Toll Bridge Seismic Retrofit and Regional Measure 1 Programs

Monthly Progress Report
August 2009

TOLL BRIDGE PROGRAM
OVERSIGHT COMMITTEE

CALTRANS · BAY AREA TOLL AUTHORITY · CALIFORNIA TRANSPORTATION COMMISSION

Released: September 2009

Deck Segment 4 Being Loaded on to Barge for Shipment

TOLL BRIDGE SEISMIC RETROFIT AND REGIONAL MEASURE 1 PROGRAMS

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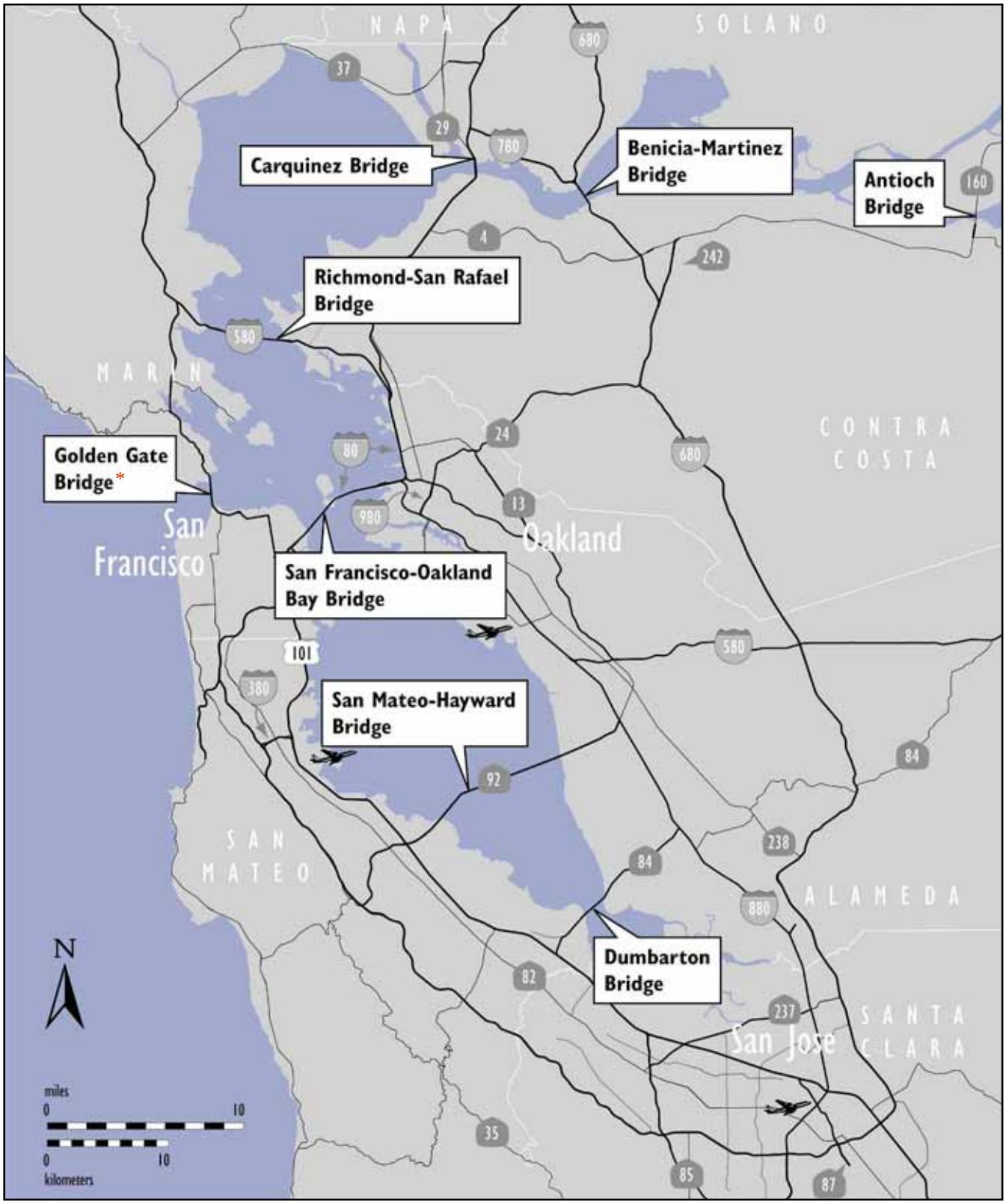
Map of Bay Area Toll Bridges



