 2221  
Sacramento, CA 95814

Dear Commissioners Alvarado and Earp:

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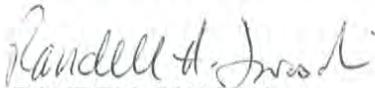
Sincerely,



STEVE HEMINGER  
TBPOC Chair  
Executive Director  
Bay Area Toll Authority  
Commission



BIMLA RHINEHART  
TBPOC Vice-Chair  
Executive Director  
California Transportation



RANDELL IWASAKI  
Director  
California Department of Transportation



Shear-Leg Barge Crane in Lifting Position

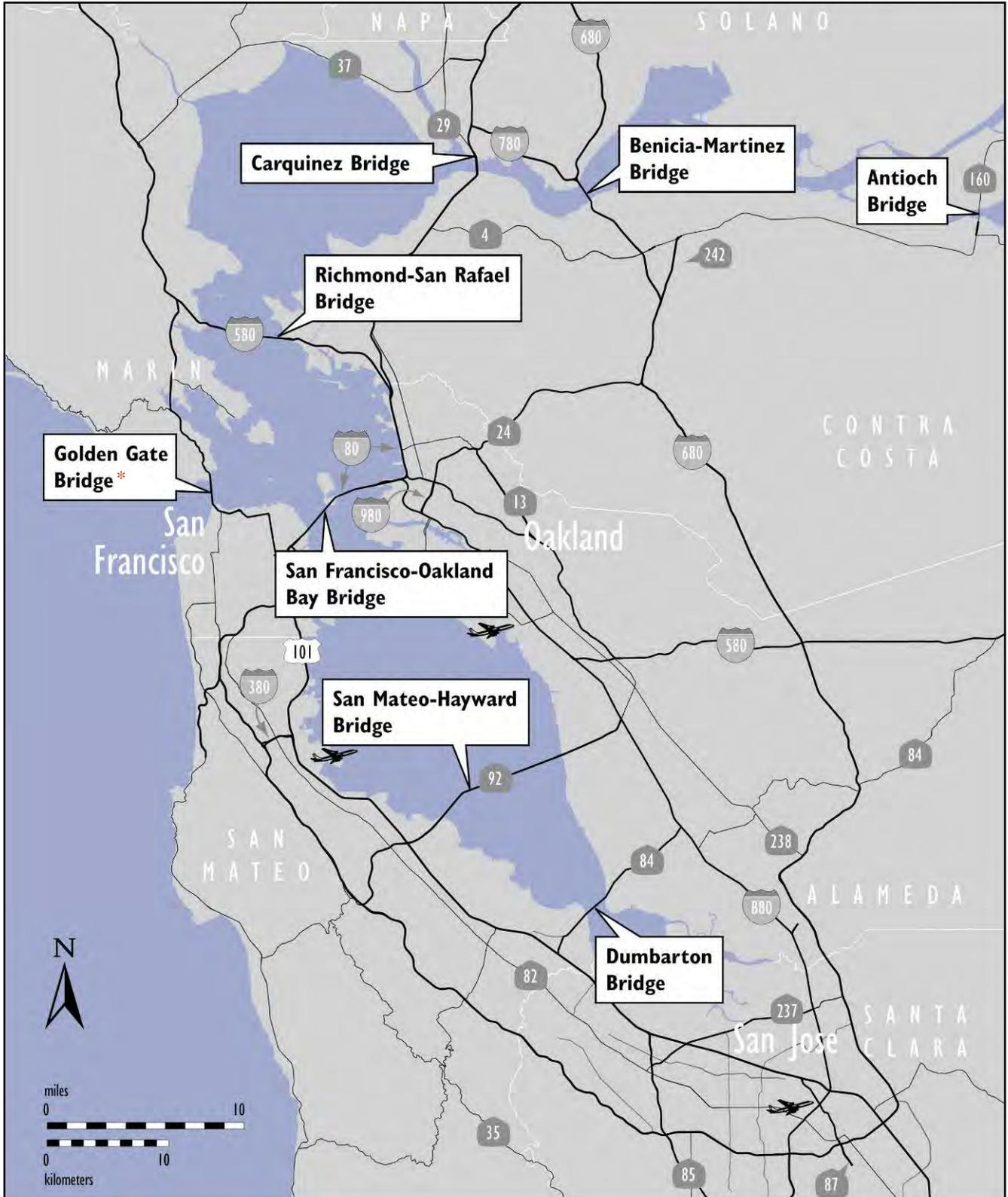


Architectural Rendering of Self Anchored Suspension Bridge

# Table of Contents

<b>Introduction</b> .....	1
Summary of Major Project Highlights, Issues, and Actions.....	2
Toll Bridge Seismic Retrofit Program Cost Summary.....	6
Toll Bridge Seismic Retrofit Program Schedule Summary.....	7
Regional Measure 1 Program Cost Summary.....	8
Regional Measure 1 Program Schedule Summary.....	9
<b>Toll Bridge Seismic Retrofit Program (TBSRP)</b> .....	<b>11</b>
San Francisco-Oakland Bay Bridge Seismic Retrofit Strategy.....	12
San Francisco-Oakland Bay Bridge East Span Replacement Project Summary.....	16
Yerba Buena Island Detour (YBID) Existing Bridge Demolition .....	17
Yerba Buena Island Transition Structures (YBITS) .....	20
Self-Anchored Suspension (SAS) Bridge.....	22
SAS Construction Sequence .....	24
SAS Superstructure Fabrication Activities .....	26
SAS Superstructure Field Activities .....	29
Skyway.....	32
Oakland Touchdown (OTD).....	33
Other Contracts.....	34
Quarterly Environmental Compliance Highlights.....	36
Other Completed TBSRP Projects.....	38
Risk Management Program Update.....	40
Program Funding Status .....	44
<b>Seismic Retrofit of Dumbarton and Antioch Bridges</b> .....	<b>48</b>
Dumbarton Bridge Seismic Retrofit Project .....	48
Antioch Bridge Seismic Retrofit Project .....	50
Project Cost and Schedule Summaries.....	52
<b>Regional Measure 1 (RM1) Toll Bridge Program</b> .....	<b>56</b>
New Benicia-Martinez Bridge Project.....	56
Interstate 880/State Route 92 Interchange Reconstruction Project .....	58
Other Completed RM1 Projects.....	60
<b>Appendices</b> .....	<b>64</b>

## Map of Bay Area Toll Bridges



\* The Golden Gate Bridge is owned and operated by the Golden Gate Bridge, Highway, and Transportation District.

## Introduction

In July 2005, Assembly Bill (AB) 144 (Hancock) created the Toll Bridge Program Oversight Committee (TBPOC) to implement a project oversight and project control process for the Benicia-Martinez Bridge and State Toll Bridge Seismic Retrofit Program projects. The TBPOC consists of the Caltrans Director, the Bay Area Toll Authority (BATA) Executive Director and the Executive Director of the California Transportation Commission (CTC). The TBPOC's project oversight and control processes include, but are not limited to, reviewing bid specifications and documents, providing field staff to review ongoing costs, reviewing and approving significant change orders and claims in excess of \$1 million (as defined by the Committee) and preparing project reports.

AB 144 identified the Toll Bridge Seismic Retrofit Program and the new Benicia-Martinez Bridge Project as being under the direct oversight of the TBPOC. The Toll Bridge Seismic Retrofit Program includes:

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	Complete
San Francisco-Oakland Bay Bridge West Span Seismic Retrofit	Complete
San Mateo-Hayward Bridge Seismic Retrofit	Complete
Richmond-San Rafael Bridge Seismic Retrofit	Complete
1958 Carquinez Bridge Seismic Retrofit	Complete
1962 Benicia-Martinez Bridge Seismic Retrofit	Complete
San Diego-Coronado Bridge Seismic Retrofit	Complete
Vincent Thomas Bridge Seismic Retrofit	Complete

The new Benicia-Martinez Bridge is part of a larger program of toll-funded projects called the Regional Measure 1 (RM1) Toll Bridge Program under the responsibility of BATA and Caltrans. While the rest of the projects in the RM1 program are not directly under the responsibility of the TBPOC, BATA and Caltrans will continue to report on their progress as an informational item. The RM1 program includes:

Regional Measure 1 Projects	Open to Traffic Status
Interstate 880/State Route 92 Interchange Reconstruction	Construction
1962 Benicia-Martinez Bridge Reconstruction	Open
New Benicia-Martinez Bridge	Open
Richmond-San Rafael Bridge Deck Overlay Rehabilitation	Open
Richmond-San Rafael Bridge Trestle, Fender & Deck Joint Rehabilitation	Open
Westbound Carquinez Bridge Replacement	Open
San Mateo-Hayward Bridge Widening	Open
State Route 84 Bayfront Expressway Widening	Open
Richmond Parkway	Open

## SUMMARY OF MAJOR PROJECT HIGHLIGHTS, ISSUES, AND ACTIONS



SAS Voyage #1 - OBG Lifts 1 through 4 in Transit December 30, 2009



SAS - View from under the Completed Skyway Looking West towards Yerba Buena Island



SAS Voyage 1 OBG Shipment and Tower Lift 1 Vertical Fit-up end of December 2009

### Toll Bridge Seismic Retrofit Program Risk Management

A major element of the 2005 AB144, the law creating the TBPOC, was legislative direction to implement a more aggressive risk management program. Such a program has been implemented in stages over time to ensure development of a robust and comprehensive approach to risk management. We have reached a milestone with our risk management program with all elements now fully incorporated, resulting in one of the most detailed and comprehensive risk management programs in the country today.

A comprehensive risk assessment is performed for each project in the program. Based upon those assessments, a forecast is developed using the average cost of risk. These forecasts can both increase and decrease as risks are identified, resolved or retired. Nonetheless, we want to ensure that the public is informed of the risks we have identified and the possible expense they could necessitate.

Based upon the Fourth Quarter 2009 Risk Management Report, we have identified a range from \$550 - \$850 million in risks to the program contingency, which is unchanged from the last quarter. It is important to note that our \$758.3 million budgeted program contingency is sufficient to cover the risks to an 80 percent confidence level. We will continue to work on mitigating these risks to reduce the potential draw on contingencies. Further details on identified risks are included in the contract summaries.

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

#### SAS Superstructure Contract

The prime contractor constructing the Self-Anchored Suspension Bridge from the completed Skyway to Yerba Buena Island is a joint venture of American Bridge/Fluor (ABF). The primarily steel bridge is being fabricated around the world in components. Temporary steel structures have been and are continuing to be erected in the San Francisco Bay to support the new bridge during construction.

The contractor has reported that fabrication of the steel tower and roadway boxes has fallen 15 months behind



**SFO Bay Bridge East Span Detour Structure Completed over the Labor Day Weekend**

schedule due to the complexity of the design and fabrication. The first shipment of roadway boxes (segments 1 through 4) were shipped on December 30, 2009, while the first tower segments are not expected until the late spring of 2010. All components have undergone a rigorous quality review by Shanghai Zhenhua Heavy Industry Co. Ltd. (ZPMC), ABF, and Caltrans to ensure that only bridge components that have been built in accordance to the specifications will be shipped.

On the critical path to completing the bridge is the fabrication of the last two roadway sections at the east end of the new span (Segments 13 and 14). Starting fabrication of these segments has fallen behind schedule due to delays in the fabrication drawing preparation process. The TBPOC has taken steps to ensure completion of the shop drawings by March of 2010. These delays will likely preclude the westbound opening of the bridge in 2012, but we continue to push for full opening of the bridge in 2013.

Caltrans has established risk management teams to evaluate these challenges and to identify future potential risks to completing the project on time and on budget. In particular, teams are reviewing cable-erection plans and mitigation actions. Based on the latest risk management assessment, there is a potential for a \$194 million increase on the SAS contract.

## Yerba Buena Island Detour Contract

The Yerba Buena Island Detour contractor, C.C. Myers, has rolled out the existing bridge span and rolled in the new east tie-in span of the detour structure that diverts traffic off the existing bridge to the detour structure that now ties into the Yerba Buena Island Tunnel. The traffic switch occurred as scheduled on Labor Day weekend. The contractor continues to make progress on a number of accelerated foundations for the future transition structure from the Self-Anchored Suspension (SAS) bridge to the tunnel.

## Yerba Buena Island Transition Structures #1 Contract

On December 15, 2009, Caltrans opened three bids for the Yerba Buena Island Transitions Structures (YBITS) #1 contract. All three bidders submitted bids substantially lower than the engineer's estimate. The lowest responsive bid by MCM Construction, Inc. was \$80.8 million versus an engineer's estimate of \$134.5 million. MCM Construction is the firm constructing the Oakland Touchdown #1 contract.

## SUMMARY OF MAJOR PROJECT HIGHLIGHTS, ISSUES, AND ACTIONS



Oakland Touchdown #1 Westbound and Eastbound Overview Looking East



Oakland Touchdown #1 Westbound Falsework and Piles Removed



Dumbarton/Antioch Bridges Mock-Up of Dumbarton Pier Columns Undergoing Seismic Testing

### Oakland Touchdown #1 Contract

The Oakland Touchdown (OTD) #1 contractor, MCM, continues to be on schedule with a projected completion date of May 2010 and has opened construction access on the new westbound OTD structure to the Skyway. Work continues on the eastbound structure.

### TBSRP Capital Outlay Support

Based on initial discussions with our contractors, early completion of the East Span Project was believed to be possible and sufficient to mitigate potential identified support cost increases. The support cost increases are primarily due to the need to re-advertise the SAS contract and to decisions made to increase our opportunities for early completion of the East Span Project. These decisions include a 12-month schedule extension provided during bid time to attract the maximum number of bidders for the SAS contract and extension of the YBI Detour contract to advance future foundation and column work of the transition structure and west-end deck reconstruction. Since we now judge early completion and the intended cost savings to be unlikely, we forecast a potential drawdown of \$293 million from the program contingency for project support. The TBPOC will continue to seek opportunities to economize in this area.

### TBSRP Programmatic Risks

This category includes risks that are not yet scoped within existing contracts and/or that spread across multiple contracts. The interdependencies between all of the contracts in the program result in the potential for one contract's delay to impact the other contracts.

### Seismic Retrofit of the Dumbarton and Antioch Bridges

When first conceived, the Toll Bridge Seismic Retrofit Program only identified seven of the nine state-owned toll bridges to be in need of seismic retrofit, which excluded the Dumbarton and Antioch Bridges. Further seismic vulnerability studies completed by Caltrans and BATA on those structures determined that both structures were in need of retrofit based on current seismic standards. On October 11, 2009, Governor Schwarzenegger signed Assembly Bill 1175, which added the Dumbarton and Antioch Bridges to the Toll Bridge Seismic Retrofit Program. BATA has now initiated efforts to raise tolls on the seven



Antioch Bridge

State-owned toll bridges in the Bay Area in part to fund the seismic retrofit of the Dumbarton and Antioch Bridges.

BATA has already funded design plans for both bridge projects in anticipation of securing the capital funding for the project. The total estimated cost of these retrofits has been recently revised from \$950 million to \$750 million as project plans have been refined with reduced scope, minimizing cost risks.

The Antioch Bridge Seismic Retrofit project was risk-advertised in December 2009 and the Dumbarton Bridge will be advertised in March of 2010.

## Regional Measure 1 Toll Bridge Program (RM1)

### New Benicia-Martinez Bridge Project

On August 29, 2009, Caltrans, BATA and a number of dignitaries celebrated the substantial completion of the rehabilitation of the 1962 Benicia-Martinez Bridge. As the last major contract of the New Benicia-Martinez Bridge Project, the rehabilitation project converted the existing bridge to carry southbound-only Interstate 680 traffic. The work included adding a new southbound traffic lane (opened in early August 2009), shoulders and a new bicycle/pedestrian pathway. The project is now complete.

### Interstate 880/State Route 92 Interchange Reconstruction Project

On this interchange reconstruction contract, the new eastbound State Route 92 to Northbound Interstate 880 direct connector structure (ENCONN) was completed and opened to detour traffic on May 16, 2009. The project is forecast to be completed as planned in June 2011. Caltrans has requested a supplemental allocation of \$6 million to replenish the construction contingency.



New Pedestrian Bicycle Path on Benicia-Martinez Bridge Under Construction



Site Preparation for New Route 92 and Interstate 880 Separator

## Toll Bridge Seismic Retrofit Program Cost Summary

	Contract Status	AB 144/SB 66 Budget (July 2005)	TBPOC Approved Changes	Current TBPOC Approved Budget (December 2009)	Cost to Date (December 2009)	Current Cost Forecast (December 2009)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
<b>SFOBB East Span Seismic Replacement</b>								
Capital Outlay Construction								
Skyway	Completed	1,293.0	(38.9)	1,254.1	1,236.9	1,254.1	-	●
SAS Marine Foundations	Completed	313.5	(32.6)	280.9	275.0	280.9	-	●
SAS Superstructure	Construction	1,753.7	-	1,753.7	865.3	1,947.5	193.8	●
YBI Detour	Construction	132.0	360.9	492.9	414.7	487.3	(5.6)	●
YBI Transition Structures (YBITS)		299.3	(93.0)	206.3	-	210.9	4.6	●
YBITS 1	Bids Opened			144.0	-	159.9	15.9	●
YBITS 2	Design			59.0	-	47.7	(11.3)	●
YBITS Landscaping	Design			3.3	-	3.3	-	●
Oakland Touchdown (OTD)		283.8	4.2	288.0	201.8	281.4	(6.6)	●
OTD 1	Construction			212.0	194.0	210.4	(1.6)	●
OTD 2	Design			62.0	-	57.0	(5.0)	●
OTD Electrical Systems	Design			4.4	-	4.4	-	●
Submerged Electric Cable	Completed			9.6	7.8	9.6	-	●
Existing Bridge Demolition	Design	239.2	(0.1)	239.1	-	232.1	(7.0)	●
Stormwater Treatment Measures	Completed	15.0	3.3	18.3	16.7	18.3	-	●
Other Completed Contracts	Completed	90.3	-	90.3	89.2	90.3	-	●
Capital Outlay Support		959.3	-	959.3	802.2	1,252.5	293.2	●
Right-of-Way and Environmental Mitigation		72.4	-	72.4	51.2	72.4	-	●
Other Budgeted Capital		35.1	(3.3)	31.8	0.7	7.7	(24.1)	●
<b>Total SFOBB East Span Replacement</b>		<b>5486.6</b>	<b>200.5</b>	<b>5,687.1</b>	<b>3,953.7</b>	<b>6,135.4</b>	<b>448.3</b>	
<b>SFOBB West Approach Replacement</b>								
Capital Outlay Construction	Completed	309.0	41.7	350.7	328.1	338.1	(12.6)	●
Capital Outlay Support		120.0	(3.0)	117.0	116.9	117.0	-	●
<b>Total SFOBB West Approach Replacement</b>		<b>429.0</b>	<b>38.7</b>	<b>467.7</b>	<b>445.0</b>	<b>455.1</b>	<b>(12.6)</b>	
<b>Completed Program Projects</b>	<b>Completed</b>	<b>1,839.4</b>	<b>(97.5)</b>	<b>1,741.9</b>	<b>1,712.6</b>	<b>1,741.9</b>	<b>-</b>	<b>●</b>
<b>Miscellaneous Program Costs</b>		<b>30.0</b>	<b>-</b>	<b>30.0</b>	<b>24.7</b>	<b>30.0</b>	<b>-</b>	<b>●</b>
<b>Net Programmatic Risks</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>265.3</b>	<b>265.3</b>	<b>●</b>
<b>Program Contingency</b>		<b>900.0</b>	<b>(141.7)</b>	<b>758.3</b>	<b>-</b>	<b>57.3</b>	<b>(701.0)</b>	<b>●</b>
<b>Total Toll Bridge Seismic Retrofit Program</b>		<b>8,685.0</b>	<b>-</b>	<b>8,685.0</b>	<b>6,136.0</b>	<b>8,685.0</b>	<b>-</b>	<b>●</b>

- Within approved schedule and budget
- Identified potential project risks that could significantly impact approved schedules and budgets if not mitigated
- Known project impacts with forthcoming changes to approved schedules and budgets

## Toll Bridge Seismic Retrofit Program Schedule Summary

	AB144/SB 66 Project Completion Schedule Baseline (July 2005)	TBPOC Approved Changes (Months)	Current TBPOC Approved Completion Schedule (December 2009)	Current Completion Forecast (December 2009)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i = g + h	j	k = j - i	l	
<b>SFOBB East Span Seismic Replacement</b>							
Contract Completion							
Skyway	Apr 2007	8	Dec 2007	Dec 2007	-	●	See Page 32
SAS Marine Foundations	Jun 2008	(5)	Jan 2008	Jan 2008	-	●	See Page 22
SAS Superstructure	Mar 2012	12	Mar 2013	Mar 2013	-	●	See Page 23
YBI Detour	Jul 2007	41	Dec 2010	Dec 2010	-	●	See Page 16
YBI Transition Structures (YBITS)	Nov 2013	12	Nov 2014	Nov 2014	-		See Page 20
YBITS 1			Sep 2013	Sep 2013	-	●	
YBITS 2			Nov 2014	Nov 2014	-	●	
YBITS Landscaping			TBD	TBD	-	●	
Oakland Touchdown	Nov 2013	12	Nov 2014	Nov 2014	-		See Page 33
OTD 1			May 2010	May 2010	-	●	
OTD 2			Nov 2014	Nov 2014	-	●	
OTD Electrical Systems			TBD	TBD	-	●	
Submerged Electric Cable			Jan 2008	Jan 2008	-	●	
Existing Bridge Demolition	Sep 2014	12	Sep 2015	Sep 2015	-	●	
Stormwater Treatment Measures	Mar 2008	-	Mar 2008	Mar 2008	-	●	
<b>SFOBB East Span Bridge Opening and Other Milestones</b>							
OTD Westbound Access			Aug 2009	Aug 2009	-	●	
YBI Detour Open			Sep 2009	Sep 2009	-	●	See Page 18
Westbound Open	Sep 2011	12	Sep 2012	Dec 2012	3	●	
Eastbound Open	Sep 2012	12	Sep 2013	Sep 2013	-	●	
<b>SFOBB West Approach Replacement</b>							
Contract Completion	Aug 2009	(7)	Jan 2009	Jan 2009	-	●	

Notes: 1) Figures may not sum up to totals due to rounding effects.

2) TBSRP Forecasts for the Monthly Reports are generally updated on a quarterly basis in conjunction with quarterly risk analysis assessments for the TBSRP Projects.

## Regional Measure 1 Program Cost Summary

	Contract Status	BATA Baseline Budget (July 2005)	BATA Approved Changes	Current BATA Approved Budget (December 2009)	Cost to Date (December 2009)	Current Cost Forecast (December 2009)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
<b>New Benicia-Martinez Bridge</b>								
Capital Outlay Construction	Completed	861.6	174.0	1,035.6	997.8	1,035.6	-	●
Capital Outlay Support		157.1	35.1	192.2	191.4	192.2	-	●
Capital Outlay Right-of-Way		20.4	(0.1)	20.3	17.0	20.3	-	●
Project Reserve		20.8	3.6	24.4	-	24.4	-	
<b>Total New Benicia-Martinez Bridge</b>		<b>1,059.9</b>	<b>212.6</b>	<b>1,272.5</b>	<b>1,206.2</b>	<b>1,272.5</b>	<b>-</b>	
<b>Interstate 880/Route 92 Interchange Reconstruction</b>								
Capital Outlay Construction	Construction	94.8	60.2	155.0	86.1	161.0	6.0	●
Capital Outlay Support		28.8	34.6	63.4	51.1	63.4	-	●
Capital Outlay Right-of-Way		9.9	7.0	16.9	11.9	16.9	-	●
Project Reserve		0.3	9.4	9.7	-	3.7	(6.0)	
<b>Total I-880/SR-92 Interchange Reconstruction</b>		<b>133.8</b>	<b>111.2</b>	<b>245.0</b>	<b>149.1</b>	<b>245.0</b>	<b>-</b>	
<b>Other Completed Program Projects</b>		<b>918.9</b>	<b>(30.0)</b>	<b>888.9</b>	<b>878.6</b>	<b>888.9</b>	<b>-</b>	
<b>Total Regional Measure 1 Toll Bridge Program</b>		<b>2,112.6</b>	<b>293.8</b>	<b>2,406.4</b>	<b>2,233.9</b>	<b>2,406.4</b>	<b>-</b>	

- Within approved schedule and budget
- Identified potential project risks that could significantly impact approved schedules and budgets if not mitigated
- Known project impacts with forthcoming changes to approved schedules and budgets

## Regional Measure 1 Program Schedule Summary

	BATA Baseline Completion Schedule (July 2005)	BATA Approved Changes (Months)	Current BATA Approved Completion Schedule (December 2009)	Current Completion Forecast (December 2009)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i = g + h	j	k = j - i	l	
<b>New Benicia-Martinez Bridge</b>							
Contract Completion							
1962 BM Bridge Reconstruction	Dec 2009	(4)	Aug 2009	Aug 2009	-	●	See Page 60
<b>New Benicia-Martinez Bridge Opening Date</b>							
New Bridge	Dec 2007	(4)	Aug 2007	Aug 2007	-	●	
<b>Interstate 880/Route 92 Interchange Reconstruction</b>							
Contract Completion							
Interchange Reconstruction	Dec 2010	6	Jun 2011	Jun 2011	-	●	See Page 62

Notes: 1) Figures may not sum to totals due to rounding effects.



OBG Lift 1 4 East and West Loaded on the Ship for Transit



**TOLL BRIDGE SEISMIC RETROFIT PROGRAM**

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge Seismic Retrofit Strategy

When a 250-ton section of the upper deck of the East Span collapsed during the 7.1-magnitude Loma Prieta Earthquake in 1989, it was a wake-up call for the entire Bay Area. While the East Span quickly reopened within a month, critical questions lingered: How could the Bay Bridge—a vital regional lifeline structure—be strengthened to withstand the next major earthquake? Seismic experts from around the world determined that to make each separate element seismically safe on a bridge of this size, the work must be divided into numerous projects. Each project presents unique challenges. Yet there is one common challenge — the need to accommodate the more than 280,000 vehicles that cross the bridge each day.



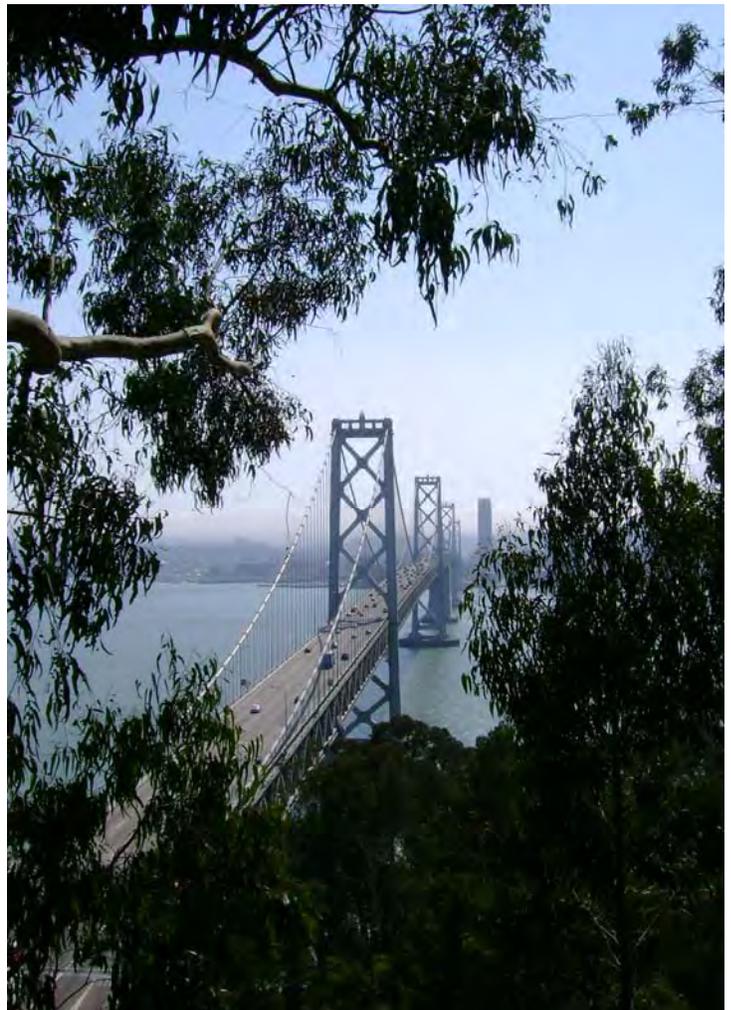
Overview of the Completed West Approach Replacement Structure

#### West Approach Seismic Replacement Project Project Status: Completed 2009

Seismic safety retrofit work on the West Approach in San Francisco—bounded on the west by 5th Street and on the east by the anchorage of the west span at Beale Street—involved completely removing and replacing this one-mile stretch of Interstate 80, as well as six on- and off-ramps within the confines of the West Approach's original footprint. This project was completed on April 8, 2009.

#### West Span Seismic Retrofit Project Project Status: Completed 2004

The West Span lies between Yerba Buena Island and San Francisco and is made up of two complete suspension spans connected at a center anchorage. Retrofit work included adding massive amounts of steel and concrete to strengthen the entire West Span, along with new seismic shock absorbers and bracing.



West Span of the Bay Bridge



## East Span Seismic Replacement Project

Rather than a seismic retrofit, the two-mile-long East Span is being completely rebuilt. When completed, the new East Span will consist of several different sections, but will appear as a single streamlined span. The eastbound and westbound lanes of the East Span will no longer include upper and lower decks. The lanes will instead be parallel, providing motorists with expansive views of the bay. These views will also be enjoyed by bicyclists and pedestrians, thanks to a new path on the south side of the bridge that will extend all the way to Yerba Buena Island. The new span will be aligned north of the existing bridge to allow traffic to continue to flow on the existing bridge as crews build the new span.

The new span will feature the world's longest Self-Anchored Suspension (SAS) bridge that will be connected to an elegant roadway supported by piers (Skyway), which will gradually slope down toward the Oakland shoreline (Oakland Touchdown). A new transition structure on Yerba Buena Island (YBI) will connect the SAS to the YBI Tunnel and will transition the East Span's side-by-side traffic to the upper and lower decks of the tunnel and West Span.

When construction of the new East Span is complete and vehicles have been safely rerouted to it, the original East Span will be demolished.



Architectural Rendering of Skyway and the New Self-Anchored Suspension Bridge Looking Towards Yerba Buena Island



L SE U 25 66 74 61

Yerba Buena Island Transition Structures  
Columns W7R and W7L N

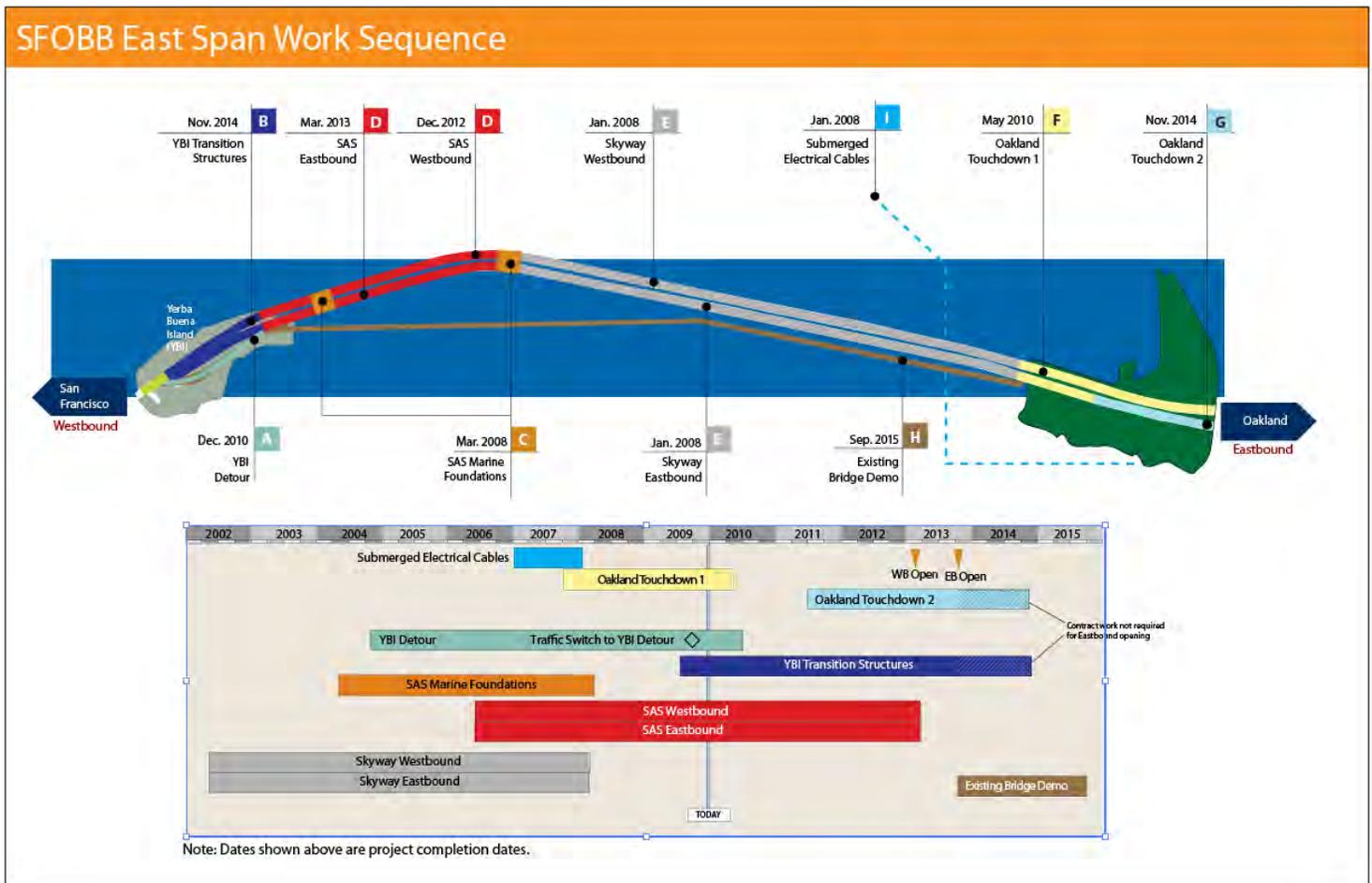
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## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Summary

The new East Span bridge can be split into four major components—the Skyway and the Self-Anchored Suspension bridge in the middle and the Yerba Buena Island Transition Structures and Oakland Touchdown approaches at either end. Each component is being constructed by one to three separate contracts that all have been sequenced together.

Highlighted below are the major East Span contracts and their schedules. The letter designation before each contract corresponds to contract descriptions in the report.



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Yerba Buena Island Detour (YBID)

As with all of the Bay Bridge's seismic retrofit projects, crews must build the Yerba Buena Island Transition Structures (YBITS) without disrupting traffic. To accomplish this daunting task, YBID eastbound and westbound traffic was shifted off the existing roadway and onto a temporary detour on Labor Day weekend 2009. Drivers will use this detour, just south of the original roadway, until traffic is moved onto the new East Span.

#### **A** YBID Contract

Contractor: C.C. Myers Inc.

Approved Capital Outlay Budget: \$492.9 M

Status: 84% Complete as of December 2009

This contract was originally awarded in early 2004 to construct the detour structure for the planned 2006 opening of the new East Span. Due to the re-advertisement of the SAS superstructure contract in 2005 because of a lack of funding at the time, the bridge opening was rescheduled to 2013. To better integrate the contract into the current East Span schedule and to improve seismic safety and mitigate future construction risks, the TBPOC has approved a number of changes to the contract, including adding the deck replacement work near the tunnel that was rolled into place over Labor Day weekend 2007, advancing future transition structure foundation work and making design enhancements to the temporary detour structure.

These changes have increased the budget and forecast for the contract to cover the revised project scope and potential project risks.



Successful Labor Day Weekend 2007 Roll-In Structure to the Tunnel

#### ***Tunnel Approach Roadway Replacement***

The first in a series of activities to open the detour viaduct was completed in 2007 with the replacement of a 350-foot-long stretch of upper-deck roadway just east of the Yerba Buena Island Tunnel. During this historic milestone, the entire Bay Bridge was closed over the 2007 Labor Day weekend so crews could demolish and replace the old section of the deck with a seismically upgraded 6,500-ton precast section of viaduct that was literally pushed into place (see photo above).

**Status:** Completed.

### Detour Viaduct Fabrication and Construction

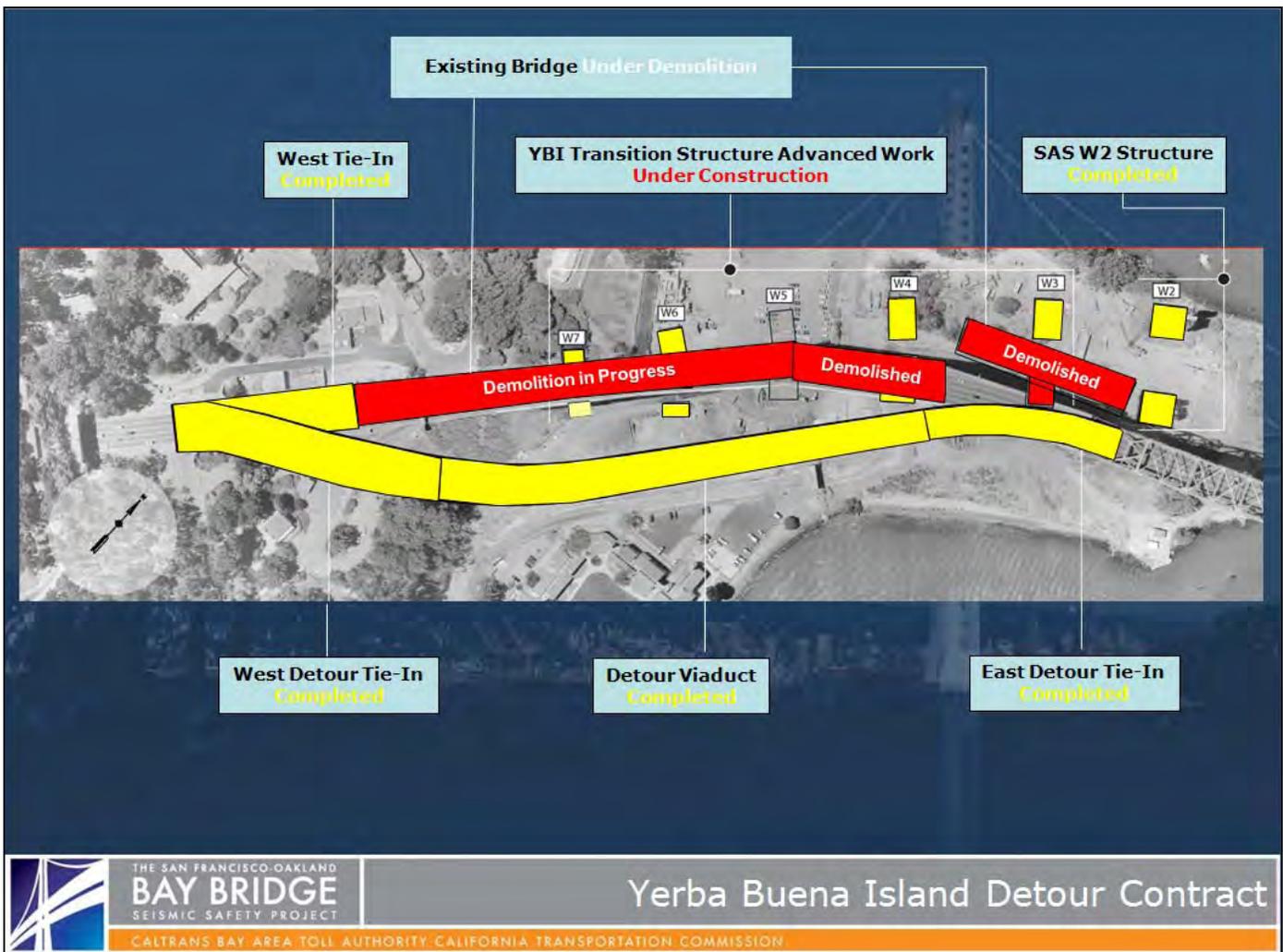
The detour viaduct runs parallel to the existing lanes on the island and ties back into the existing bridge and tunnel. Speed limits have been reduced due to the turns needed to get on and off the detour. The viaduct looks quite similar to the existing bridge, with steel cross beams and girders and a concrete roadway deck. To ensure a good fit, the steel viaduct truss members were pre-fitted during fabrication in South Korea and Oregon.

**Status:** Completed.

### Demolition of Existing Viaduct

After shifting traffic onto the detour structure, crews will focus on the demolition of the existing bridge structure into the tunnel. The old transition structure will need to be removed before construction of the new transition structures from the SAS bridge to the YBI Tunnel can be completed.

**Status:** Started in early September 2009 and is forecast to be completed in May 2010.



Overview of Yerba Buena Island Detour Contract Scope of Work and Current Status



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM *Yerba Buena Island Detour (YBID)*

Shifting traffic to the Yerba Buena Island Detour was the most significant realignment of the bridge to date. To accomplish this, crews cut away a 288-foot portion of the existing truss bridge and replaced it with a connection to the detour. This dramatic maneuver involved aerial construction that occurred more than 100 feet above the ground. Vehicles will travel on the detour until the completion of the new East Span.

This “S” curve detour now allows for the Yerba Buena Island demolition of the existing structure to proceed. This is a critical step in the overall East Span bridge construction.