* 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 project and the 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 East & South Tower Being Fit Up on Heavy Duty Dock

SAS Temporary Trusses

SAS OBG Segment 4E Being Lifted onto Barge

Toll Bridge Seismic Retrofit Program Risk Management

A major element of Assembly Bill 144 of 2005, 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. There is a risk assessment done for each project. The forecast is based on the 50% probable cost of risk (average). It is possible our forecasts could decrease as risks are resolved and retired. Nonetheless, we want to ensure that the public is fully informed of the risks we have identified and the possible expense they could necessitate. It is important to note that the $689.7 million TBPOC Second Quarter of 2009 Approved Budget Program Contingency is sufficient to cover identified risks to a 95% confidence level. Ongoing risk mitigation actions will continue to be developed and implemented to reduce the potential draw on Program Contingency (see page 38 for further details).

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

SAS Superstructure Contract

The contractor for the Self-Anchored Suspension (SAS) Bridge, American Bridge/Fluor, continues work on both the fabrication of major bridge components around the world and on the temporary support structures in the bay.

The contractor has reported that fabrication of the steel tower and roadway boxes has fallen several months behind schedule due to the shop fabrication drawing preparation process and the complexity of the fabrication. Delays, including those specifically related to lifts 13 and 14 of the steel roadway boxes at the east end of the bridge, may prevent the westbound opening of the bridge in 2012, but have not yet affected the expected full opening date of the bridge in 2013.

The TBPOC has planned to travel to Canada and China to meet with the contractor and their sub-contractors to evaluate all options to accelerate the project and ensure

SAS Temporary Tower Truss Erection with Shear-leg Barge Crane

quality specifications are being met. The TBPOC will explore options to co-locate additional design staff with shop drawing drafters to improve review times and communication. On fabrication, Caltrans will continue their rigorous quality assurance review of all parts of the bridge and will ensure that bridge components will only ship when ready.

The roadway box lifts 1 through 4 are continuing to be readied for voyage 1 shipment (see segment 4E being lifted shown in the photo on the bottom left of page 2). The shipment is expected to be loaded in October.

Out on the bay, the contractor continues to erect and has completed approximately 52 percent of the temporary support structures that span from Yerba Buena Island to the Skyway. These structures will support the SAS bridge before the cable system is installed.

Caltrans has established risk management teams to evaluate future potential risks to completing the project on time and on budget. In particular, teams are reviewing cable erection plans and mitigation schedules. Based on the last risk management assessment, there is a potential for a $305 million increase on the SAS contract.

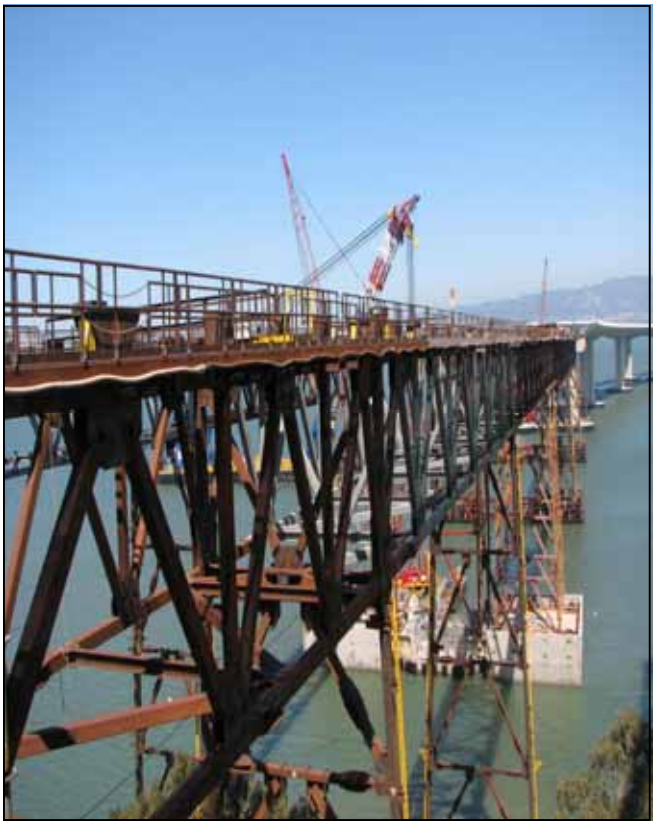
East Tie-in Detour Truss Structure on Yerba Buena Island