**Status:** Demolition of the existing structure is underway.



Yerba Buena Island Detour Skid Bent System and Beams Demolition in Progress



Completed Yerba Buena Island Detour East Tie-In Roll-Out/Roll-In Structure



## San Francisco-Oakland Bay Bridge East Span Replacement Demolition Progress



Yerba Buena Island Temporary Structures Column W3L and Demolition of Existing Viaduct Looking West

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Yerba Buena Island Transition Structures (YBITS)

The new Yerba Buena Island Transition Structures (YBITS) will connect the new SAS bridge span to the existing Yerba Buena Island Tunnel, transitioning the new side-by-side roadway decks to the upper and lower decks of the tunnel. The new structures will be cast-in-place reinforced concrete structures that will look very similar to the already constructed Skyway structures. While some YBITS foundations and columns have been advanced by the YBID contract, the remaining work will be completed under three separate YBITS contracts.



Yerba Buena Island Transition Structure Columns W6 and W7 Looking West

#### **B** YBITS #1 Contract

Contractor: TBD

Current Capital Outlay Forecast: \$159.9 M

Status: Bids Opened December 15, 2009

The YBITS #1 contract will construct the mainline roadway structures from the SAS bridge to the YBI tunnel. On December 15, 2009, Caltrans opened three bids for the Yerba Buena Island Transitions Structures (YBITS) #1 contract. All three bidders submitted bids substantially lower than the engineer's estimate. The low bid by MCM Construction, Inc. was \$80.8 million versus an engineer's estimate of \$134.5 million.



Rendering of Overview of Future Yerba Buena Island Transition Structures (top), in progress with Detour Viaduct (bottom) Completed

## YBITS #2 Contract

Contractor: TBD

Current Capital Outlay Forecast: \$47.7 M

Status: **In Design**

The YBITS #2 contract will demolish the detour viaduct after all traffic is shifted to the new bridge and will construct a new eastbound on-ramp to the bridge in its place. The new ramp will also provide the final link for bicycle/pedestrian access off the SAS bridge onto Yerba Buena Island.

## YBITS Landscaping Contract

Contractor: TBD

Current Capital Outlay Forecast: \$3.3 M

Status: **In Design**

Upon completion of the YBITS work, a follow-on landscaping contract will be executed to re-plant and landscape the area.

### ***Yerba Buena Island Transition Structures Advanced Work***

Due to the re-advertisement of the SAS superstructure contract in 2005, it became necessary to temporarily suspend the detour contract and make design changes to the viaduct. To make more effective use of the extended contract duration and to reduce overall project schedule and construction risks, the TBPOC approved the advancement of foundation and column work from the Yerba Buena Island Transition Structures contract.

**Status:** Advanced foundations and columns for the left piers of W3, W4, W6 and W7 are under construction. Work at pier W5 is pending removal of the existing transition structure. See page 17 for a diagram of pier locations.



YBITS Columns W4 and W3 Looking East



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Self-Anchored Suspension (SAS) Bridge

If one single element bestows world class status on the new Bay Bridge East Span, it is the Self-Anchored Suspension (SAS) bridge. This engineering marvel will be the world's largest SAS span at 2,047 feet in length, as well as the first bridge of its kind built with a single tower.

The SAS was separated into three separate contracts—construction of the land-based foundations and columns at Pier W2; construction of the marine-based foundations and columns at Piers T1 and E2; and construction of the SAS steel superstructure, including the tower, roadway, and cabling. Construction of the foundations at Pier W2 and at Piers T1 and E2 was completed in 2004 and 2007, respectively.

#### SAS Land Foundation Contract

Contractor: West Bay Builders, Inc.  
Approved Capital Outlay Budget: \$26.4 M  
Status: Completed October 2004

The twin W2 columns on Yerba Buena Island provide essential support for the western end of the SAS bridge, where the single main cable for the suspension span will extend down from the tower and wrap around and under the western end of the roadway deck. Each of these huge columns required massive amounts of concrete and steel and are anchored 80 feet into the island's solid bedrock.



SAS OBG Cradles Erected on top of Westbound and Eastbound Temporary Structures



SAS T1 Trestle Construction Overview

#### C SAS Marine Foundations Contract

Contractor: Kiewit/FCI/Manson, Joint Venture  
Approved Capital Outlay Budget: \$280.9 M  
Status: Completed January 2008

Construction of the piers at E2 and T1 required significant on-water resources to drive the foundation support piles down, not only to bedrock, but also through the bay water and mud (see rendering on facing page).

The T1 foundation piles extend 196 feet below the waterline and are anchored into bedrock with heavily reinforced concrete rock sockets that are drilled into the rock. Driven nearly 340 feet deep, the steel and concrete E2 foundation piles were driven 100 feet deeper than the deepest timber piles of the existing east span in order to get through the bay mud and reach solid bedrock.

## D SAS Superstructure Contract

Contractor: American Bridge/Fluor Enterprises, Joint Venture

Approved Capital Outlay Budget: \$1.75 B

Status: 47% Complete as of December 2009

The SAS bridge is not just another suspension bridge. Rising 525 feet above mean sea level and embedded in rock, the single-tower SAS span is designed to withstand a massive earthquake. Traditional main cable suspension bridges have twin cables with smaller suspender cables connected to them. These cables hold up the roadbed and are anchored to the east end of the box girders. While there will appear to be two main cables on the SAS, there will actually only be one. This single cable will be anchored within the eastern end of the roadway, carried over the tower and then wrapped around the two side-by-side decks at the western end.

The single steel tower will be made up of four separate legs connected by shear link beams which function much like a fuse in an electrical circuit. These beams will absorb most of the impact from an earthquake, preventing damage to the tower legs.

The next several pages highlight the construction sequence of the SAS and are followed by detailed updates on specific construction activities.



Architectural Rendering of New Self-Anchored Suspension Span and Skyway

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### *Self-Anchored Suspension (SAS) Construction Sequence*

#### STEP 1 - CONSTRUCT TEMPORARY SUPPORT STRUCTURES

Temporary support structures will need to be erected from the Skyway to Yerba Buena Island to support the new SAS bridge during construction.

**Status:** Foundations for the temporary supports are complete. Support structures are now being installed from west to east.



#### STEP 2 - INSTALL ROADWAYS

The roadway boxes will be lifted into place by using the shear-leg crane barge. The boxes will be bolted and welded together atop the temporary support trusses to form two continuous parallel steel roadway boxes.

**Status:** The roadway box segments are being fabricated (see page 26 for more information). OBG lifts 1 though 4 eastbound and westbound were shipped on December 30, 2009.



#### STEP 3 - INSTALL TOWER

Each of the four legs of the tower will be erected in five separate lifts. The first lift will use the shear-leg crane barge while the remaining higher lifts will use a temporary support tower and lifting jacks.

**Status:** The first shipment of tower sections is being fabricated and is forecast for shipment in mid - 2010 (see page 26 for more information).



#### STEP 4 - MAIN CABLE AND SUSPENDER INSTALLATION

The main cable will be pulled from the east end of the SAS bridge, over the tower, and wrapped around the west end before returning back. Suspender cables will be added to lift the roadway decks off the temporary support structure.

**Status:** Cable installation is pending the erection of the tower and roadway spans. Shipment for the first half of the cables is forecast for January 2010.



#### STEP 5 - WESTBOUND OPENING

The new bridge will first open in the westbound direction pending completion of the Yerba Buena Island Transition Structures. Westbound access to the Skyway from Oakland will be completed by the Oakland Touchdown #1 contract in 2009.

**Status:** Westbound opening is forecast for the end of 2012.



#### STEP 6 - EASTBOUND OPENING

Opening of the bridge in the eastbound direction is pending completion of Oakland Touchdown #2. Westbound traffic will need to be routed off the existing bridge before the eastbound approach structure can be completed.

**Status:** Eastbound opening is forecast for third quarter 2013.



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### ***Self-Anchored Suspension (SAS) Superstructure Fabrication Activities***

Nearly every component of the SAS above the waterline—from the temporary support structures to the roadway and tower box sections to the main cable and suspender ropes—will be fabricated off-site and erected into place upon arrival in the Bay Area. This project is truly global in nature, with fabrication of the bridge components occurring not only in the United States but around the world—in China, the United Kingdom, Japan, South Korea and other locations.

#### ***Roadway and Tower Segments***

Like giant three-dimensional jigsaw puzzles, the roadway and tower segments of the SAS bridge are hollow steel shells that are internally strengthened and stiffened by a highly engineered network of welded steel ribs and diaphragms. The use of steel in this manner allows for a flexible yet relatively light and strong structure able to withstand the massive loads placed on the bridge during seismic events.

**Status:** The contractor has reported that fabrication of the steel tower and roadway boxes has fallen 15 months behind schedule due to the complexity of the design and fabrication.

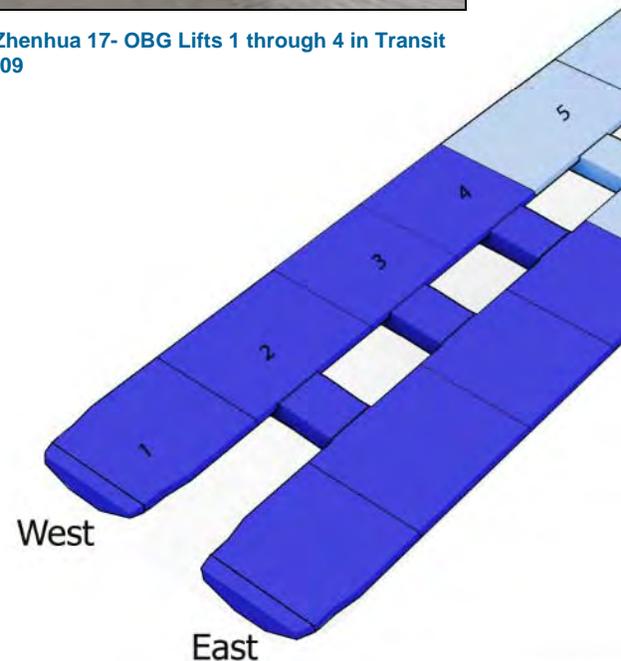
As shown in the diagram to the right, roadway segments 5 to 11 are in segment assembly or further along in the process, while segment 12 is in subassembly fabrication. Tower segments 1 to 4 are in various stages of fabrication. The first shipment of roadway boxes (segments 1 through 4) were shipped on December 30, 2009, while the first tower segments are expected this year.

All components have undergone a rigorous quality review by ZPMC, ABF, and Caltrans to ensure that only bridge components that have been built in accordance to the specifications will be shipped.

On the critical path to completing the bridge are the fabrication of the last two roadway sections (segments 13 and 14). Start of fabrication of these segments has fallen behind schedule due to delays in the fabrication drawing preparation process. The TBPOC has taken steps to ensure completion of the shop drawings by March 2010.



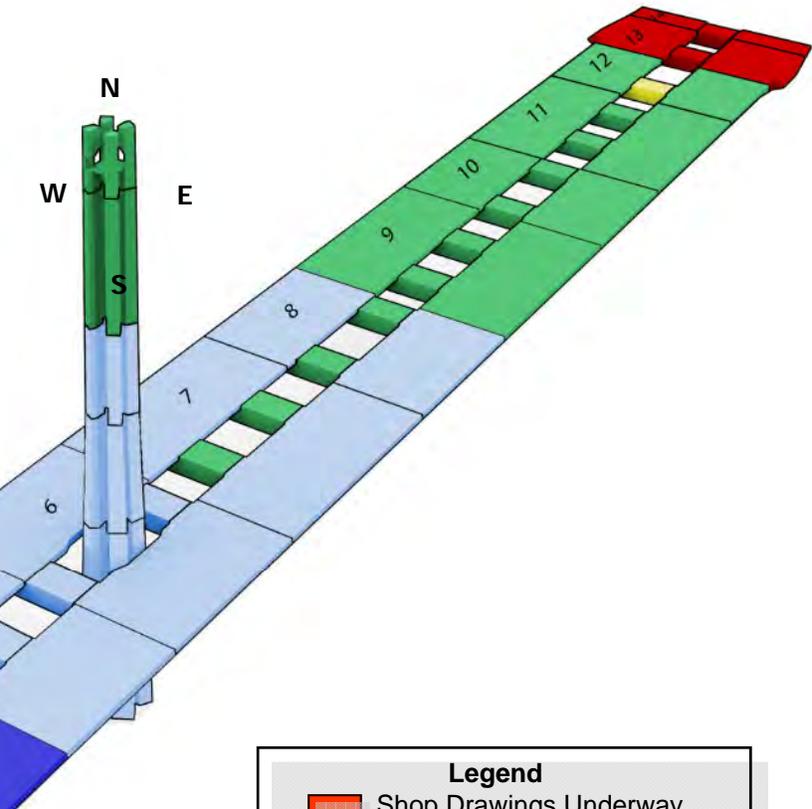
SAS Voyage #1 Zhenhua 17- OBG Lifts 1 through 4 in Transit  
December 30, 2009



These delays will likely preclude the westbound opening of the bridge in 2012, but we continue to push for full opening of the bridge in 2013 (see additional progress photos on pages 76 through 79).

# Fabrication Progress Diagram

Through December 31, 2009



**Legend**

- Shop Drawings Underway
- Sub-Assemblies Fabrication
- Segment Assembly
- Blast, Paint & Fit Up
- Ready To Ship/In Transit
- On Site/In Place

**Through December 31, 2009**



SAS Tower Lift1 East and West Shaft Placed onto the Base Plate during Trial Assembly on the Heavy Duty Dock



SAS Departure of OBG 1 through 4 East and West



SAS OBG Lifts 1-4 East and West Loaded on Ship

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### *Self-Anchored Suspension (SAS) Superstructure Fabrication Activities (cont.)*

#### **Cables and Suspenders**

One continuous main cable will be used to support the roadway deck of the SAS bridge. Anchored into the eastern end of the bridge, the main cable will start on the east end of the box girder, go over the main tower at T1, loop around the western end of the roadway decks at Pier W2, and then go back over the main tower to the eastern end of the box girder. The main cable will be made up of bundles of individual wire strands. Supporting the roadway decks to the main cable will be a number of smaller suspender cables. The main cable will be fabricated in China and the suspender cables in Missouri, USA.

**Status:** Initial trial testing of the main cable strands was performed in September 2009. The first half of the cable shipment is anticipated in January 2010.



SAS Cable Separator



SAS E2 Bearing Assembly

#### **Saddles, Bearings, Hinges, and Other Bridge Components**

The mounts on which the main cable and suspender ropes will sit are made from solid steel castings. Castings for the main cable saddles are being made by Japan Steel Works, while the cable bands and brackets are being made by Goodwin Steel in the United Kingdom.

The bridge bearings and hinges that support, connect, and transfer loads from the self-anchored suspension (SAS) span to the adjoining sections of the new east span are being fabricated in a number of locations. Work on the bearings is being performed in Pennsylvania, USA and Hochang, South Korea, while hinge pipe beams are being fabricated in Oregon, USA.

**Status:** The cable saddles and hinges at the W2 cap beam and YBITS are under fabrication. The hinges in between the Skyway and Oakland Touchdown have been installed.

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### ***Self-Anchored Suspension (SAS) Superstructure Field Activities***



Shear-Leg Barge Crane

#### ***Shear-Leg Barge Crane***

The massive shear-leg barge crane that is helping to build the SAS superstructure arrived in the San Francisco Bay on March 12, 2009 after a trans-Pacific voyage.

The crane and barge are separate units operating as a single entity dubbed the “Left Coast Lifter.” The 400-by-100-foot barge is a U.S. flagged vessel that was custom built in Portland, Oregon by U.S. Barge, LLC and outfitted with the crane by Shanghai Zhenhua Heavy Industry Co. Ltd. (ZPMC) at a facility near Shanghai, China. The crane’s boom weighs 992 tons and is 328 feet long. The crane can lift up to 1,873 tons, including the deck and tower sections for the SAS.

The crane has off-loaded all temporary structures shipped to date and has lifted 85 percent of the temporary structures into place. Work on the eastbound side of the SAS must occur first, as the crane cannot reach over permanent westbound decks to work on the eastbound roadway.

**Status:** The shear-leg crane arrived at the jobsite March 2009



SAS View from East of E2

#### ***Cap Beams***

Construction of the massive steel-reinforced concrete cap beams that link the columns at piers W2 and E2 was left to the SAS superstructure contractor and represents the only concrete portions of work on that contract. The east and west ends of the SAS roadway will rest on the cap beams and the main cable will wrap around Pier W2, while anchoring into the east end of the SAS deck sections near E2.

**Status:** Completed March 2009

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### **Self-Anchored Suspension (SAS) Superstructure Field Activities**

#### **Temporary Support Structures**

To erect the roadway decks and tower of the bridge, temporary support structures will first be put in place. Almost a bridge in itself, the temporary support structures will stretch from the end of the completed Skyway back to Yerba Buena Island. For the tower, a strand jack system is being built into the tower's temporary frame to elevate the upper sections of the tower into place. These temporary supports are being fabricated in the Bay Area, as well as in Oregon and in China at ZPMC.

**Status:** The temporary support foundations and six temporary towers have been completed. 85 percent of the temporary structures are in place.

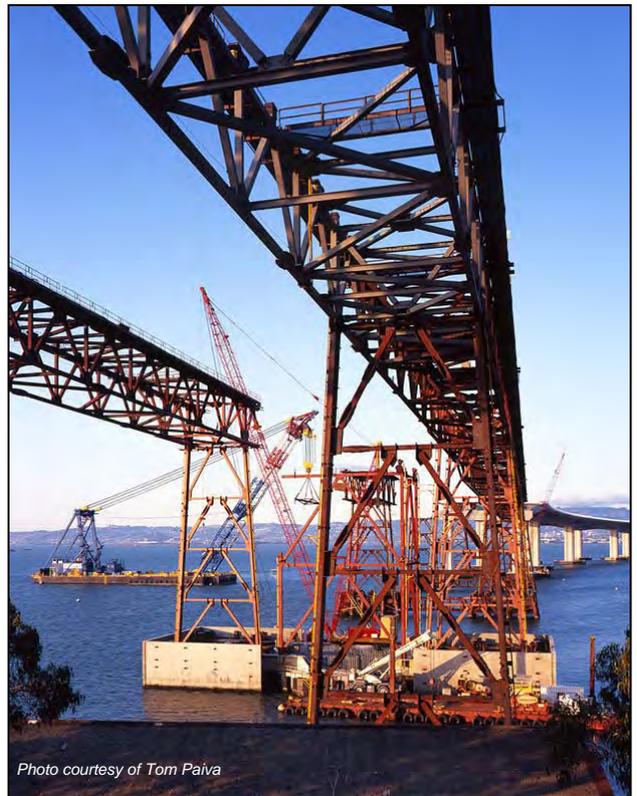
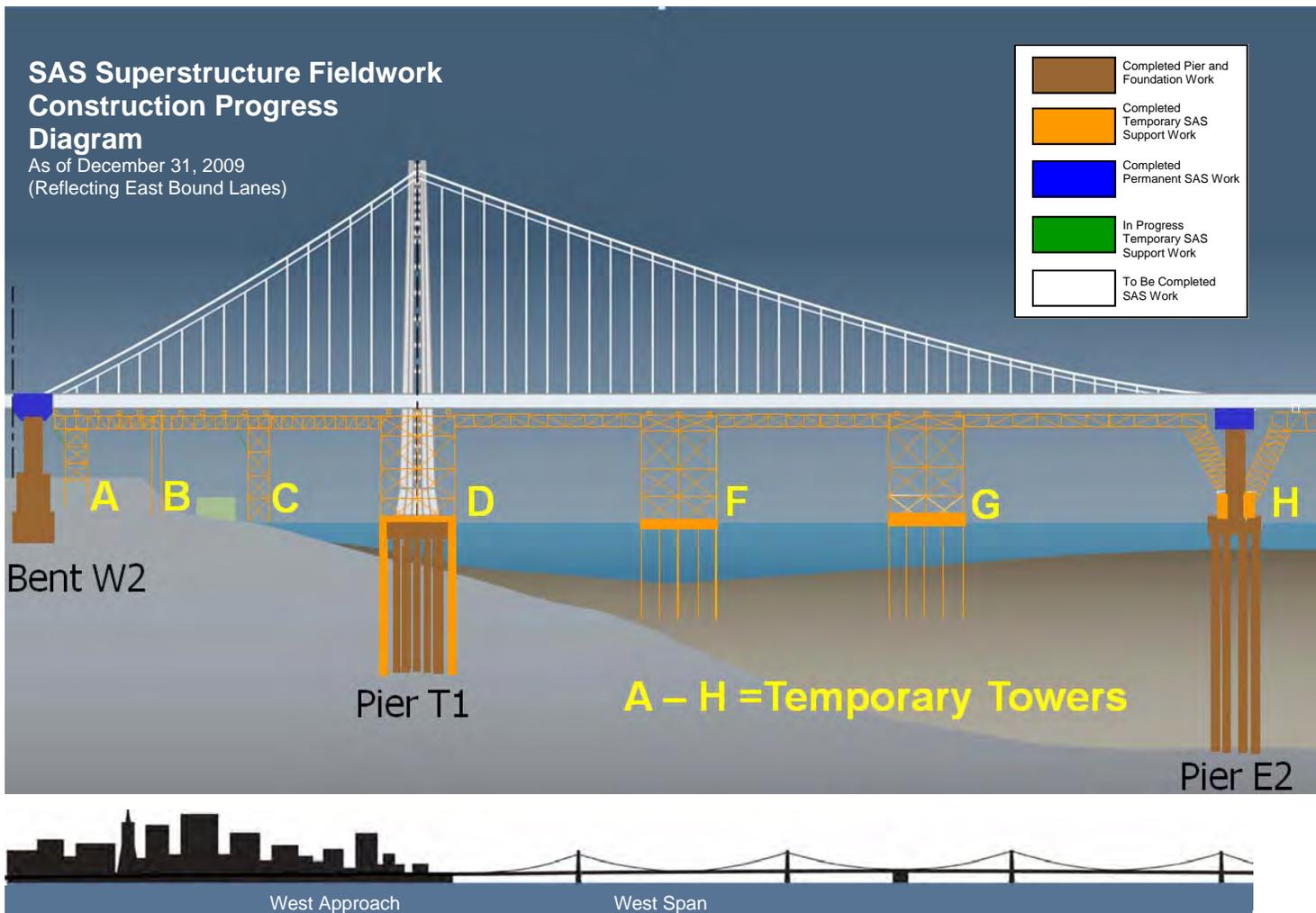


Photo courtesy of Tom Paiva

SAS Eastbound and Westbound





SAS Westbound and Eastbound Temporary Structures, T1 Erection Tower Framing and Trestle



SAS Temporary Support Structures and Existing East Span

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Skyway

The Skyway, which comprises much of the new East Span, will drastically change the appearance of the Bay Bridge. Replacing the gray steel that currently cages drivers, a graceful, elevated roadway supported by piers will provide sweeping views of the bay.

#### **E Skyway Contract**

**Contractor:** Kiewit/FCI/Manson, Joint Venture

**Approved Capital Outlay Budget:** \$1,254.1 M

**Status:** Completed March 2008

Extending for more than a mile across Oakland mudflats, the Skyway is the longest section of the East Span. It sits between the new Self-Anchored Suspension (SAS) span and the Oakland Touchdown. In addition to incorporating the latest seismic-safety technology, the side-by-side roadway decks of the Skyway feature shoulders and lane widths built to modern standards.

The Skyway's decks are composed of 452 pre-cast concrete segments (standing three stories high), containing approximately 200 million pounds of structural steel, 120 million pounds of reinforcing steel, 200 thousand linear feet of piling and about 450 thousand cubic yards of concrete. These are the largest segments of their kind ever cast and were lifted into place by custom-made winches.

The Skyway marine foundation consists of 160 hollow steel pipe piles measuring eight feet in diameter and dispersed among 14 sets of piers. The 365-ton piles were driven more than 300 feet into the deep bay mud. The new East Span piles were battered or driven in at an angle, rather than vertically, to obtain maximum strength and resistance.

Designed specifically to move during a major earthquake, the Skyway features several state-of-the-art seismic safety innovations, including 60-foot-long hinge pipe beams. These beams will allow deck segments on the Skyway to move, enabling the deck to withstand greater motion and to absorb more earthquake energy.



Completed Skyway Left of Existing East Span



Western End of Completed Skyway



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Oakland Touchdown

When completed, the Oakland Touchdown (OTD) structures will connect Interstate 80 in Oakland to the new side-by-side decks of the new East Span. For westbound drivers, the OTD will be their introduction to the graceful new East Span. For eastbound drivers from San Francisco, this section of the bridge will carry them from the Skyway to the East Bay, offering unobstructed views of the Oakland hills.

The OTD will be constructed through two contracts. The first contract will build the new westbound lanes, as well as part of the eastbound lanes. The second contract to complete the eastbound lanes cannot fully begin until westbound traffic is shifted onto the new bridge. This enables a portion of the upper deck of the existing bridge to be demolished allowing for a smooth transition for the new eastbound lanes in Oakland.

#### F Oakland Touchdown #1 Contract

Contractor: MCM Construction, Inc.  
Current Capital Outlay Forecast: \$210.4 M  
Status: 89% Complete as of December 2009

The OTD #1 contract constructs the entire 1,000-foot-long westbound approach from the toll plaza to the Skyway. When completed, the westbound approach structure will provide direct access to the westbound Skyway. In the eastbound direction, the contract will construct a portion of the eastbound structure and all of the eastbound foundations that are not in conflict with the existing bridge.

**Status:** On the westbound structure, the contractor has completed all work and is completing the eastbound superstructure work. The contractor, MCM, re-established temporary construction access to the Skyway structure over the new westbound Oakland Touchdown on August 4.

#### G Oakland Touchdown #2 Contract

Contractor: TBD  
Current Capital Outlay Forecast: \$57.0 M  
Status: In design

The OTD #2 contract will complete the eastbound approach structure from the end of the Skyway to Oakland. This work is critical to the eastbound opening of the new bridge, but cannot be completed until westbound traffic has been shifted off the existing upper deck to the new SAS bridge.



Oakland Touchdown Progress

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### San Francisco-Oakland Bay Bridge East Span Replacement Project Other Contracts

A number of contracts needed to relocate utilities, clear areas of archeological artifacts, and prepare areas for future work have already been completed. The last major contract will be the eventual demolition and removal of the existing bridge, which by that time will have served the Bay Area for nearly 80 years. Following is a status of some of the other East Span contracts.



Archeological Investigations

### East Span Interim Seismic Retrofit

Contractors: 1) California Engineering Contractors  
2) Balfour Beatty

Approved Capital Outlay Budget: \$30.8 M

Status: Completed October 2000

After the 1989 Loma Prieta Earthquake, and before the final retrofit strategy was determined for the East Span, Caltrans completed an interim retrofit of the existing bridge to prevent a catastrophic collapse of the bridge should a similar earthquake occur before the East Span was completely replaced. The interim retrofit was performed under two separate contracts that lengthened pier seats, added some structural members, and strengthened areas of the bridge so they would be more resilient during an earthquake.



Existing East Span of Bay Bridge

### Stormwater Treatment Measures

Contractor: Diablo Construction, Inc.

Approved Capital Outlay Budget: \$18.3 M

Status: Completed December 2008

The Stormwater Treatment Measures contract implemented a number of best practices for the management and treatment of stormwater runoff. Focused on the areas around and approaching the toll plaza, the contract added new drainage and built new bio-retention swales and other related constructs.



Stormwater Retention Basin



## Yerba Buena Island Substation

Contractor: West Bay Builders  
 Approved Capital Outlay Budget: \$11.6 M  
 Status: Completed May 2005

This contract relocated an electrical substation just east of the Yerba Buena Island Tunnel in preparation for the new East Span.

## Pile Installation Demonstration

Contractor: Manson and Dutra, Joint Venture  
 Approved Capital Outlay Budget: \$9.2 M  
 Status: Completed December 2000

While common in offshore drilling, the new East Span is one of the first bridges to use large-diameter battered piles in its foundations. To minimize project risks and build industry knowledge, a pile installation demonstration project was initiated to prove the efficacy of the proposed technology and methodology. The demonstration was highly successful and helped result in zero contract change orders or claims for pile driving on the project.

## H Existing Bridge Demolition

Contractor: TBD  
 Approved Capital Outlay Budget: \$239.1 M  
 Status: In Design

Design work on the contract will start in earnest as the opening of the new bridge to traffic approaches.



New YBI Electrical Substation

## I Electrical Cable Relocation

Contractor: Manson Construction  
 Approved Capital Outlay Budget: \$9.6 M  
 Status: Completed January 2008

A submerged cable from Oakland that is close to where the new bridge will touch down supplies electrical power to Treasure Island. To avoid any possible damage to the cable during construction, two new replacement cables were run from Oakland to Treasure Island. The extra cable was funded by the Treasure Island Development Authority and its future development plans.

## Quarterly Environmental Compliance Highlights



Peregrine Falcon

Overall environmental compliance for the SFOBB East Span project has been a success. All weekly, monthly and annual compliance reports to resource agencies have been delivered on time. There are no comments from receiving agencies. The tasks for the current quarters are focused on mitigation monitoring. Key successes in this quarter are as follows:

- Bird monitoring was conducted weekly in the active construction areas. Monitors did not observe any indication that birds were disturbed due to the East Span construction activities.
- Peregrine falcon monitoring for the 2009/2010 nesting season began on December 4 and will be conducted weekly until observations indicate that the monitoring frequency should be changed.
- Environmental compliance and storm water pollution prevention plan (SWPPP) inspections were conducted weekly at all active project sites. Environmental permit compliance staff continues to work closely with the California Department of Transportation (Department) construction and contractor to ensure compliance with environmental permits and regulations and improve SWPPP and best management practices.
- On October 1, 2009, the Department submitted the Final Hydroacoustic Monitoring Plan for the Driving of Temporary Access Trestle Piles for the Self-Anchored Suspension Span to the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA-Fisheries) and California Department of Fish and Game (CDFG). This plan was submitted in accordance with the NOAA-Fisheries Supplemental Biological Opinion and Conference Opinion of the San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project.
- On October 7, 2009, the San Francisco Bay Conservation and Development Commission (BCDC) issued Amendment No. 25 to Permit No. 8-01 for construction of a temporary access trestle as part of the Self-Anchored Suspension Span (SAS) portion of the SFOBB Project.
- On October 14, 2009 the CDFG issued Minor Amendment No. 1 to the SFOBB East Span Seismic Safety Project, Incidental Take Permit No. 2081-2001-021-03, in accordance with section 783.6 (c) of the California Code of Regulations. The Minor Amendment extends the expiration date of the Permit to June 30, 2018 and includes longfin smelt as a Covered Species.
- During October 22 – November 5, 2009, hydroacoustic, bird predation, and marine mammal monitoring was conducted during pile driving for a SAS T1 temporary access trestle.
- During October 16 – November 9, 2009, a bay wide eelgrass survey was conducted to update the previous survey that was completed in 2003.
- On December 30, 2009, the Department submitted the Vegetation Monitoring Report for the SFOBB East Span Seismic Safety Project, Post Construction Stormwater Treatment Project, Emeryville Crescent Habitat Mitigation Site to BCDC. The Vegetation Monitoring Report was submitted pursuant to BCDC Permit No. 8-01, Amendment No. 18, Section II.W.4.



Canadian Geese and Chicks at Emeryville Crescent



Oakland Touchdown #1 Shore Rock Protection



Storm water Pollution Prevention



San Francisco Oakland Bay Bridge Eelgrass

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Other Completed Projects

In the 1990s, the State Legislature identified seven of the nine state-owned toll bridges for seismic retrofit. In addition to the San Francisco-Oakland Bay Bridge, these included the Benicia-Martinez, Carquinez, Richmond-San Rafael and San Mateo-Hayward bridges in the Bay Area, and the Vincent Thomas and Coronado bridges in Southern California. Other than the East Span of the Bay Bridge, the retrofits of all of the bridges have been completed as planned.

#### San Mateo-Hayward Bridge Seismic Retrofit Project

**Project Status: Completed 2000**

The San Mateo-Hayward Bridge seismic retrofit project focused on strengthening the high-rise portion of the span. The foundations of the bridge were significantly upgraded with additional piles.



High-Rise Section of San Mateo-Hayward Bridge

#### 1958 Carquinez Bridge Seismic Retrofit Project

**Project Status: Completed 2002**

The eastbound 1958 Carquinez Bridge was retrofitted in 2002 with additional reinforcement of the cantilever thru-truss structure.

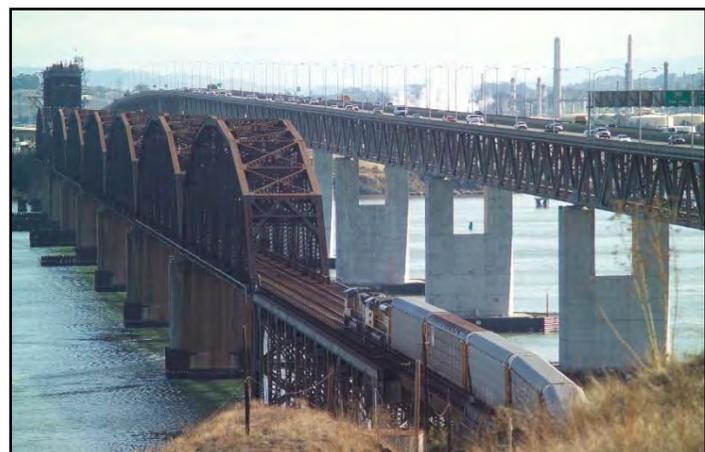


1958 Carquinez Bridge (foreground) with the 1927 Span (middle) under Demolition and the New Alfred Zampa Memorial Bridge (background)

#### 1962 Benicia-Martinez Bridge Seismic Retrofit Project

**Project Status: Completed 2003**

The southbound 1962 Benicia-Martinez Bridge was retrofitted to “Lifeline” status with the strengthening of the foundations and columns and the addition of seismic bearings that allow the bridge to move during a major seismic event. The Lifeline status means the bridge is designed to sustain minor to moderate damage after an event and to reopen quickly to emergency response traffic.



1962 Benicia-Martinez Bridge (right)

## Richmond-San Rafael Bridge Seismic Retrofit Project

**Project Status: Completed 2005**

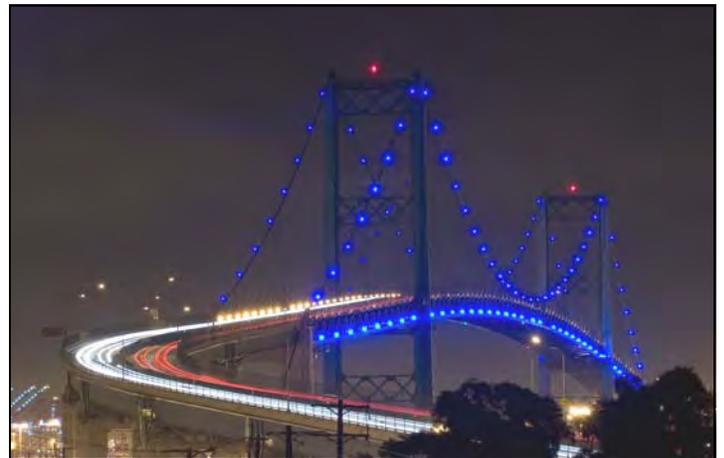
The Richmond-San Rafael Bridge was retrofitted to a “No Collapse” classification to avoid catastrophic failure during a major seismic event. The foundations, columns, and truss of the bridge were strengthened, and the entire low-rise approach viaduct from Marin County was replaced.



Richmond-San Rafael Bridge

## Los Angeles-Vincent Thomas Bridge Seismic Retrofit Project

**Project Status: Completed 2000**



Los Angeles-Vincent Thomas Bridge

## San Diego-Coronado Bridge Seismic Retrofit Project

**Project Status: Completed 2002**



San Diego-Coronado Bridge

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Risk Management Program Update

#### POTENTIAL DRAW ON PROGRAM RESERVE (PROGRAM CONTINGENCY)

Assembly Bill (AB) 144 states that Caltrans must “regularly reassess its reserves for potential claims and unknown risks, incorporating information related to risks identified and quantified through its risk assessment processes.” AB 144 set a \$900 million Program Reserve (also referred to as the Program Contingency). The Program Contingency is currently at \$758.3 million, according to the TBPOC Approved Budget.

The risk management process calculates the potential draw on Program Contingency each quarter based on the total of all risks and the contingencies remaining from the contracts.

Each contract in design has an assigned contingency allowance. A contract in construction has a remaining contingency, which is the difference between its budget

and the sum of bid items, state furnished materials, contract change orders and remaining supplemental work. Capital outlay support has no identified contingency allowance. The total of the contingencies is the amount that is available to cover the risks of all contracts, program-level risks (the risks not assigned to a particular contract), and capital outlay support risks. The amount by which the sum of all risks exceeds the total of all contingencies represents a potential draw on the Program Contingency (Reserve).

The risk management process calculates the potential draw on program contingency each quarter, and compares it to the current balance in the Program Contingency. Total risks did not increase from the previous quarter. The fourth quarter 2009 potential draw curve, excluding any potential out-of-scope program risks, is shown in Figure 1.

As of the end of the fourth quarter 2009, the 50 percent probable draw on Program Contingency is \$701

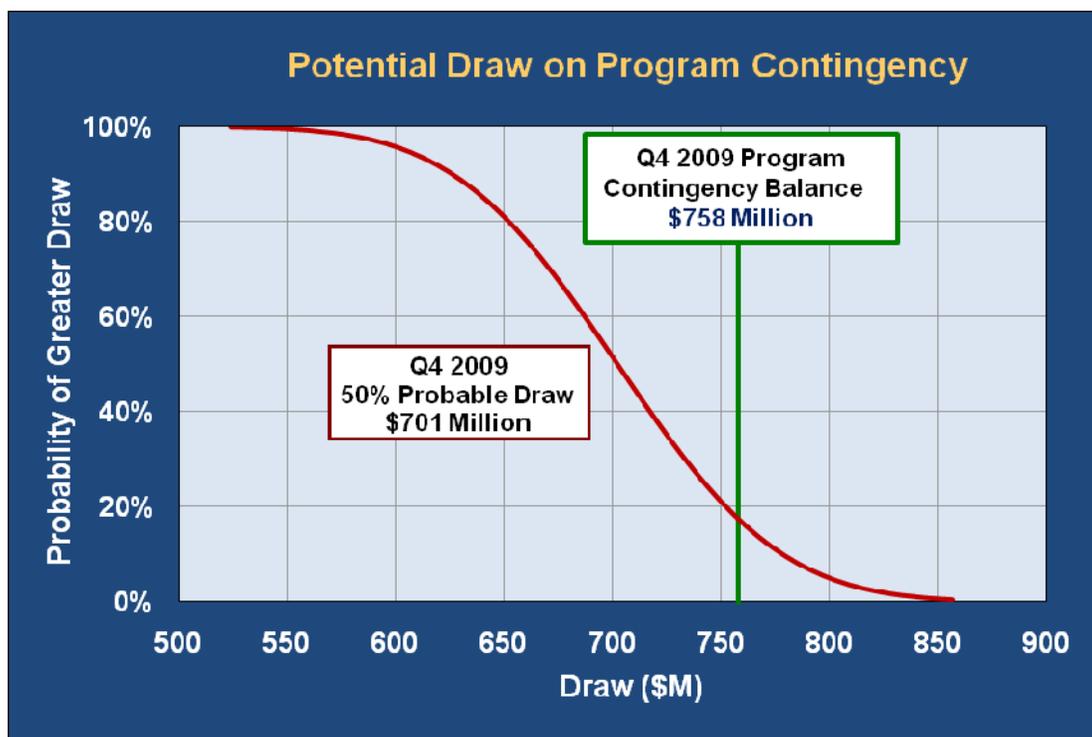


FIGURE 1 – POTENTIAL DRAW ON PROGRAM CONTINGENCY

**Note:** The Program Contingency funds could be used for other beneficial purposes than to cover risks. The potential draw chart should not be construed as a forecast of the future balance of Program Contingency funds.

million. The potential draw ranges from about \$550 million to \$850 million.

The \$758 million Program Contingency balance is 80 percent probable to be sufficient to cover the identified risks, a significant increase in confidence from the previous quarter. This change illustrates the significant effect that contract bids lower than the estimate can have on the potential draw.

Risk mitigation actions are continuously developed and implemented to reduce the potential draw on the Program Contingency.

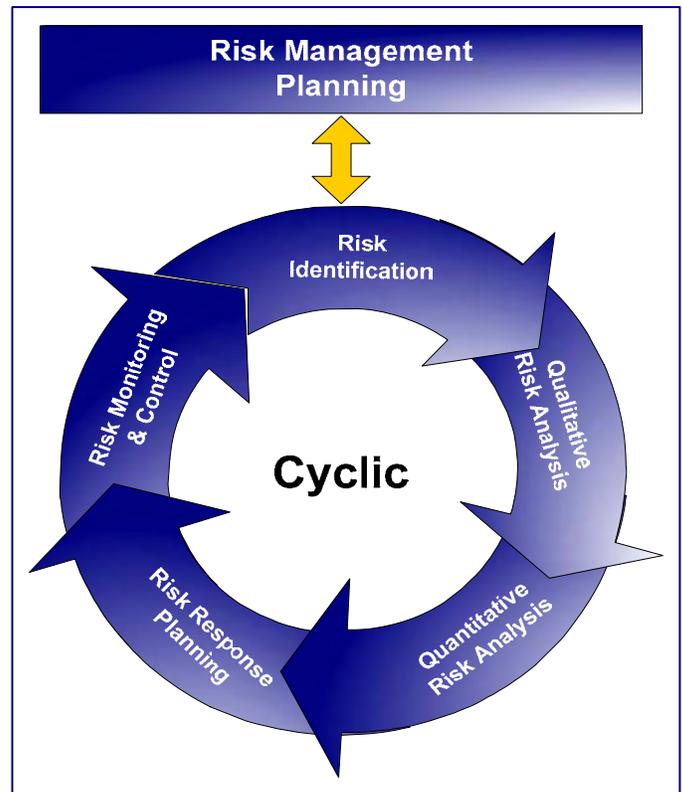
## RISK MANAGEMENT DEVELOPMENTS

### SAS Contract

The SAS contractor's December 2009 schedule update indicates that the project as a whole is potentially about 11 months behind schedule from the revised contract dates. The TBPOC and Caltrans, in cooperation with the SAS contractor, are continuously assessing and implementing measures to recover potential lost time in the schedule.