Yerba Buena Island Detour Contract

The Yerba Buena Island Detour contractor, CC Myers, has erected the detour structure that will divert traffic off the existing bridge to the detour structure that will tie the existing bridge to the Yerba Buena Island tunnel. The traffic switch has been scheduled for Labor Day Weekend 2009 and will require a full closure of the Bay Bridge over an extended holiday weekend. In addition to work on the detour structure, the contractor is making progress on a number of accelerated foundations for the future transition structure from the SAS to the tunnel.

Based on the last risk management assessment, there is potential for a $34 million increase for the contract. Risks include unexpected construction challenges during demolition of the old structure which are being addressed via collaborative on-site meetings between Caltrans and the contractor to actively identify and resolve issues early and at the least cost.

SUMMARY OF MAJOR PROJECT HIGHLIGHTS, ISSUES, AND ACTIONS



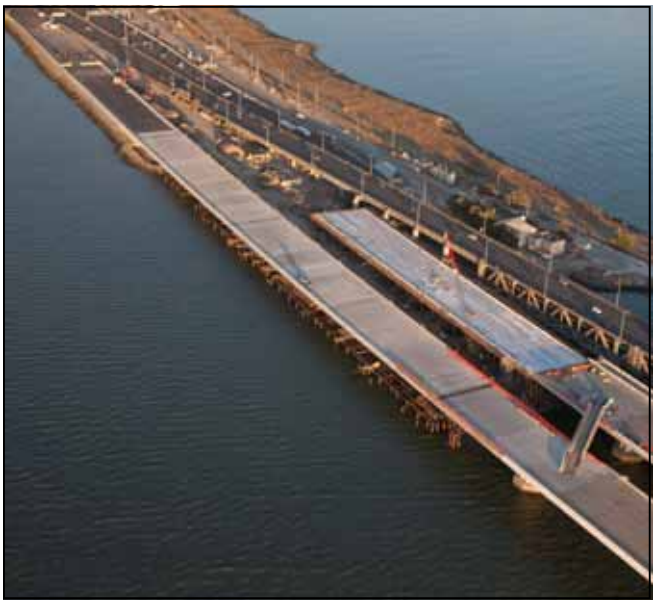
View of SAS Temporary Truss

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 due primarily to the need to re-advertise the SAS contract and by decisions made to increase our opportunities for early completion of the East Span project and potential for support cost savings. 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 attendant cost savings to be less likely, we forecast a potential drawdown of **$244 million** from the program contingency for project support. Further increases in project support costs would be expected if the project is delayed beyond the 2013 forecast bridge opening date.

TBSRP Programmatic Risks

This category includes risks that are not yet scoped within existing contracts and/or spread across multiple contracts. The interdependencies between all the contracts in the program result in the potential for delays on one contract to impact the other contracts in the overall program of contracts. A net potential drawdown of **$50 million** from the program contingency is forecast for these risks.



Aerial View of Oakland Touchdown Newly Opened Construction Access Westbound to the Skyway

Oakland Touchdown Contract

In early August, the Oakland Touchdown contractor opened construction access of the westbound OTD structure to the Skyway (see aerial photo on left). Work continues on the eastbound structure

Prototype of Bearing for the Antioch Bridge Seismic Retrofit Project

New Pedestrian Bicycle Path on Benicia-Martinez Bridge Under Construction

Site Preparation for New Route 92 and Interstate 880 Separator

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, excluding the Dumbarton and Antioch bridges. Further seismic vulnerability studies were completed by Caltrans and BATA on those structures, which determined that both structures were in need of retrofit based on current seismic standards. The total cost to retrofit both structures is estimated to be $950 million. State Assemblyman Tom Torlakson is sponsoring Assembly Bill 1175 to amend the Toll Bridge Seismic Retrofit Program to include the Antioch and Dumbarton bridges and to make the projects eligible for TBSRP funding. Design plans for both bridges are currently being prepared with advertisement of the projects expected in 2010.