The TBPOC approved incentive and disincentive provisions that are proving successful in expediting approved working drawing delivery as well as expediting the Orthotropic Box Girder (OBG) and Tower steel delivery. Working drawings for the East End of OBG Lifts 12 – 14 are progressing well, but remain a critical operation for the project. Working drawing production has been incentivized and working drawings are expected to be "Approved" or "Approved as Noted" by March 2010. The incentives and the placement of key personnel by Caltrans onto this item of work have facilitated getting this challenging issue under control. The TBPOC also approved incentive and disincentive provisions associated with the first and third permanent steel shipments. These provisions have resulted in the first shipment of permanent works departing from the fabrication facility this quarter. This shipment is expected to arrive at the jobsite before the end of January.

Caltrans and the SAS contractor continue to work together to develop and implement a joint planning



schedule. The schedule is continuously assessed to identify future opportunities and actions to mitigate schedule risk. Team China continues to work to mitigate deck and tower fabrication challenges reported in the SAS contractor's latest schedule update. Potential actions include the implementation of complex "mock-up" construction as well as the assessment of additional shop space, should the opportunity arise. Work could proceed in multiple shifts to expedite fabrication.

The Corridor Schedule Team (CST) continues to assess the SAS and other contract schedules. The CST developed an intermediate-level critical path method schedule for the corridor to evaluate schedule risks. This corridor schedule is a summarization of the contract schedules submitted by the various contractors and schedules developed by Caltrans for the contracts in design.

During development and updating of the corridor schedule, the CST and Risk Management Team incorporated several recovery opportunities and other assumptions into the SAS schedule. Most of the recovery opportunities are in the construction phase of the SAS contract and allow for re-sequencing certain

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Risk Management Program Update (cont.)

work activities to better reflect concurrent work and redefine phase completion requirements.

An important aspect of this schedule and of all schedules for large projects is that there may be multiple critical paths on a project. Focusing on the most critical path, while important, may divert attention from other near-critical paths. The CST continues to assess risk mitigation strategies and opportunities accordingly.

#### YBITS #1 Contract

The YBITS #1 bids were opened on December 15, 2009. All three bids were well below the engineer's estimate, realizing potential savings identified in a cost risk analysis performed last quarter. The savings are now realized and have increased the funds in Program Contingency, resulting in an improved potential draw outlook.



SAS Voyage 1 OBG Lifts 1- 4 East and West Loaded and Ready to Ship

## RISK MANAGEMENT LOOK AHEAD

### SAS Contract

Forecasting shipment dates continues to be challenging. Although the first OBG shipment has departed the fabrication facility, subsequent shipment dates remain uncertain. The uncertainty should reduce with each shipment as the teams lessons learned are applied to managing the fabrication processes.

The SAS contractor is still contemplating rearranging OBG and Tower lifts among shipments to deliver the bridge components to the jobsite as soon as possible. Also under consideration: adding additional shipments to allow OBG and Tower sections to be delivered without having to wait for other sections to be completed.

Project management will engage the contractor to jointly develop a schedule for the remaining portion of the project. The joint schedule should identify and address specific actions that can be taken to facilitate schedule recovery. This schedule can be used as a planning tool to identify risks and their potential impacts to the bridge opening. For example, Caltrans will work with the contractor to identify ways of rearranging the OBG and tower lifts among shipments to help mitigate project delays.

The TBPOC and Caltrans, in cooperation with the SAS contractor, will continue to assess implementation of incentive and disincentive provisions in order to expedite project completion.



SAS Westbound Temporary Structure and Historical Torpedo Room below

Photo courtesy of Tom Paiva

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Program Funding Status

AB 144 established a funding level of \$8.685 billion for the TBSRP. The bill specifies program funding sources as shown in *Table 1-Program Budget*.

Table 1—Program Budget  
as of December 31, 2009 (\$ Millions)

	Budgeted	Funding Available & Contributions
<b>Financing</b>		
Seismic Surcharge Revenue AB 1171	2,282.0	2,282.0
Seismic Surcharge Revenue AB 144	2,150.0	2,150.0
BATA Consolidation	820.0	820.0
<b>Subtotal - Financing</b>	<b>5,252.0</b>	<b>5,252.0</b>
<b>Contributions</b>		
Proposition 192	790.0	789.0
San Diego Coronado Toll Bridge Revenue Fund	33.0	33.0
Vincent Thomas Bridge	15.0	6.9
State Highway Account <sup>(1)(2)</sup>	745.0	745.0
Public Transportation Account <sup>(1)(3)</sup>	130.0	130.0
ITIP/SHOPP/Federal Contingency	448.0	100.0
Federal Highway Bridge Replacement and Rehabilitation (HBRR)	642.0	642.0
SHA - East Span Demolition	300.0	-
SHA - "Efficiency Savings" <sup>(4)</sup>	130.0	10.0
Redirect Spillover	125.0	125.0
Motor Vehicle Account	75.0	75.0
<b>Subtotal - Contributions</b>	<b>3,433.0</b>	<b>2,655.9</b>
<b>Total Funding</b>	<b>8,685.0</b>	<b>7,907.9</b>
<b>Encumbered to Date</b>		<b>7,168.1</b>
<b>Remaining Unallocated</b>		<b>739.8</b>
<b>Expenditures:</b>		
Capital Outlay		<b>4,846.1</b>
State Operations		<b>1,289.9</b>
Total Expenditures		<b>6,136.0</b>
<b>Encumbrances:</b>		
Capital Outlay		<b>1,024.3</b>
State Operations		<b>7.7</b>
Total Encumbrances		<b>1,032.0</b>
<b>Total Expenditures and Encumbrances</b>		<b>7,168.0</b>
<p><sup>(1)</sup> The California Transportation Commission adopted a new schedule and changed the PTA/SHA split on December 15, 2005.</p> <p><sup>(2)</sup> To date, \$645 million has been transferred from the SHA to the TBSRP, including the full \$290 million transfer scheduled by the CTC to occur in 2005-06. An additional \$100 million has been expended directly from the account.</p> <p><sup>(3)</sup> To date, \$130 million has been transferred from the PTA to the TBSRP, including the full amount of all transfers scheduled by the CTC.</p> <p><sup>(4)</sup> To date, \$10 million has been transferred from the SHA to the TBSRP, representing the commitment of "Efficiency Savings" identified under AB 144. Approximately \$120 million remains to be distributed as scheduled by the CTC.</p>		
<b>Notes:</b>		
Program budget includes \$900 million program contingency.		

## Summary of the Toll Bridge Oversight Committee (TBPOC) Expenses

Pursuant to Streets and Highways Code Section 30952.1 (d), expenses incurred by Caltrans, BATA, and the California Transportation Commission (CTC) for costs directly related to the duties associated with the TBPOC are to be reimbursed by toll revenues. *Table 3-Toll Bridge Program Oversight Committee Estimated Expenses: July 1, 2005 through December 31, 2009* shows expenses through December 31, 2009 for TBPOC functioning, support, and monthly and quarterly reporting.

**Table 2—CTC Toll Bridge Seismic Retrofit Program Contributions Adopted December 2005**  
Schedule of Contributions to the Toll Bridge Seismic Retrofit Program (\$ Millions)

Source	Description	2005-06 (Actual)	2006-07 (Actual)	2007-08 (Actual)	2008-09 (Actual)	2009-10 (Actual)	2010-11	2011-12	2012-13	2013-14	Total
AB 1171	SHA	290									290
	PTA	80	40								120
	Highway Bridge Replacement and Rehabilitation (HBRR)	100	100	100	42						342
	Contingency				1	99	100	100	148		448
AB 144	SHA*	2	8				53	50	17		130
	Motor Vehicle Account (MVA)	75									75
	Spillover		125								125
	SHA**									300	300
	<b>Total</b>	<b>547</b>	<b>273</b>	<b>100</b>	<b>43</b>	<b>99</b>	<b>153</b>	<b>150</b>	<b>165</b>	<b>300</b>	<b>1830</b>

\* Caltrans Efficiency Savings

\*\* SFOBB East Span Demolition Cost

**Table 3—Toll Bridge Program Oversight Committee**  
Estimated Expenses: July 1, 2005 through December 31, 2009  
(\$ Millions)

Agency/Program Activity	Expenses
<b>BATA</b>	0.8
<b>Caltrans</b>	1.8
<b>CTC</b>	1.2
<b>Reporting</b>	3.4
<b>Total Program</b>	<b>7.2</b>





Antioch Bridge

# Seismic Retrofit of the Dumbarton and Antioch Bridges

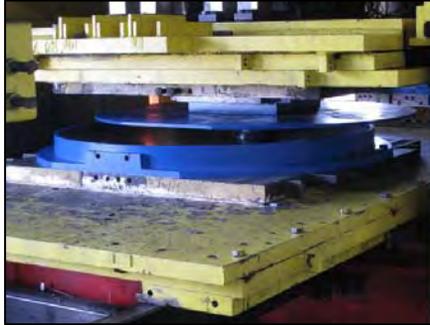
## SEISMIC RETROFIT OF DUMBARTON AND ANTIOCH BRIDGES

### Dumbarton Bridge Seismic Retrofit Project

**Project Status: Advertised**

The Dumbarton Bridge was opened to traffic in 1982, linking the cities of Newark in Alameda County and East Palo Alto in San Mateo County. The 1.6-mile-long bridge carries average daily traffic of nearly 60,000 vehicles over its six lanes and has an eight-foot bicycle/pedestrian lane to the south.

Though located between the San Andreas and Hayward faults, the Dumbarton Bridge was not included in the Toll Bridge Seismic Retrofit Program based on evaluations made in the 1990s that concluded the bridge did not warrant retrofitting. The bridge has since been re-evaluated for seismic vulnerability based on more recent seismic engineering, which has shown the bridge to be susceptible to damage from a major earthquake.



Dumbarton Prototype Bearing Test at Earthquake Protection Systems (EPS)



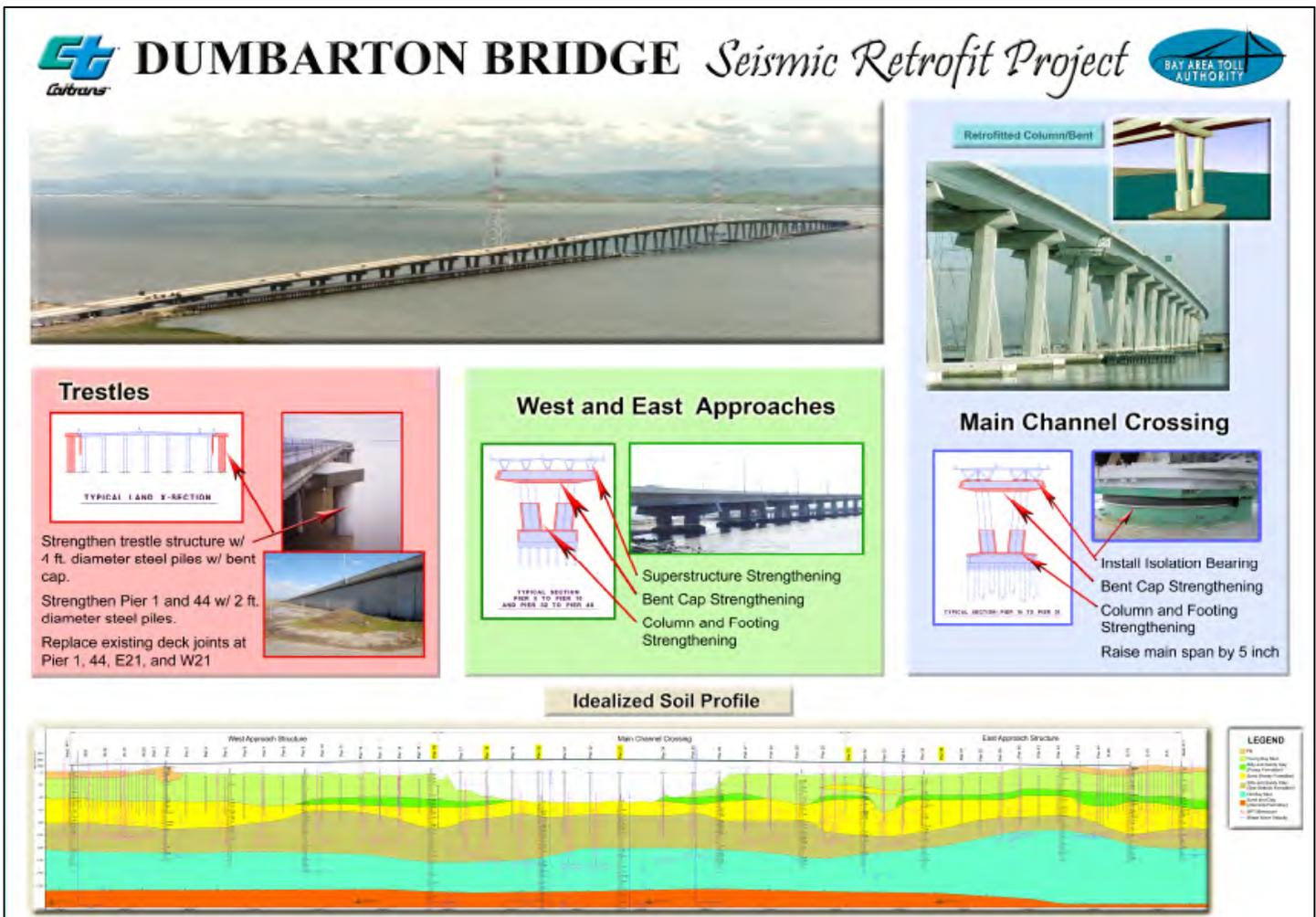
Existing Dumbarton Bridge Looking East toward the Alameda County Foothills

Based on the vulnerability studies and a follow-up sensitivity analysis of seismic risk, Caltrans and BATA decided to take steps towards retrofitting the Dumbarton Bridge, even though full funding for the project has not yet been identified. Using BATA toll bridge rehabilitation funding, a comprehensive seismic analysis of the bridge has commenced. This includes detailed geotechnical and geophysical investigations at the bridge and development of a seismic retrofit strategy and design plans.

The current retrofit strategy for the Dumbarton Bridge includes superstructure and deck modifications, as well as strengthening the over land approach slab structures. Additional activities are identified in the attached diagram. The results of the seismic analysis and proposed retrofit strategy have been presented to the Toll Bridge Seismic Safety Peer Review Panel.

**Status:** On October 11, 2009, Governor Schwarzenegger approved Assembly Bill 1175 that added the Dumbarton and Antioch Bridges to the Toll Bridge Seismic Retrofit Program. BATA has now initiated efforts to raise tolls on the seven state-owned toll bridges in the Bay Area to, in part, fund the seismic retrofit of the Dumbarton and Antioch bridges.

BATA has already funded design plans for both bridge projects in anticipation of the projects being advertised in early 2010. The total estimated cost of these retrofits has been recently revised from \$950 million to \$750 million as project plans have been refined with reduced scope, minimizing cost risks. In the future, the project progress report will be updated to better reflect the incorporation of these two projects into the Toll Bridge Seismic Retrofit Program.



Seismic Retrofit Strategy Summary for Dumbarton Bridge

## SEISMIC RETROFIT OF DUMBARTON AND ANTIOCH BRIDGES

### Antioch Bridge Seismic Retrofit Project

#### Project Status: **Advertised**

Serving the Delta region of the Bay Area, the Antioch Bridge takes State Route 160 traffic over the San Joaquin River, linking eastern Contra Costa County with Sacramento County. The current bridge was opened in 1978 with one lane in each direction and carries an average of more than 10,000 vehicles a day. Approximately 1.8 miles long, the bridge is a steel girder support roadway on reinforced concrete columns and foundations.

Like the Dumbarton Bridge, the Antioch bridge was not included in the Toll Bridge Seismic Retrofit Program based on evaluations made in the 1990s that concluded that the bridge did not warrant retrofitting. The Antioch Bridge has since been re-evaluated for seismic vulnerability based on more recent seismic engineering, which has shown the bridge to be susceptible to damage from a major earthquake.

Based on the vulnerability studies and a follow-up sensitivity analysis of seismic risk, Caltrans and BATA decided to take steps toward retrofitting the Antioch Bridge, even though full funding for the project has not yet been identified. Using BATA toll bridge rehabilitation funding, a comprehensive seismic analysis of the bridge has commenced. This analysis includes detailed geotechnical and geophysical investigation at the bridge and the development of a seismic retrofit strategy and design plans.

The current retrofit strategy for the Antioch Bridge includes relatively minor modifications to the approach structure on Sherman Island, the addition of isolation bearings, strengthening of the columns, and hinge retrofits. The results of the seismic analysis and proposed retrofit strategy have been presented to the Toll Bridge Seismic Safety Peer Review Panel.



Antioch Bridge

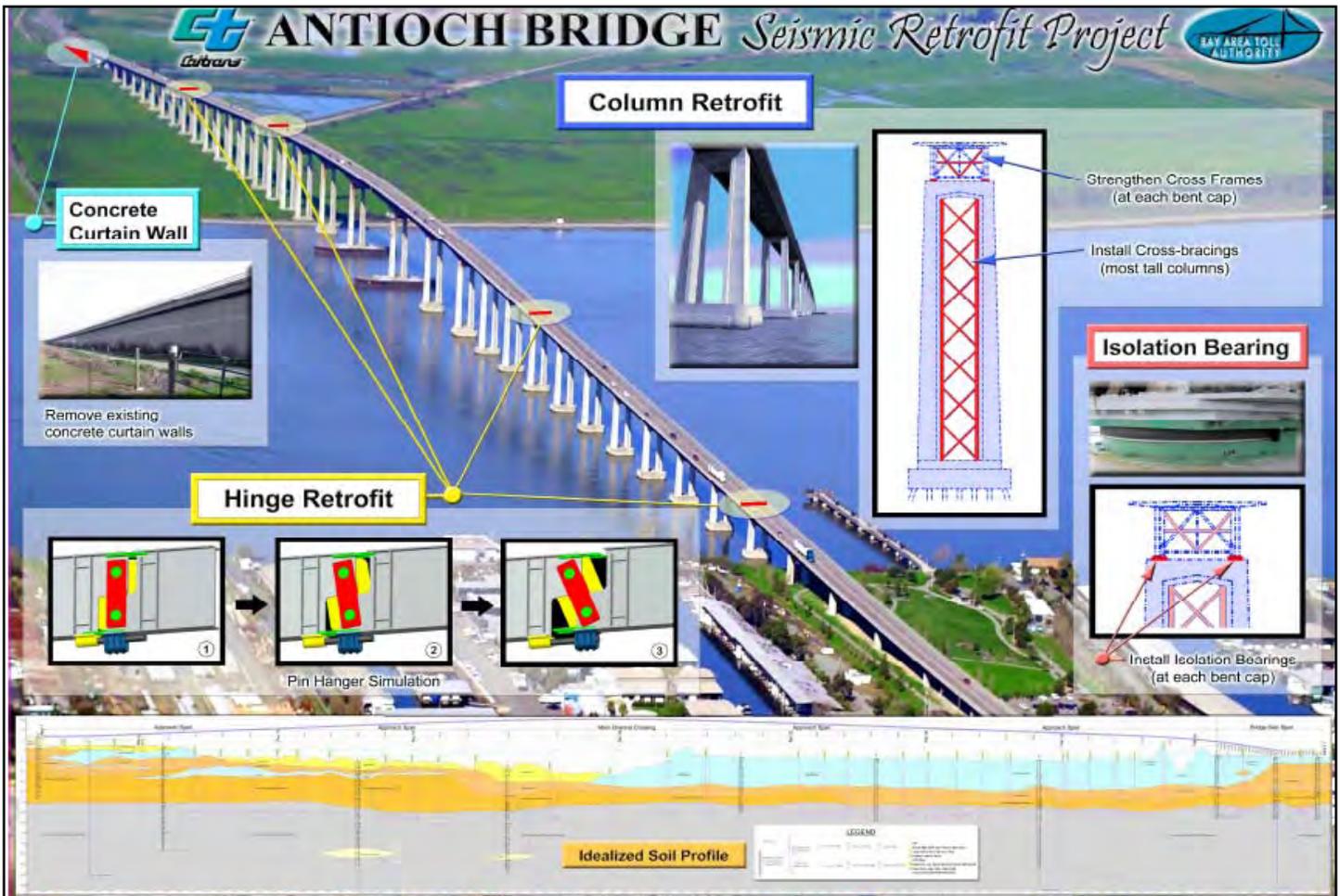
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The Antioch Bridge Seismic Retrofit project was risk-advertised in December 2009.