New Benicia-Martinez Bridge Project

On the 1962 Benicia-Martinez Bridge Modification Contract, remaining tasks include procurement and installation of the outside rail fence of the bridge pedestrians and bicycle path, rehabilitating the Vista Point parking lot, final paving and striping of the main line, and miscellaneous electrical activities. Southbound I-680 was open to traffic in early August. The Bicycle/Pedestrian path opened to traffic on August 29th. The contract is now substantially complete. Minor punchlist work remains.

Interstate 880/State Route 92 Interchange Reconstruction Project

On the Interchange Reconstruction Contract, the new east Route 92 to North Interstate 880 direct connector structure (ENCONN) was completed and opened to detour traffic on May 16, 2009. Work is now ongoing on a new separator structure. The Department and BATA have revised the support forecast for the project. The increase in support is due to extended advertisement for the project and weather delays. The project is still forecast to be completed as planned in June 2011.

Toll Bridge Seismic Retrofit Program Cost Summary

	Contract Status	AB 144/SB 66 Budget (Jul 2005)	TBPOC Approved Changes	Current TBPOC Approved Budget (JuLY 2009)	Cost to Date (July 2009)	Current Cost Forecast (July 2009)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
SFOBB East Span Seismic Replacement								
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	786.7	2,058.6	304.9	●
YBI Detour	Construction	132.0	360.8	492.8	358.4	526.7	33.9	●
YBI Transition Structures (YBITS)		299.3	(23.2)	276.1	-	285.9	9.8	●
YBITS 1	Advertised	-		-	-	*223.2*	-	●
YBITS 2	Design	-	-	-	-	*59.4*	-	●
YBITS Landscaping	Design	-		-	-	*3.3*	-	●
Oakland Touchdown		283.8	-	283.8	183.2	289.8	6.0	●
OTD 1	Construction	-		-	*175.4*	*211.8*	-	●
OTD 2	Design	-			-	*64.0*	-	●
OTD Electrical Systems	Design	-		-	-	*4.4*	-	●
Submerged Electric Cable	Completed	-			*7.9*	*9.6*	-	●
Existing Bridge Demolition	Design	239.2		239.2	-	232.1	(7.1)	●
Stormwater Treatment Measures	Completed	15.0	3.3	18.3	16.7	18.3	-	●
Other Completed Contracts	Completed	90.3	-	90.3	89.3	90.3	-	●
Capital Outlay Support		959.3	-	959.3	749.6	1,203.1	243.8	●
Right-of-Way and Environmental Mitigation		72.4	-	72.4	51.1	72.4	-	●
Other Budgeted Capital		35.1	(3.3)	31.8	0.7	7.7	(24.1)	●
Total SFOBB East Span Replacement		5486.6	266.1	5,752.7	3,747.6	6,319.9	567.2	
SFOBB West Approach Replacement								●
Capital Outlay Construction	Completed	309.0	41.7	350.7	327.9	340.7	(10.0)	●
Capital Outlay Support		120.0	-	120.0	116.5	117.0	(3.0)	●
Total SFOBB West Approach Replacement		429.0	41.7	470.7	444.4	457.7	(13.0)	
Completed Program Projects	Completed	1,839.4	(97.5)	1,741.9	1,712.6	1,741.9	-	●
Miscellaneous Program Costs		30.0	-	30.0	24.7	30.0	-	●
Net Programmatic Risks		-	-	-	-	49.8	49.8	●
Program Contingency		900.0	(210.3)	689.7	-	85.7	(604.0)	●
Total Toll Bridge Seismic Retrofit Program		8,685.0	-	8,685.0	5,929.3	8,685.0	-	●

● 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	TBPOC Approved Changes (Months)	Current TBPOC Approved Completion Schedule (July 2009)	Current Completion Forecast (July 2009)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i = g + h	j	k = j - i	l	
SFOBB East Span Seismic Replacement							
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	-	●	
SFOBB East Span Bridge Opening and Other Milestones							
OTD West bound Access			Jan 2010	Jan 2010	-	●	
YBI Detour Open			Sep 2009	Sep 2009	-	●	See page 18
West bound Open	Sep 2011	12	Sep 2012	Dec 2012	3	●	
East bound Open	Sep 2012	12	Sep 2013	Sep 2013	-	●	
SFOBB West Approach Replacement						●	
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 (Jul 2005)	BATA Approved Changes	Current BATA Approved Budget (July 2009)	Cost to Date (July 2009)	Current Cost Forecast (July 2009)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
New Benicia-Martinez Bridge								
Capital Outlay Construction	Construction	861.6	174.0	1,035.6	992.8	1,035.6	-	●
Capital Outlay Support		157.1	35.1	192.1	189.8	192.1	-	●
Capital Outlay Right-of-Way		20.4	(0.1)	20.3	17.0	20.3	-	●
Project Reserve		20.8	3.7	24.5	-	24.5	-	
Total New Benicia-Martinez Bridge		1,059.9	212.7	1,272.5	1,199.6	1,272.5	-	
Interstate 880/Route 92 Interchange Reconstruction								
Capital Outlay Construction	Construction	94.8	60.2	155.0	72.2	155.0	-	●
Capital Outlay Support		28.8	34.6	63.4	48.7	63.4	-	●
Capital Outlay Right-of-Way		9.9	7.0	16.9	11.7	16.9	-	●
Project Reserve		0.3	9.4	9.7	-	9.7	-	
Total I-880/SR-92 Interchange Reconstruction		133.8	111.2	245.0	132.6	245.0	-	
Completed Program Projects		918.9	(30.0)	888.9	878.6	888.9	-	
Total Regional Measure 1 Toll Bridge Program		2,112.6	293.9	2,406.4	2,210.8	2,406.4	-	

● 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 (Jul 2005)	BATA Approved Changes (Months)	Current BATA Approved Completion Schedule (July 2009)	Current Completion Forecast (July 2009)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i = g + h	j	k = j - i	l	
New Benicia-Martinez Bridge							
Contract Completion							
1962 BM Bridge Reconstruction	Dec 2009	(4)	Aug 2009	Aug 2009	-	●	See Page 54
New Benicia-Martinez Bridge Opening Date							
New Bridge	Dec 2007	(4)	Aug 2007	Aug 2007	-	●	
Interstate 880/Route 92 Interchange Reconstruction							
Contract Completion							
Interchange Reconstruction	Dec 2010	6	Jun 2011	Jun 2011	-	●	See Page 56

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

The Completed Skyway

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 of the separate elements 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.

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 8th, 2009.

Overview of the Completed West Approach Replacement Structure

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 also will 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 towards 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 New Self-Anchored Suspension Bridge