Prototype of Bearing for the Antioch Bridge Seismic Retrofit Project

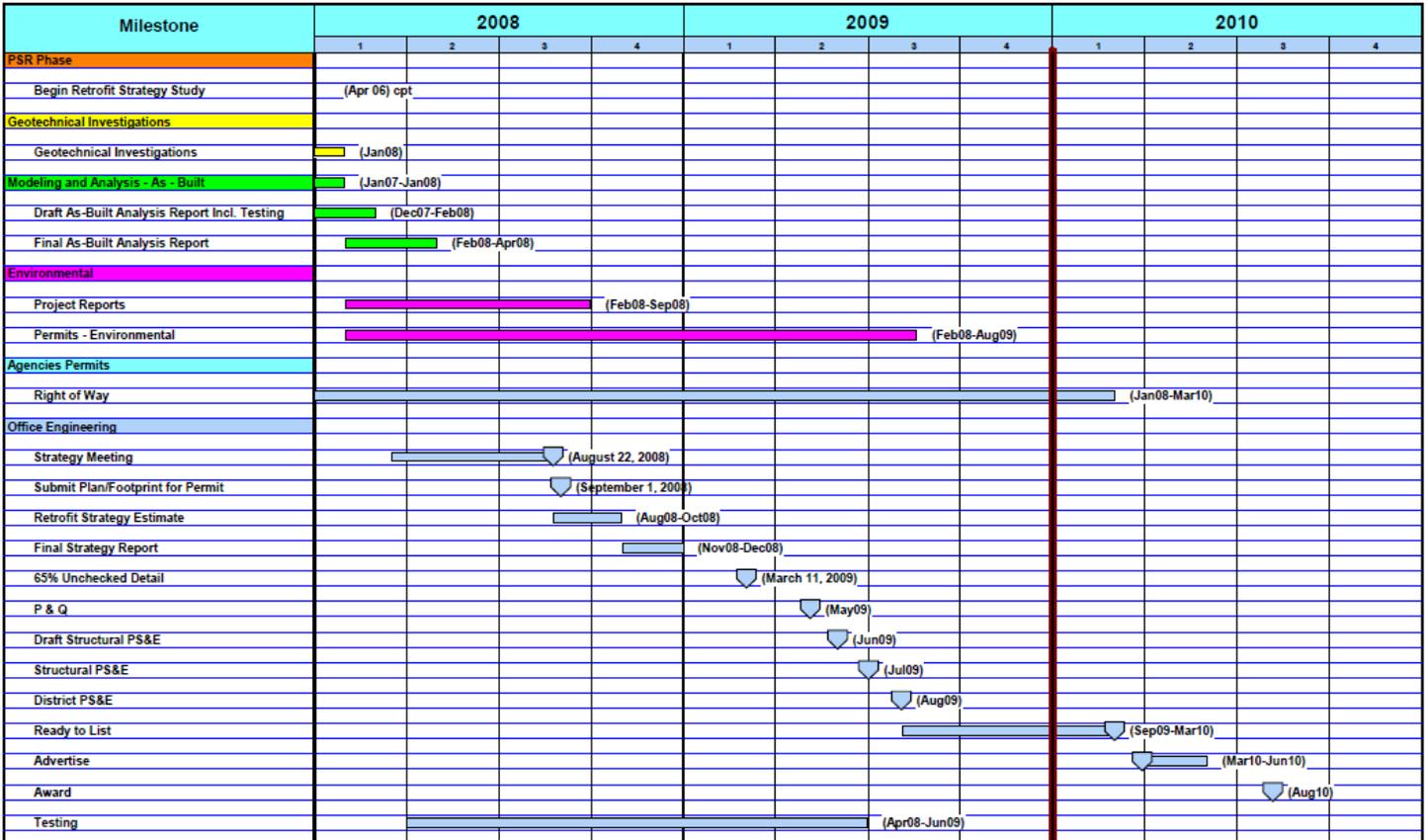
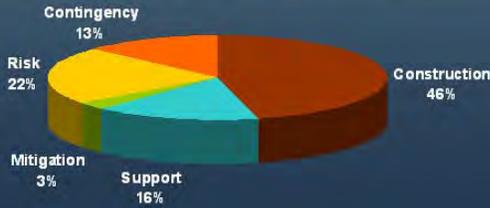


Seismic Retrofit Strategy Summary for Antioch Bridge

## Seismic Retrofits of Dumbarton and Antioch Bridges Project Cost and Schedule Summaries

### Total Project Costs – \$750 Million

Description	Antioch (\$ Millions)	Dumbarton (\$ Millions)
CONSTRUCTION COST ESTIMATE (ESCALATION TO MID YEAR OF CONSTRUCTION)	\$98	\$195
CONTINGENCIES	45	65
SUBTOTAL CAPITAL COST ESTIMATE	143	260
SUPPORT COST ESTIMATE	39	95
MITIGATION COST ESTIMATE	13	10
RISK COST ESTIMATE	72	118
<b>TOTAL COST ESTIMATE</b>	<b>\$267</b>	<b>\$483</b>





Dumbarton Bridge



Photo courtesy of Tom Paiva



Benicia Martinez Bridge

**REGIONAL MEASURE 1 TOLL BRIDGE PROGRAM**

## REGIONAL MEASURE 1 PROGRAM

### New Benicia-Martinez Bridge Project

#### Project Status: New Bridge Completed 2007

The new Congressman George Miller Bridge opened to traffic in August 2007, taking its place alongside the existing 1962 Benicia-Martinez Bridge, which is named for Congressman Miller's father, the late George Miller, Jr. The new bridge carries five lanes of northbound Interstate 680 traffic, while the existing bridge is being upgraded to carry four lanes of southbound traffic and a new bicycle/pedestrian pathway.

Decades into the planning and construction, the new bridge is designed to a "Lifeline" seismic design standard, expected to be available for emergency response vehicles soon after a major seismic event. Constructed of lightweight concrete, the structure is one of the longest post-tensioned reinforced cast-in-place concrete bridges in the world. The new toll plaza, relocated from Benicia to Martinez, features the Bay Area's first FasTrak<sup>®</sup> express lanes, which vastly increase the throughput of vehicles using electronic toll collection.



New Benicia-Martinez Bridge Opened to Traffic in August 2007

### 1962 Benicia-Martinez Bridge Reconstruction Contract

Contractor: ACC/Top Grade, Joint Venture

Approved Capital Outlay Budget: \$59.5 M

Status: Complete

A two-year project to rehabilitate and reconfigure the original Benicia-Martinez Bridge began shortly after the opening of the new Congressman George Miller Bridge. The existing 1.2-mile roadway surface on the steel deck truss bridge is being modified to carry four lanes of southbound traffic (one more than before)—with shoulders on both sides—plus a bicycle/pedestrian path on the west side of the span that will connect to Park Road in Benicia and to Marina Vista Boulevard in Martinez.

#### ***Stage 1 – Reconstruction of East Side of Bridge and Approaches***

Completed in August 2008, this stage involved removal of the old toll plaza on the Benicia side of the bridge, deck repairs on the east side of the span, and repair of the roadway undulations on the southern approach just south of the Marina Vista interchange.



Mococo Road Bridge Jacking

## ***Stage 2 – Reconstruction of West Side of Bridge and Approaches and Construction of Bicycle/Pedestrian Pathway***

This stage began after southbound traffic was shifted from the west side of the bridge to the newly refurbished east side. It involves repairing the west-side bridge deck, repairing undulations on the west side of the roadway in Martinez, demolishing obsolete I-680/I-780 interchange structures, realigning southbound Interstate 680 for four lanes, and construction of the barrier separating traffic lanes from the bicycle/pedestrian path.

**Status:** A new southbound I-680 was opened to traffic in early August. The new bicycle/pedestrian path opened on August 29. The contract is now complete.



**Benicia-Martinez Bridge Newly Opened Pedestrian/Bicycle Pathway**



**Benicia-Martinez Bridge Pedestrian/Bicycle Pathway Opened to The Public**

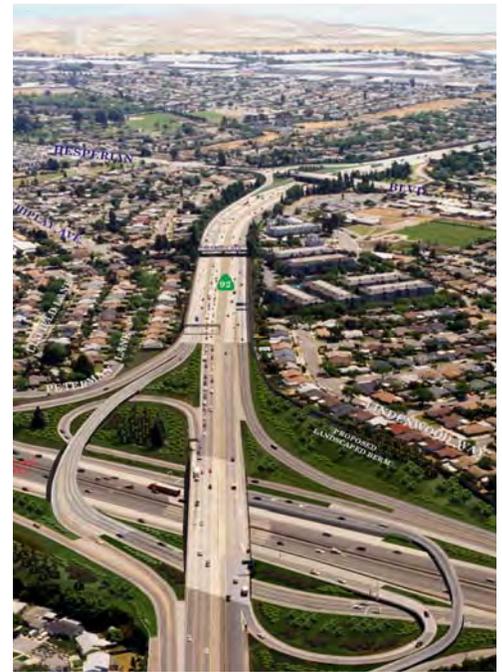
## REGIONAL MEASURE 1 PROGRAM

### Interstate 880/State Route 92 Interchange Reconstruction Project

**Project Status: Under Construction**

The Interstate 880/State Route 92 Interchange Reconstruction Project is the final project under the Regional Measure 1 Toll Bridge Program. Project completion fulfills a promise made to Bay Area voters in 1988 to deliver a slate of projects that help expand bridge capacity and improve safety on the bridges.

This corridor is consistently one of the Bay Area’s most congested during the evening commute. This is due in part to the lane merging and weaving that is required by the existing cloverleaf interchange. The new interchange will feature direct freeway-to-freeway connector ramps that will increase traffic capacity and improve overall safety and traffic operations in the area. With the new direct-connector ramps, drivers coming off the San Mateo-Hayward Bridge can access Interstate 880 without having to compete with traffic headed onto east Route 92 from south Interstate 880 (see progress photos on pages 86 and 87).



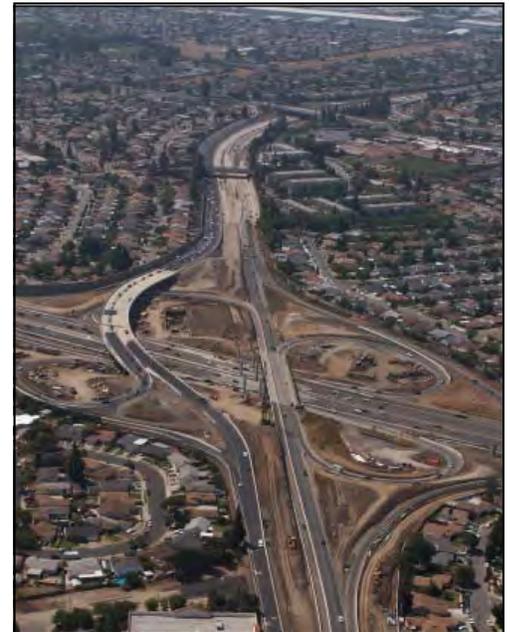
Future Interstate 880/State Route 92 Interchange (as simulated) ,Looking West toward San Mateo.

### Interstate 880/State Route 92 Interchange Reconstruction Contract

Contractor: Flatiron/Granite

Approved Capital Outlay Budget: \$155.0 M

Status: 63% Complete As Of November 2009



Overview of Progress to Date



92/880 Pump Station Construction in Progress

### **Stage 1 – Construct East Route 92 to North Interstate 880 Connector**

The new east Route 92 to north Interstate 880 connector (ENCONN) is the most critical flyover structure for relieving congestion in the corridor. The ENCONN will be first used as a detour to allow for future stages of work, while keeping traffic flowing.

**Status:** ENCONN was completed and opened to detour traffic on May 16, 2009.

### **Stage 2 – Replace South Side of Route 92 Separation Structure**

By detouring eastbound Route 92 traffic onto ENCONN, the existing separation structure that carries SR92 over I-880 can be replaced. The existing structure will be cut lengthwise, and then demolished and replaced separately. In this stage, the south side of the structure will be replaced, while west Route 92 and south-Interstate-880-to-east-Route-92 traffic will stay on the remaining structure.

**Status:** Work on the south side of the separation structure is nearly complete. The concrete roadway will be poured in January 2010 and pending weather, will be opened in March 2010. Foundations and columns have been installed.

### **Stage 3 – Replace North Side of Route 92 Separation Structure**

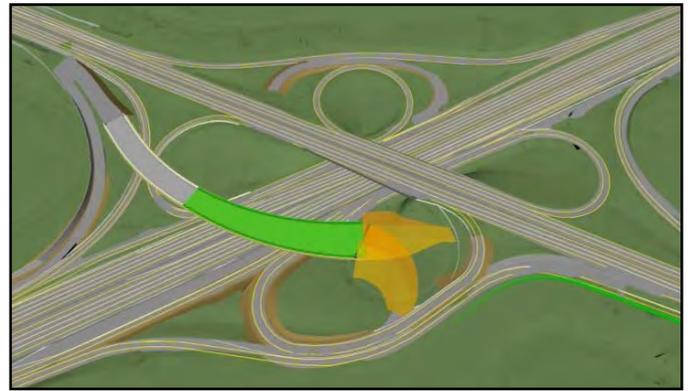
Upon completion of Stage 2, the existing north side of the separation structure will be demolished and replaced. Its traffic will then be shifted onto the newly reconstructed south side.

**Status:** Pending Stage 2.

### **Stage 4 – Final Realignment and Other Work**

Upon completion of the Route 92 separation structure, east Route 92 traffic can be shifted onto its permanent alignment from the new ENCONN and directly under the new separation structure. Along with the ENCONN and Route 92 separation structures, several soundwalls, a pedestrian overcrossing on I-880 at Eldridge Avenue and other ramps and structures will also be reconstructed as part of this project.

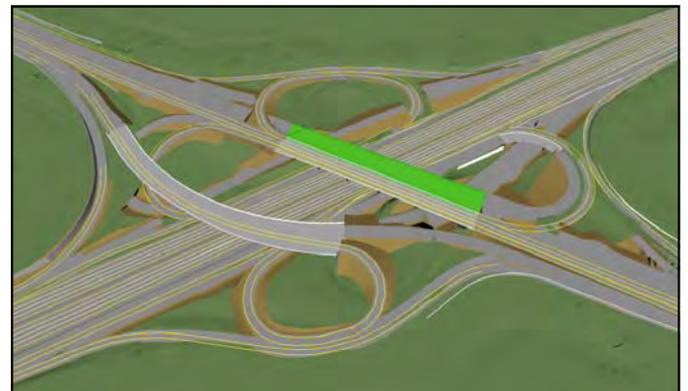
**Status:** Work continues on walls in the northwest (Stage 2), southeast and northeast quadrants, as well as on the Eldridge Avenue pedestrian overcrossing. The new pump station construction is ongoing and scheduled to be completed in February 2010. The Calaroga Bridge is 50 percent complete.



Stage 1 - Construct East Route 92 to North Interstate 880 Direct Connector



Stage 2 - Demolish and Replace South Side of Route 92 Separation Structure



Stage 3 - Demolish and Replace North Side of Route 92 Separation Structure



Stage 4 - Final Realignment and Other Work

## REGIONAL MEASURE 1 PROGRAM

### Other Completed Projects

#### San Mateo-Hayward Bridge-Widening Project

**Project Status: Completed 2003**

This project expanded the low-rise concrete trestle section of the San Mateo-Hayward Bridge to allow for three lanes in each direction to match the existing configuration of the high-rise steel section of the bridge.



Widening of the San Mateo-Hayward Bridge Trestle on Left

#### Richmond-San Rafael Bridge Rehabilitation Projects

**Project Status: Completed 2006**

Two major rehabilitation projects for the Richmond-San Rafael Bridge were funded and completed:

- (1) replacement of the western concrete approach trestle and ship-collision protection fender system; and
- (2) rehabilitation of deck joints and resurfacing of the bridge deck.

In 2005, along with the seismic retrofit of the bridge, the trestle and fender replacement work was completed as part of the same project. Under a separate contract in 2006, the bridge was resurfaced with a polyester concrete overlay along with the repair of numerous deck joints.



New Richmond-San Rafael Bridge West Approach Trestle under Construction

#### Richmond Parkway Construction Project

**Project Status: Completed 2001**

The final connections to the Richmond Parkway from Interstate 580 near the Richmond-San Rafael Bridge were completed in May 2001.



New Alfred Zampa Memorial (Carquinez) Bridge Soon after Opening to Traffic, with Crockett Interchange Still under Construction

## **New Alfred Zampa Memorial (Carquinez) Bridge Project** **Project Status: Completed 2003**

The new western span of the Carquinez Bridge, which replaced the original 1927 span, is a twin-towered suspension bridge with three mixed-flow lanes, a new carpool lane shoulders and a bicycle and pedestrian pathway.

## **Bayfront Expressway (State Route 84) Widening Project** **Project Status: Completed 2004**

This project expanded and improved the roadway from the Dumbarton Bridge touchdown to the US 101/Marsh Road interchange by adding additional lanes and turn pockets and improving bicycle and pedestrian access in the area.



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View of Existing Bridge Span YB2 and YB1 Demolition



## APPENDICES

A.	TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 30, 2009 (A-1 and A-2).....	64
B.	TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 30, 2009 .....	65
C.	Regional Measure 1 Program Cost Detail.....	68
D.	Yerba Buena Island Transition Structures (YBITS) Advanced Work Project Progress Diagram.....	71
E.	Oakland Touchdown (OTD) #1 Program Diagram.....	72
F.	Project Photos.....	73
G.	Glossary of Terms.....	84

## Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2009 (\$ Millions)

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2009)	Cost To Date (12/2009)	Cost Forecast (12/2009)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>SFOBB East Span Replacement Project</b>						
Capital Outlay Support	959.3	-	959.3	802.2	1,252.5	293.2
Capital Outlay Construction	4,492.2	203.8	4,696.0	3,150.8	4,875.2	179.2
Other Budgeted Capital	35.1	(3.3)	31.8	0.7	7.7	(24.1)
<b>Total</b>	<b>5,486.6</b>	<b>200.5</b>	<b>5,687.1</b>	<b>3,953.7</b>	<b>6,135.4</b>	<b>448.3</b>
<b>SFOBB West Approach Replacement</b>						
Capital Outlay Support	120.0	(3.0)	117.0	116.9	117.0	-
Capital Outlay Construction	309.0	41.7	350.7	328.1	338.1	(12.6)
<b>Total</b>	<b>429.0</b>	<b>38.7</b>	<b>467.7</b>	<b>445.0</b>	<b>455.1</b>	<b>(12.6)</b>
<b>SFOBB West Span Retrofit</b>						
Capital Outlay Support	75.0	-	75.0	74.8	75.0	-
Capital Outlay Construction	232.9	-	232.9	227.2	232.9	-
<b>Total</b>	<b>307.9</b>	<b>-</b>	<b>307.9</b>	<b>302.0</b>	<b>307.9</b>	<b>-</b>
<b>Richmond-San Rafael Bridge Retrofit</b>						
Capital Outlay Support	134.0	(7.0)	127.0	126.7	127.0	-
Capital Outlay Construction	780.0	(90.5)	689.5	667.5	689.5	-
<b>Total</b>	<b>914.0</b>	<b>(97.5)</b>	<b>816.5</b>	<b>794.2</b>	<b>816.5</b>	<b>-</b>
<b>Benicia-Martinez Bridge Retrofit</b>						
Capital Outlay Support	38.1	-	38.1	38.1	38.1	-
Capital Outlay Construction	139.7	-	139.7	139.7	139.7	-
<b>Total</b>	<b>177.8</b>	<b>-</b>	<b>177.8</b>	<b>177.8</b>	<b>177.8</b>	<b>-</b>
<b>Carquinez Bridge Retrofit</b>						
Capital Outlay Support	28.7	-	28.7	28.8	28.7	-
Capital Outlay Construction	85.5	-	85.5	85.4	85.5	-
<b>Total</b>	<b>114.2</b>	<b>-</b>	<b>114.2</b>	<b>114.2</b>	<b>114.2</b>	<b>-</b>
<b>San Mateo-Hayward Bridge Retrofit</b>						
Capital Outlay Support	28.1	-	28.1	28.1	28.1	-
Capital Outlay Construction	135.4	-	135.4	135.3	135.4	-
<b>Total</b>	<b>163.5</b>	<b>-</b>	<b>163.5</b>	<b>163.4</b>	<b>163.5</b>	<b>-</b>
<b>Vincent Thomas Bridge Retrofit (Los Angeles)</b>						
Capital Outlay Support	16.4	-	16.4	16.4	16.4	-
Capital Outlay Construction	42.1	-	42.1	42.0	42.1	-
<b>Total</b>	<b>58.5</b>	<b>-</b>	<b>58.5</b>	<b>58.4</b>	<b>58.5</b>	<b>-</b>
<b>San Diego-Coronado Bridge Retrofit</b>						
Capital Outlay Support	33.5	-	33.5	33.2	33.5	-
Capital Outlay Construction	70.0	-	70.0	69.4	70.0	-
<b>Total</b>	<b>103.5</b>	<b>-</b>	<b>103.5</b>	<b>102.6</b>	<b>103.5</b>	<b>-</b>
<b>Subtotal Capital Outlay Support</b>						
	1,433.1	(10.0)	1,423.1	1,265.2	1,716.3	293.2
<b>Subtotal Capital Outlay</b>						
	6,286.8	155.0	6,441.8	4,845.4	6,608.4	166.6
<b>Subtotal Other Budgeted Capital</b>						
	35.1	(3.3)	31.8	0.7	7.7	(24.1)
<b>Miscellaneous Program Costs</b>						
	30.0	-	30.0	24.7	30.0	-
<b>Subtotal Toll Bridge Seismic Retrofit Program</b>						
	7,785.0	141.7	7,926.7	6,136.0	8,362.4	435.7
<b>Programmatic Risk</b>						
	-	-	-	-	265.3	265.3
<b>Program Contingency</b>						
	900.0	(141.7)	758.3	-	57.3	(701.0)
<b>Total Toll Bridge Seismic Retrofit Program</b>						
	8,685.0	-	8,685.0	6,136.0	8,685.0	-