Overview of Progress on the Yerba Buena Island Detour

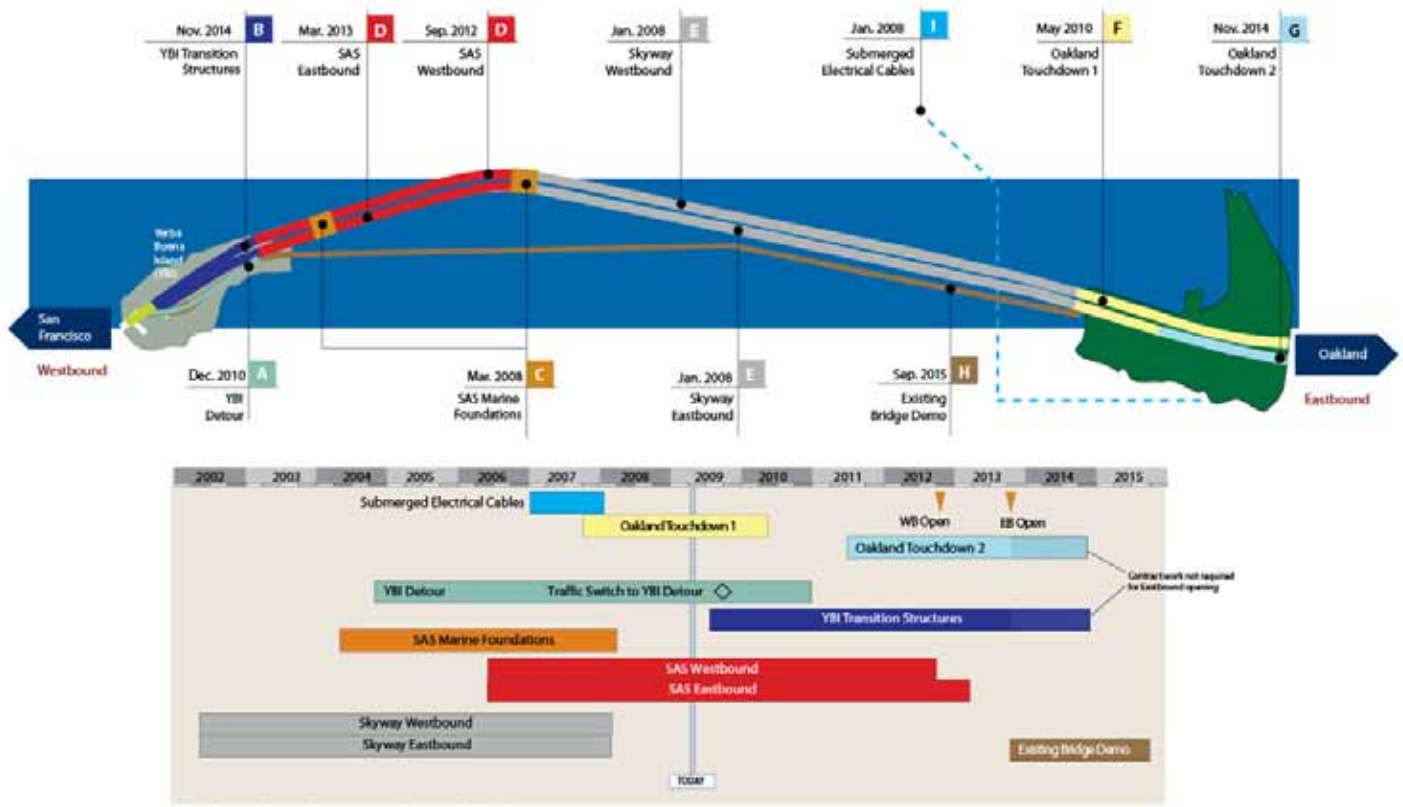
TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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 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 including their schedules. The letter designation before each contract corresponds to contract descriptions in the rest of the report.

SFOBB East Span Work Sequence



Note: Dates shown above are project completion dates.

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) close to moving vehicles and without disrupting traffic. To accomplish this daunting task, eastbound and westbound traffic will be shifted off the existing roadway and onto a temporary detour supported by 200-foot-tall steel towers. 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: $492.8 M
Status: 74% Complete

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 of Replacement Tunnel Approach Roadway

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

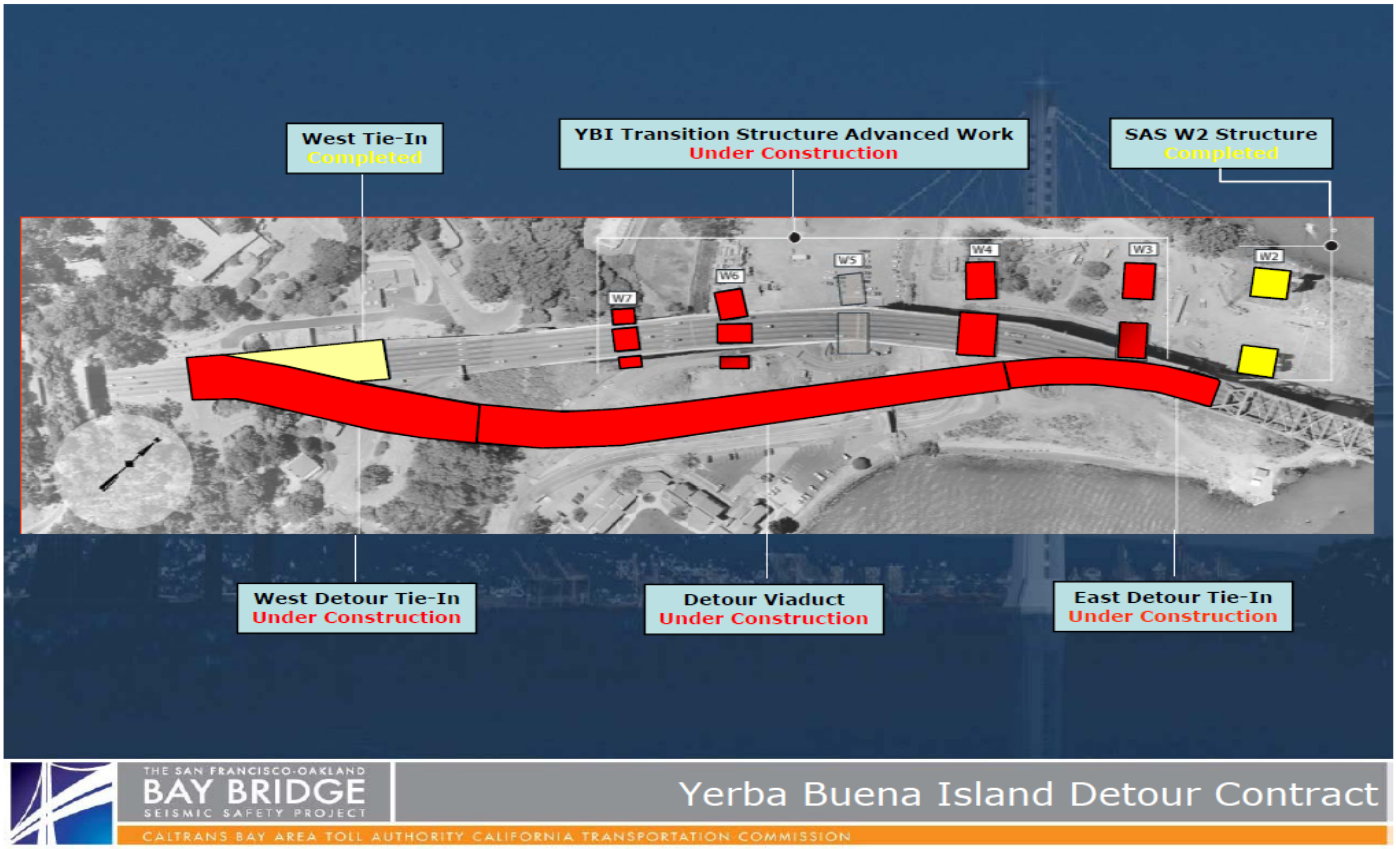
The detour viaduct will run generally parallel to the existing lanes on the island and will tie back into the existing bridge and tunnel. While speed limits will be reduced due to the turns needed to get on and off the detour, the viaduct will look quite similar to the existing bridge with steel cross beams and girders and a concrete roadway deck. To insure a good fit, the steel viaduct truss members were pre-fitted during fabrication in South Korea and Oregon. Opening of the detour to traffic is discussed on the following page.

Status: Most of the center portion of the detour viaduct has already been erected, including the concrete decks. At the west end of the detour, a cast-in-place concrete transition span has been poured to connect the detour into the completed tunnel approach roadway replacement span. At the east end, support structures and falsework, which are being erected to facilitate the roll-out/roll-in of the last truss section that will tie the detour into the existing bridge, are nearly complete.

Demolition of Existing Viaduct

After shifting traffic onto the detour structure, crews will focus on the demolition of the existing transition 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: The start of the demolition is pending the opening of the detour.



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

TOLL BRIDGE SEISMIC RETROFIT PROGRAM
Yerba Buena Island Detour (YBID) East Tie-in Opening Activities

Shifting traffic to the Yerba Buena Island detour will be the most significant realignment of the bridge to date. To accomplish this, crews will cut away a 288-foot portion of the existing truss bridge and replace it with a connection to the detour. This dramatic maneuver will involve aerial construction that occurs more than 100 feet above the ground. When the Bay Bridge reopens to traffic, vehicles will travel on the detour until the completion of the new East Span.

A detailed step-by-step construction sequence for the roll-out of existing span and roll-in of the new truss at the east tie-in to the detour viaduct structure is provided on the facing page.

Status: The YBID contractor is nearing completion of Stage 3 and will be ready for the Labor day weekend roll-out/roll-in.

East Tie-In Structure

Yerba Buena Island Detour East Tie-In Structure

East Tie-in Activities From Now through August 2009

Stage 1 – As the detour viaduct is being constructed (left), a support structure of falsework will be erected to support the new and existing trusses and the skid bent girders on which the trusses will move.

Stage 2 – The new roll-in truss will be constructed atop the skid bent just south of the existing truss.

Stage 3 – When the roll-in truss and detour viaduct are ready to be installed and opened to traffic, the Bay Bridge will be closed to all traffic.