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

## Appendix A-2: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2009 (\$ Millions)

Bridge	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and	Estimated Costs not yet	Total Forecast as of Dec 2009
			Encumbrances as of Dec 2009 See Note (1)	Spent or Encumbered as of Dec 2009	
a	b	c	d	e	f = d + e
<b>Other Completed Projects</b>					
Capital Outlay Support	144.9	144.9	144.6	0.3	144.9
Capital Outlay	472.6	472.6	472.6	0.1	472.7
Total	617.5	617.5	617.2	0.4	617.6
<b>Richmond-San Rafael</b>					
Capital Outlay Support	134.0	127.0	126.7	0.3	127.0
Capital Outlay	698.0	689.5	674.2	15.3	689.5
Project Reserves	82.0	-	-	-	-
Total	914.0	816.5	800.9	15.6	816.5
<b>West Span Retrofit</b>					
Capital Outlay Support	75.0	75.0	74.8	0.2	75.0
Capital Outlay	232.9	232.9	232.7	0.2	232.9
Total	307.9	307.9	307.5	0.4	307.9
<b>West Approach</b>					
Capital Outlay Support	120.0	117.0	117.6	(0.6)	117.0
Capital Outlay	309.0	350.7	342.5	(4.4)	338.1
Total	429.0	467.7	460.1	(5.0)	455.1
<b>SFOBB East Span -Skyway</b>					
Capital Outlay Support	197.0	181.2	181.3	(0.1)	181.2
Capital Outlay	1,293.0	1,254.1	1,368.4	(114.3)	1,254.1
Total	1,490.0	1,435.3	1,549.7	(114.4)	1,435.3
<b>SFOBB East Span -SAS- Superstructure</b>					
Capital Outlay Support	214.6	214.6	202.9	250.2	453.1
Capital Outlay	1,753.7	1,753.7	1,649.6	297.9	1,947.5
Total	1,968.3	1,968.3	1,852.5	548.1	2,400.6
<b>SFOBB East Span -SAS- Foundations</b>					
Capital Outlay Support	62.5	37.6	37.6	-	37.6
Capital Outlay	339.9	307.3	308.7	(1.4)	307.3
Total	402.4	344.9	346.3	(1.4)	344.9
<b>Small YBI Projects</b>					
Capital Outlay Support	10.6	10.6	10.1	0.5	10.6
Capital Outlay	15.6	15.6	16.6	(0.9)	15.7
Total	26.2	26.2	26.7	(0.4)	26.3
<b>YBI Detour</b>					
Capital Outlay Support	29.5	84.5	78.7	12.0	90.7
Capital Outlay	131.9	492.9	493.0	(5.7)	487.3
Total	161.4	577.4	571.7	6.3	578.0
<b>YBI - Transition Structures</b>					
Capital Outlay Support	78.7	78.8	16.4	100.5	116.9
Capital Outlay	299.4	206.3	0.1	210.8	210.9
Total	378.1	285.1	16.5	311.3	327.8
<b>Oakland Touchdown</b>					
Capital Outlay Support	74.4	84.6	70.9	24.0	94.9
Capital Outlay	283.8	288.0	218.0	63.4	281.4
Total	358.2	372.6	288.9	87.4	376.3
<b>East Span Other Small Project</b>					
Capital Outlay Support	212.3	206.5	210.4	(3.8)	206.6
Capital Outlay	170.8	170.8	94.0	52.6	146.6
Total	383.1	377.3	304.4	48.8	353.2
<b>Existing Bridge Demolition</b>					
Capital Outlay Support	79.7	60.9	0.4	60.5	60.9
Capital Outlay	239.2	239.1	-	232.1	232.1
Total	318.9	300.0	0.4	292.6	293.0
<b>Miscellaneous Program Costs</b>	<b>30.0</b>	<b>30.0</b>	<b>25.3</b>	<b>4.7</b>	<b>30.0</b>
<b>Total Capital Outlay Support (2)</b>	<b>1,463.2</b>	<b>1,453.2</b>	<b>1,297.7</b>	<b>448.7</b>	<b>1,746.4</b>
<b>Total Capital Outlay</b>	<b>6,321.8</b>	<b>6,473.5</b>	<b>5,870.4</b>	<b>745.7</b>	<b>6,616.1</b>
<b>Program Total</b>	<b>7,785.0</b>	<b>7,926.7</b>	<b>7,168.1</b>	<b>1,194.4</b>	<b>8,362.5</b>

(1). Funds allocated to project or contract for Capital Outlay and Support needs includes Capital Outlay Support total allocation for FY 06/07.

(2). BSA provided a distribution of program contingency in December 2004 based on Bechtel Infrastructure Corporation input.

This column is subject to revision upon completion of Department's risk assessment update.

(3). Total Capital Outlay Support includes program indirect costs.

Notes: \* Budget for Richmond-San Rafael Bridge includes \$16.9 million of deck joint rehabilitation work that is considered to be eligible for seismic retrofit program funding.

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

## Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2009 (\$ Millions)

Contract	EA Number	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2009)	Cost To Date (12/2009)	Cost Forecast (12/2009)	At-Completion Variance
a	b	c	d	e = c+d	f	g	h = g - e
<b>San Francisco-Oakland Bay Bridge</b>							
<b>East Span Replacement Project</b>							
<b>East Span - SAS Superstructure</b>	<b>0120FX</b>						
Capital Outlay Support		214.6	-	214.6	199.4	453.1	238.5
Capital Outlay Construction		1,753.7	-	1,753.7	865.3	1,947.5	193.8
<b>Total</b>		<b>1,968.3</b>	<b>-</b>	<b>1,968.3</b>	<b>1,064.7</b>	<b>2,400.6</b>	<b>432.3</b>
<b>SAS W2 Foundations</b>	<b>0120CX</b>						
Capital Outlay Support		10.0	(0.8)	9.2	9.2	9.2	-
Capital Outlay Construction		26.4	-	26.4	25.8	26.4	-
<b>Total</b>		<b>36.4</b>	<b>(0.8)</b>	<b>35.6</b>	<b>35.0</b>	<b>35.6</b>	<b>-</b>
<b>YBI South/South Detour</b>	<b>0120RX</b>						
Capital Outlay Support		29.4	55.1	84.5	77.4	90.7	6.2
Capital Outlay Construction		132.0	360.9	492.9	414.7	487.3	(5.6)
<b>Total</b>		<b>161.4</b>	<b>416.0</b>	<b>577.4</b>	<b>492.1</b>	<b>578.0</b>	<b>0.6</b>
<b>YBI Transition Structures (see notes below)</b>	<b>0120PX</b>						
Capital Outlay Support		78.7	0.1	78.8	29.0	116.9	38.1
Capital Outlay Construction		299.3	(93.0)	206.3	-	210.9	4.6
<b>Total</b>		<b>378.0</b>	<b>(92.9)</b>	<b>285.1</b>	<b>29.0</b>	<b>327.8</b>	<b>42.7</b>
<b>* YBI- Transition Structures Prior-to-Split Costs</b>							
Capital Outlay Support				16.7	16.4	16.4	(0.3)
Capital Outlay Construction				-	-	-	-
<b>Total</b>				<b>16.7</b>	<b>16.4</b>	<b>16.4</b>	<b>(0.3)</b>
<b>* YBI- Transition Structures Contract No. 1</b>							
Capital Outlay Support				45.1	9.0	75.1	30.1
Capital Outlay Construction				144.0	-	159.9	15.9
<b>Total</b>				<b>189.1</b>	<b>9.0</b>	<b>235.0</b>	<b>46.0</b>
<b>* YBI- Transition Structures Contract No. 2</b>							
Capital Outlay Support				16.0	3.6	24.4	8.4
Capital Outlay Construction				59.0	-	47.7	(11.3)
<b>Total</b>				<b>75.0</b>	<b>3.6</b>	<b>72.1</b>	<b>(2.9)</b>
<b>* YBI- Transition Structures Contract No. 3 Landscape</b>							
Capital Outlay Support				1.0	-	1.0	-
Capital Outlay Construction				3.3	-	3.3	-
<b>Total</b>				<b>4.3</b>	<b>-</b>	<b>4.3</b>	<b>-</b>
<b>Oakland Touchdown (see notes below)</b>	<b>01204X</b>						
Capital Outlay Support		74.4	10.2	84.6	69.4	94.9	10.3
Capital Outlay Construction		283.8	4.2	288.0	201.8	281.4	(6.6)
<b>Total</b>		<b>358.2</b>	<b>14.4</b>	<b>372.6</b>	<b>271.2</b>	<b>376.3</b>	<b>3.7</b>
<b>* OTD Prior-to-Split Costs</b>							
Capital Outlay Support				21.0	20.0	21.7	0.7
Capital Outlay Construction				-	-	-	-
<b>Total</b>				<b>21.0</b>	<b>20.0</b>	<b>21.7</b>	<b>0.7</b>
<b>* OTD Submarine Cable</b>							
Capital Outlay Support	<b>0120K4</b>			0.9	0.9	0.9	-
Capital Outlay Construction				9.6	7.8	9.6	-
<b>Total</b>				<b>10.5</b>	<b>8.7</b>	<b>10.5</b>	<b>-</b>
<b>* OTD No. 1 (Westbound)</b>							
Capital Outlay Support	<b>0120L4</b>			45.5	42.3	47.3	1.8
Capital Outlay Construction				212.0	194.0	210.4	(1.6)
<b>Total</b>				<b>257.5</b>	<b>236.3</b>	<b>257.7</b>	<b>0.2</b>
<b>* OTD No. 2 (Eastbound)</b>							
Capital Outlay Support	<b>0120M4</b>			15.8	5.4	23.5	7.7
Capital Outlay Construction				62.0	-	57.0	(5.0)
<b>Total</b>				<b>77.8</b>	<b>5.4</b>	<b>80.5</b>	<b>2.7</b>
<b>* OTD Electrical Systems</b>							
Capital Outlay Support	<b>0120N4</b>			1.4	0.8	1.5	0.1
Capital Outlay Construction				4.4	-	4.4	-
<b>Total</b>				<b>5.8</b>	<b>0.8</b>	<b>5.9</b>	<b>0.1</b>

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

## Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2009 (\$ Millions) (continued)

Contract a	EA Number b	AB 144 / SB 66 Budget (07/2005) c	Approved Changes d	Current Approved Budget (12/2009) e = c + d	Cost To Date (12/2009) f	Cost Forecast (12/2009) g	At- Completi on Variance h = g - e
<b>East Span - Skyway</b>	<b>01202X</b>						
Capital Outlay Support		197.0	(15.8)	181.2	181.1	181.2	-
Capital Outlay Construction		1,293.0	(38.9)	1,254.1	1,236.9	1,254.1	-
<b>Total</b>		<b>1,490.0</b>	<b>(54.7)</b>	<b>1,435.3</b>	<b>1,418.0</b>	<b>1,435.3</b>	<b>-</b>
<b>East Span - SAS E2/T1 Foundations</b>	<b>0120EX</b>						
Capital Outlay Support		52.5	(24.1)	28.4	28.4	28.4	-
Capital Outlay Construction		313.5	(32.6)	280.9	275.0	280.9	-
<b>Total</b>		<b>366.0</b>	<b>(56.7)</b>	<b>309.3</b>	<b>303.4</b>	<b>309.3</b>	<b>-</b>
<b>Existing Bridge Demolition</b>	<b>01209X</b>						
Capital Outlay Support		79.7	(18.8)	60.9	0.4	60.9	-
Capital Outlay Construction		239.2	(0.1)	239.1	-	232.1	(7.0)
<b>Total</b>		<b>318.9</b>	<b>(18.9)</b>	<b>300.0</b>	<b>0.4</b>	<b>293.0</b>	<b>(7.0)</b>
<b>YBI/SAS Archeology</b>	<b>01207X</b>						
Capital Outlay Support		1.1	-	1.1	1.1	1.1	-
Capital Outlay Construction		1.1	-	1.1	1.1	1.1	-
<b>Total</b>		<b>2.2</b>	<b>-</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>-</b>
<b>YBI - USCG Road Relocation</b>	<b>0120QX</b>						
Capital Outlay Support		3.0	-	3.0	2.7	3.0	-
Capital Outlay Construction		3.0	-	3.0	2.8	3.0	-
<b>Total</b>		<b>6.0</b>	<b>-</b>	<b>6.0</b>	<b>5.5</b>	<b>6.0</b>	<b>-</b>
<b>YBI - Substation and Viaduct</b>	<b>0120GX</b>						
Capital Outlay Support		6.5	-	6.5	6.4	6.5	-
Capital Outlay Construction		11.6	-	11.6	11.3	11.6	-
<b>Total</b>		<b>18.1</b>	<b>-</b>	<b>18.1</b>	<b>17.7</b>	<b>18.1</b>	<b>-</b>
<b>Oakland Geofill</b>	<b>01205X</b>						
Capital Outlay Support		2.5	-	2.5	2.5	2.5	-
Capital Outlay Construction		8.2	-	8.2	8.2	8.2	-
<b>Total</b>		<b>10.7</b>	<b>-</b>	<b>10.7</b>	<b>10.7</b>	<b>10.7</b>	<b>-</b>
<b>Pile Installation Demonstration Project</b>	<b>01208X</b>						
Capital Outlay Support		1.8	-	1.8	1.8	1.8	-
Capital Outlay Construction		9.2	-	9.2	9.2	9.2	-
<b>Total</b>		<b>11.0</b>	<b>-</b>	<b>11.0</b>	<b>11.0</b>	<b>11.0</b>	<b>-</b>
<b>Stormwater Treatment Measures</b>	<b>0120JX</b>						
Capital Outlay Support		6.0	2.2	8.2	8.1	8.2	-
Capital Outlay Construction		15.0	3.3	18.3	16.7	18.3	-
<b>Total</b>		<b>21.0</b>	<b>5.5</b>	<b>26.5</b>	<b>24.8</b>	<b>26.5</b>	<b>-</b>
<b>Right-of-Way and Environmental Mitigation</b>	<b>0120X9</b>						
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay & Right-of-Way		72.4	-	72.4	51.2	72.4	-
<b>Total</b>		<b>72.4</b>	<b>-</b>	<b>72.4</b>	<b>51.2</b>	<b>72.4</b>	<b>-</b>
<b>Sunk Cost - Existing East Span Retrofit</b>	<b>04343X &amp; 04300X</b>						
Capital Outlay Support		39.5	-	39.5	39.5	39.5	-
Capital Outlay Construction		30.8	-	30.8	30.8	30.8	-
<b>Total</b>		<b>70.3</b>	<b>-</b>	<b>70.3</b>	<b>70.3</b>	<b>70.3</b>	<b>-</b>
<b>Other Capital Outlay Support</b>							
Environmental Phase		97.7	-	97.7	97.7	97.7	-
Pre-Split Project Expenditures		44.9	-	44.9	44.9	44.9	-
Non-project Specific Costs		20.0	(8.0)	12.0	3.2	12.0	-
<b>Total</b>		<b>162.6</b>	<b>(8.0)</b>	<b>154.6</b>	<b>145.8</b>	<b>154.6</b>	<b>-</b>
<b>Subtotal Capital Outlay Support</b>		<b>959.3</b>	<b>-</b>	<b>959.3</b>	<b>802.2</b>	<b>1,252.5</b>	<b>293.2</b>
<b>Subtotal Capital Outlay Construction</b>		<b>4,492.2</b>	<b>203.8</b>	<b>4,696.0</b>	<b>3,150.8</b>	<b>4,875.2</b>	<b>179.2</b>
<b>Other Budgeted Capital</b>		<b>35.1</b>	<b>(3.3)</b>	<b>31.8</b>	<b>0.7</b>	<b>7.7</b>	<b>(24.1)</b>
<b>Total SFOBB East Span Replacement Project</b>		<b>5,486.6</b>	<b>200.5</b>	<b>5,687.1</b>	<b>3,953.7</b>	<b>6,135.4</b>	<b>448.3</b>

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

## Appendix C: Regional Measure 1 Program Cost Detail (\$ Millions)

Project	EA Number	BATA Budget (07/2005)	Approved Changes	Current Approved Budget (12/2009)	Cost To Date (12/2009)	Cost Forecast (12/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
<b>New Benicia-Martinez Bridge Project</b>							
<b>New Bridge</b>	<b>00603_</b>						
Capital Outlay Support							
BATA Funding		84.9	6.9	91.8	91.8	91.8	-
Non-BATA Funding		-	0.1	0.1	0.1	0.1	-
Subtotal		84.9	7.0	91.9	91.9	91.9	-
Capital Outlay Construction				-			-
BATA Funding		661.9	94.6	756.5	753.8	756.5	-
Non-BATA Funding		10.1	-	10.1	10.1	10.1	-
Subtotal		672.0	94.6	766.6	763.9	766.6	-
<b>Total</b>		<b>756.9</b>	<b>101.6</b>	<b>858.5</b>	<b>855.8</b>	<b>858.5</b>	<b>-</b>
<b>I-680/I-780 Interchange Reconstruction 00606_</b>							
Capital Outlay Support							
BATA Funding		24.9	5.2	30.1	30.1	30.1	-
Non-BATA Funding		1.4	5.2	6.6	6.3	6.6	-
Subtotal		26.3	10.4	36.7	36.4	36.7	-
Capital Outlay Construction							
BATA Funding		54.7	26.9	81.6	77.1	81.6	-
Non-BATA Funding		21.6	-	21.6	21.7	21.6	-
Subtotal		76.3	26.9	103.2	98.8	103.2	-
<b>Total</b>		<b>102.6</b>	<b>37.3</b>	<b>139.9</b>	<b>135.2</b>	<b>139.9</b>	<b>-</b>
<b>I-680/Marina Vista Interchange Reconstruction 00605_</b>							
Capital Outlay Support		18.3	1.8	20.1	20.1	20.1	-
Capital Outlay Construction		51.5	4.9	56.4	56.1	56.4	-
<b>Total</b>		<b>69.8</b>	<b>6.7</b>	<b>76.5</b>	<b>76.2</b>	<b>76.5</b>	<b>-</b>
<b>New Toll Plaza and Administration Building 00604_</b>							
Capital Outlay Support		11.9	3.8	15.7	15.7	15.7	-
Capital Outlay Construction		24.3	2.0	26.3	25.1	26.3	-
<b>Total</b>		<b>36.2</b>	<b>5.8</b>	<b>42.0</b>	<b>40.8</b>	<b>42.0</b>	<b>-</b>
<b>Existing Bridge &amp; Interchange Modifications 0060A_</b>							
Capital Outlay Support							
BATA Funding		4.3	13.5	17.8	17.7	17.8	-
Non-BATA Funding		-	0.9	0.9	0.8	0.9	-
Subtotal		4.3	14.4	18.7	18.5	18.7	-
Capital Outlay Construction							
BATA Funding		17.2	32.8	50.0	36.6	50.0	-
Non-BATA Funding		-	9.5	9.5	-	9.5	-
Subtotal		17.2	42.3	59.5	36.6	59.5	-
<b>Total</b>		<b>21.5</b>	<b>56.7</b>	<b>78.2</b>	<b>55.1</b>	<b>78.2</b>	<b>-</b>
<b>Other Contracts See note below</b>							
Capital Outlay Support		11.4	(2.3)	9.1	8.8	9.1	-
Capital Outlay Construction		20.3	3.3	23.6	17.3	23.6	-
Capital Outlay Right-of-Way		20.4	(0.1)	20.3	17.0	20.3	-
<b>Total</b>		<b>52.1</b>	<b>0.9</b>	<b>53.0</b>	<b>43.1</b>	<b>53.0</b>	<b>-</b>
Subtotal BATA Capital Outlay Support		155.7	28.9	184.6	184.2	184.6	-
Subtotal BATA Capital Outlay Construction		829.9	164.5	994.4	966.0	994.4	-
Subtotal Capital Outlay Right-of-Way		20.4	(0.1)	20.3	17.0	20.3	-
Subtotal Non-BATA Capital Outlay Support		1.4	6.2	7.6	7.2	7.6	-
Subtotal Non-BATA Capital Outlay Construction		31.7	9.5	41.2	31.8	41.2	-
Project Reserves		20.8	3.6	24.4	-	24.4	-
<b>Total New Benicia-Martinez Bridge Project</b>		<b>1,059.9</b>	<b>212.6</b>	<b>1,272.5</b>	<b>1,206.2</b>	<b>1,272.5</b>	<b>-</b>

Notes: Includes EA's 00601\_, 00603\_, 00605\_, 00606\_, 00608\_, 00609\_, 0060A\_, 0060C\_, 0060E\_, 0060F\_, 0060G\_, and 0060H\_ and all Project Right-of-Way

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

## Appendix C: Regional Measure 1 Program Cost Detail (\$ Millions) (Continued)

Project	EA Number	BATA Budget (07/2005)	Approved Changes	Current Approved Budget (12/2009)	Cost To Date (12/2009)	Cost Forecast (12/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
<b>Carquinez Bridge Replacement Project</b>							
<b>New Bridge</b>							
	<b>01301_</b>						
Capital Outlay Support		60.5	(0.3)	60.2	60.2	60.2	-
Capital Outlay Construction		253.3	2.7	256.0	255.9	256.0	-
<b>Total</b>		<b>313.8</b>	<b>2.4</b>	<b>316.2</b>	<b>316.1</b>	<b>316.2</b>	<b>-</b>
<b>Crockett Interchange Reconstruction</b>							
	<b>01305_</b>						
Capital Outlay Support		32.0	(0.1)	31.9	31.9	31.9	-
Capital Outlay Construction		73.9	(1.9)	72.0	71.9	72.0	-
<b>Total</b>		<b>105.9</b>	<b>(2.0)</b>	<b>103.9</b>	<b>103.8</b>	<b>103.9</b>	<b>-</b>
<b>Existing 1927 Bridge Demolition</b>							
	<b>01309_</b>						
Capital Outlay Support		16.1	(0.5)	15.6	15.6	15.6	-
Capital Outlay Construction		35.2	-	35.2	34.8	35.2	-
<b>Total</b>		<b>51.3</b>	<b>(0.5)</b>	<b>50.8</b>	<b>50.4</b>	<b>50.8</b>	<b>-</b>
<b>Other Contracts</b>							
	<b>See note below</b>						
Capital Outlay Support		15.8	1.2	17.0	16.3	17.0	-
Capital Outlay Construction		18.8	(1.2)	17.6	16.2	17.6	-
Capital Outlay Right-of-Way		10.5	(0.1)	10.4	9.9	10.4	-
<b>Total</b>		<b>45.1</b>	<b>(0.1)</b>	<b>45.0</b>	<b>42.4</b>	<b>45.0</b>	<b>-</b>
<b>Subtotal BATA Capital Outlay Support</b>							
		124.4	0.3	124.7	124.0	124.7	-
<b>Subtotal BATA Capital Outlay Construction</b>							
		381.2	(0.4)	380.8	378.8	380.8	-
<b>Subtotal Capital Outlay Right-of-Way</b>							
		10.5	(0.1)	10.4	9.9	10.4	-
<b>Project Reserves</b>							
		12.1	(9.8)	2.3	-	2.3	-
<b>Total Carquinez Bridge Replacement Project</b>							
		<b>528.2</b>	<b>(10.0)</b>	<b>518.2</b>	<b>512.7</b>	<b>518.2</b>	<b>-</b>

## Notes:

Other Contracts includes EA's 01301\_01302\_, 01303\_01304\_01305\_, 01306\_01307\_01308\_01309\_0130A\_0130C\_0130D\_0130F\_0130G\_0130H\_0130J\_00453\_00493\_04700\_00607\_2A270\_ and 29920\_ and all Project Right-of-Way

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

## Appendix C: Regional Measure 1 Program Cost Detail (\$ Millions) (Continued)

Project	EA Number	BATA Budget (07/2005)	Approved Changes	Current Approved Budget (12/2009)	Cost To Date (12/2009)	Cost Forecast (12/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
Richmond-San Rafael Bridge Trestle, Fender, and Deck Joint Rehabilitation			See note <sup>1</sup> below				
Capital Outlay Support							
BATA Funding		2.2	(0.8)	1.4	1.4	1.4	-
Non-BATA Funding		8.6	1.8	10.4	10.4	10.4	-
Subtotal		10.8	1.0	11.8	11.8	11.8	-
Capital Outlay Construction							
BATA Funding		40.2	(6.8)	33.4	33.3	33.4	-
Non-BATA Funding		51.1	-	51.1	51.1	51.1	-
Subtotal		91.3	(6.8)	84.5	84.4	84.5	-
Project Reserves		-	0.8	0.8	-	0.8	-
<b>Total</b>		<b>102.1</b>	<b>(5.0)</b>	<b>97.1</b>	<b>96.2</b>	<b>97.1</b>	<b>-</b>
<b>Rehabilitation</b>			<b>04152_</b>				
Capital Outlay Support							
BATA Funding		4.0	(0.7)	3.3	3.3	3.3	-
Non-BATA Funding		4.0	(4.0)	-	-	-	-
Subtotal		8.0	(4.7)	3.3	3.3	3.3	-
Capital Outlay Construction		16.9	(0.6)	16.3	16.3	16.3	-
Project Reserves		0.1	0.3	0.4	-	0.4	-
<b>Total</b>		<b>25.0</b>	<b>(5.0)</b>	<b>20.0</b>	<b>19.6</b>	<b>20.0</b>	<b>-</b>
<b>Richmond Parkway Project (RM 1 Share Only)</b>			<b>Non-Caltrans</b>				
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay Construction		5.9	-	5.9	4.3	5.9	-
<b>Total</b>		<b>5.9</b>	<b>-</b>	<b>5.9</b>	<b>4.3</b>	<b>5.9</b>	<b>-</b>
<b>San Mateo-Hayward Bridge Widening</b>			<b>See note <sup>2</sup> below</b>				
Capital Outlay Support		34.6	(0.5)	34.1	34.1	34.1	-
Capital Outlay Construction		180.2	(6.1)	174.1	174.1	174.1	-
Capital Outlay Right-of-Way		1.5	(0.9)	0.6	0.5	0.6	-
Project Reserves		1.5	(0.5)	1.0	-	1.0	-
<b>Total</b>		<b>217.8</b>	<b>(8.0)</b>	<b>209.8</b>	<b>208.7</b>	<b>209.8</b>	<b>-</b>
<b>I-880/SR-92 Interchange Reconstruction</b>			<b>EA's 23317_, 01601_, and 01602_</b>				
Capital Outlay Support		28.8	34.6	63.4	51.1	63.4	-
Capital Outlay Construction							
BATA Funding		85.2	60.2	145.4	86.1	151.4	6.0
Non-BATA Funding		9.6	-	9.6	-	9.6	-
Subtotal		94.8	60.2	155.0	86.1	161.0	6.0
Capital Outlay Right-of-Way		9.9	7.0	16.9	11.9	16.9	-
Project Reserves		0.3	9.4	9.7	-	3.7	(6.0)
<b>Total</b>		<b>133.8</b>	<b>111.2</b>	<b>245.0</b>	<b>149.1</b>	<b>245.0</b>	<b>-</b>
<b>Bayfront Expressway Widening</b>			<b>EA's 00487_, 01511_, and 01512_</b>				
Capital Outlay Support		8.6	(0.2)	8.4	8.3	8.4	-
Capital Outlay Construction		26.5	(1.5)	25.0	24.9	25.0	-
Capital Outlay Right-of-Way		0.2	-	0.2	0.2	0.2	-
Project Reserves		0.8	(0.3)	0.5	-	0.5	-
<b>Total</b>		<b>36.1</b>	<b>(2.0)</b>	<b>34.1</b>	<b>33.4</b>	<b>34.1</b>	<b>-</b>
<b>US 101/University Avenue Interchange Modification</b>			<b>Non-Caltrans</b>				
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay Construction		3.8	-	3.8	3.7	3.8	-
<b>Total</b>		<b>3.8</b>	<b>-</b>	<b>3.8</b>	<b>3.7</b>	<b>3.8</b>	<b>-</b>
<b>Subtotal BATA Capital Outlay Support</b>		<b>358.3</b>	<b>61.6</b>	<b>419.9</b>	<b>406.4</b>	<b>419.9</b>	<b>-</b>
<b>Subtotal BATA Capital Outlay Construction</b>		<b>1,569.8</b>	<b>209.3</b>	<b>1,779.1</b>	<b>1,687.5</b>	<b>1,785.1</b>	<b>6.0</b>
<b>Subtotal Capital Outlay Right-of-Way</b>		<b>42.5</b>	<b>5.9</b>	<b>48.4</b>	<b>39.5</b>	<b>48.4</b>	<b>-</b>
<b>Subtotal Non-BATA Capital Outlay Support</b>		<b>14.0</b>	<b>4.0</b>	<b>18.0</b>	<b>17.6</b>	<b>18.0</b>	<b>-</b>
<b>Subtotal Non-BATA Capital Outlay Construction</b>		<b>92.4</b>	<b>9.5</b>	<b>101.9</b>	<b>82.9</b>	<b>101.9</b>	<b>-</b>
<b>Project Reserves</b>		<b>35.6</b>	<b>3.5</b>	<b>39.1</b>	<b>-</b>	<b>33.1</b>	<b>(6.0)</b>
<b>Total RM1 Program</b>		<b>2,112.6</b>	<b>293.8</b>	<b>2,406.4</b>	<b>2,233.9</b>	<b>2,406.4</b>	<b>-</b>

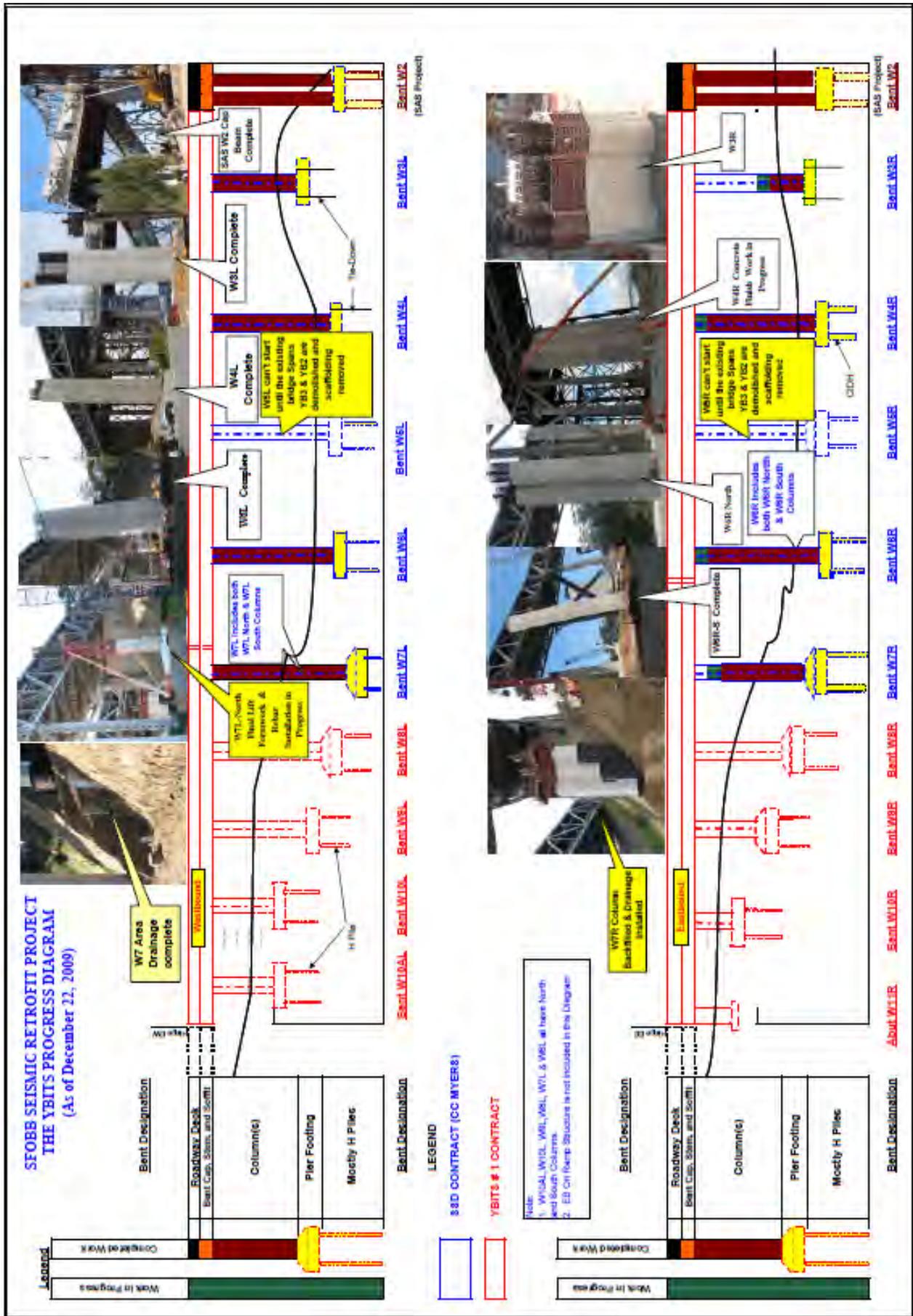
Notes:

<sup>1</sup> Richmond-San Rafael Bridge Trestle, Fender, and Deck Joint Rehabilitation Includes Non-TBSRA Expenses for EA 0438U\_ and 04157\_

<sup>2</sup> San Mateo-Hayward Bridge Widening Includes EA's 00305\_, 04501\_, 04502\_, 04503\_, 04504\_, 04505\_, 04506\_, 04507\_, 04508\_, 04509\_, 27740\_, 27790\_, 04860\_

Notes: 2 Details may not sum to totals due to rounding effects.

Appendix D: YBITS Advanced Work Project Progress Diagram







Appendix F: Project Progress Photographs

## Appendix F: Project Progress Photographs

### Yerba Buena Island Detour Existing Bridge Demolition



**Demolition of Existing Bridge Spans YB2 and YB1**



Skid Bent System Disassembly in Progress



Skid Beams A1 and A2 Disassembled

## Appendix F: Project Progress Photographs

### Self-Anchored Suspension Bridge Fabrication



SAS Tower Lift 2 North Shaft Being Fabricated in Bay 10



SAS Lift 8CW Being Prime Coated



SAS Unloading of OBG Lift 1E



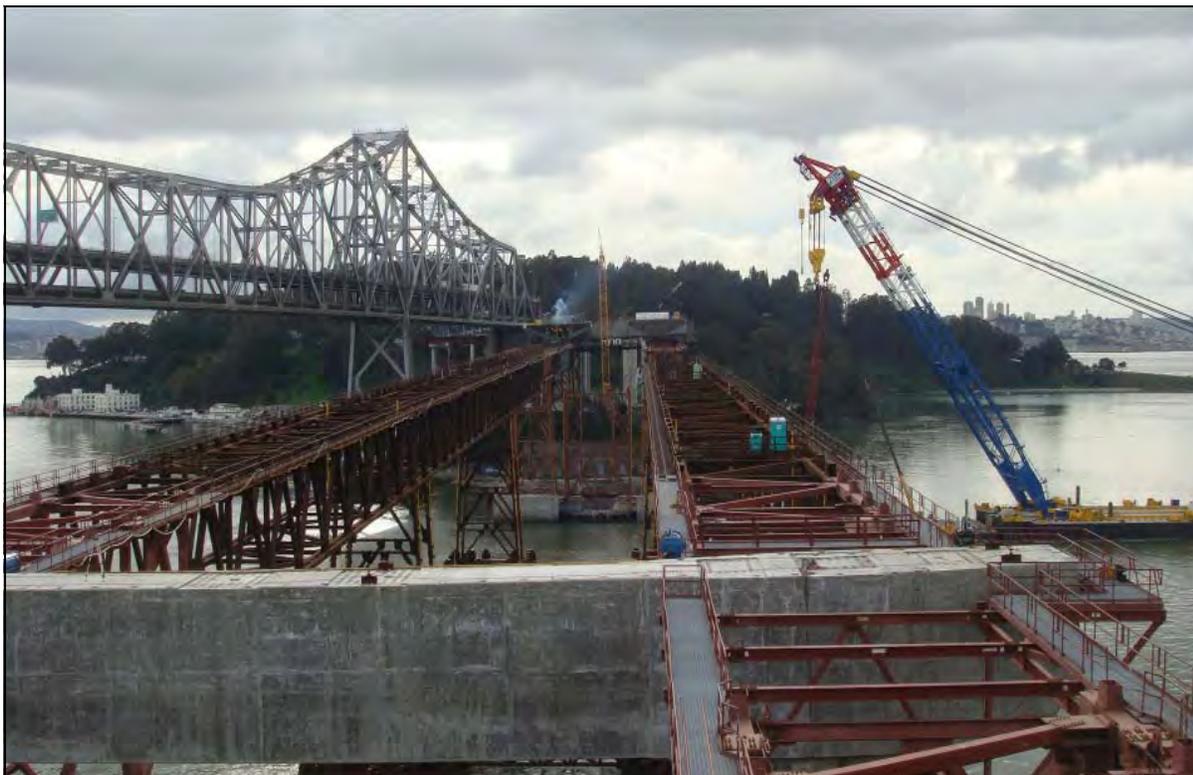
SAS OBG Lift 3W Being Loaded onto the Ship

## Appendix F: Project Progress Photographs

### Self-Anchored Suspension Bridge Field Work



SAS - OBG Lifts 3 and 4 Stored onto the Barge



SAS - First OBG Lift 1E Completed



SAS OBG Lift 1E Placed on top of Temporary Eastbound Structure

## Appendix F: Project Progress Photographs

### Oakland Touchdown



Oakland Touchdown Falsework Removal



Oakland Touchdown Mole Substation Exterior View



Oakland Touchdown Eastbound Detour Road Paved



Oakland Touchdown Westbound Falsework Piles Removed

## Appendix F: Project Progress Photographs

### 92/880 Interchange



92/880 Widening at Mount Eden Overhead Crossing



92/880 Pump Station Construction in Progress



92/880 Site Preparation of New Route 92 and Interstate 880 Separator

## Appendix G: Glossary of Terms

**AB144/SB 66 BUDGET:** The planned allocation of resources for the Toll Bridge Seismic Retrofit Program, or subordinate projects or contracts, as provided in Assembly Bill 144 and Senate Bill 66, signed into law by Governor Schwarzenegger on July 18, 2005 and September 29, 2005, respectively.

**BATA BUDGET:** The planned allocation of resources for the Regional Measure 1 Program, or subordinate projects or contracts as authorized by the Bay Area Toll Authority as of June 2005.

**APPROVED CHANGES:** For cost, changes to the AB144/SB 66 Budget or BATA Budget as approved by the Bay Area Toll Authority Commission. For schedule, changes to the AB 144/SB 66 Project Complete Baseline approved by the Toll Bridge Program Oversight Committee, or changes to the BATA Project Complete Baseline approved by the Bay Area Toll Authority Commission.

**CURRENT APPROVED BUDGET:** The sum of the AB144/SB66 Budget or BATA Budget and Approved Changes.

**COST TO DATE:** The actual expenditures incurred by the program, project or contract as of the month and year shown.

**COST FORECAST:** The current forecast of all of the costs that are projected to be expended so as to complete the given scope of the program, project, or contract.

**AT COMPLETION VARIANCE or VARIANCE (cost):** The mathematical difference between the Cost Forecast and the Current Approved Budget.

**AB 144/SB 66 PROJECT COMPLETE BASELINE:** The planned completion date for the Toll Bridge Seismic Retrofit Program or subordinate projects or contracts.

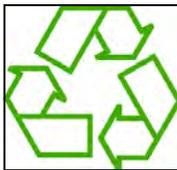
**BATA PROJECT COMPLETE BASELINE:** The planned completion date for the Regional Measure 1 Program or subordinate projects or contracts.

**PROJECT COMPLETE CURRENT APPROVED SCHEDULE:** The sum of the AB144/SB66 Project Complete Baseline or BATA Project Complete Baseline and Approved Changes.

**PROJECT COMPLETE SCHEDULE FORECAST:** The current projected date for the completion of the program, project, or contract.

**SCHEDULE VARIANCE or VARIANCE (schedule):** The mathematical difference expressed in months between the Project Complete Schedule Forecast and the Project Complete Current Approved Schedule.

**% COMPLETE:** % Complete is based on an evaluation of progress on the project, expenditures to date, and schedule.



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*The information in this report is provided in accordance with California Government code Section 755. This document is one of a series of reports prepared for the Bay Area Toll Authority (BATA)/Metropolitan Transportation Commission (MTC) for the Toll Bridge Seismic Retrofit and Regional Measure 1 Programs. The contract value for the monitoring efforts, technical analysis, and field site works that contribute to these reports, as well as the report preparation and production is \$1,574,873.73.*



Photo courtesy of Tom Paiva