East Tie-in Activities Over Labor Day Weekend 2009

Stage 4 – After the bridge is closed, the existing truss will be cut loose at both ends and will be rolled out hydraulically using jacks similar to those used for the Labor Day 2007 move to push the truss aside.

Stage 5 – After the existing truss has been rolled out of the way, the new truss will be similarly rolled into place using the same hydraulic jacking system.

Stage 6 – After being rolled into place, the new truss will be secured to the detour viaduct and existing bridge and the Bay Bridge will be re-opened to traffic. Removal of the rolled out span will commence soon after the new truss is secured.

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 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 Support Columns Looking West

B YBITS #1 Contract

Contractor: TBD
Current Capital Outlay Forecast: $223.2 M
Status: Advertised

The YBITS #1 contract will construct the mainline roadway structures from the SAS bridge to the YBI tunnel. Work on the structures is scheduled to start once the existing structures have been demolished and removed from the site. An addendum to revise the bid opening date to December 15, 2009 was issued in May.

Rendering of Future Yerba Buena Island Transition Structures (top) with Detour Viaduct (bottom)

YBITS #2 Contract

Contractor: TBD
Current Capital Outlay Forecast: $59.4 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.

YBITS Advanced Foundation and Column Work in Progress

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

If one single element bestows the status of world class 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 the 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

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 W2 Stripping Void—South

SAS Pier Table at E2

C SAS Marine Foundations Contract

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

The single main suspension cable is anchored at Pier E2 and goes up and over the tower at Pier T1 before wrapping around column W2 on Yerba Buena Island before returning to Pier E2 (see rendering on facing page). 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.

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: $1,753.7 M
Status: 44% Complete

Rising 525 feet above mean sea level and embedded in rock, the single-tower SAS span is designed to withstand a massive earthquake. The SAS bridge is not just another suspension bridge. 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 separate structures in the ground. 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 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 in the same way as a fuse in an electrical circuit. These beams will absorb most of the impact from an earthquake, preventing damage to the tower legs. In addition, if one of the legs is damaged, the other legs will keep the bridge standing.

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

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Self-Anchored Suspension (SAS) Construction Sequence

STEP 1 - CONSTRUCT TEMPORARY SUPPORTS

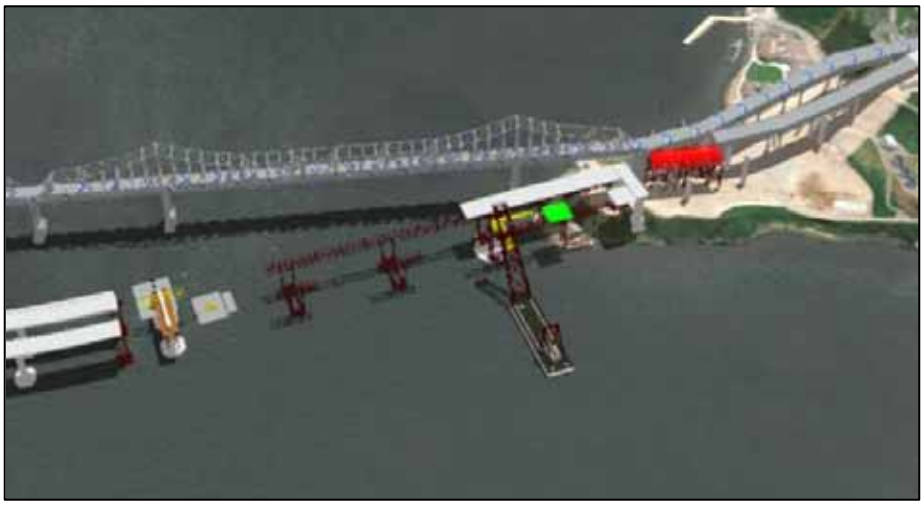
Temporary support trusses will need to be erected from the Skyway to Yerba Buena Island to support the new SAS bridge during construction.

Status: Foundations for the temporary supports are complete. Support columns and trusses 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).



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 (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 sections.

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 scheduled for 2012.

Step 6 - Eastbound Opening

Opening of the bridge in the eastbound direction is pending completion of Oakland Touchdown 2, which needs westbound traffic off the existing bridge before the eastbound approach structure can be completed.

Status: Eastbound opening is scheduled for 2013.

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Self-Anchored Suspension (SAS) Superstructure Fabrication Activities

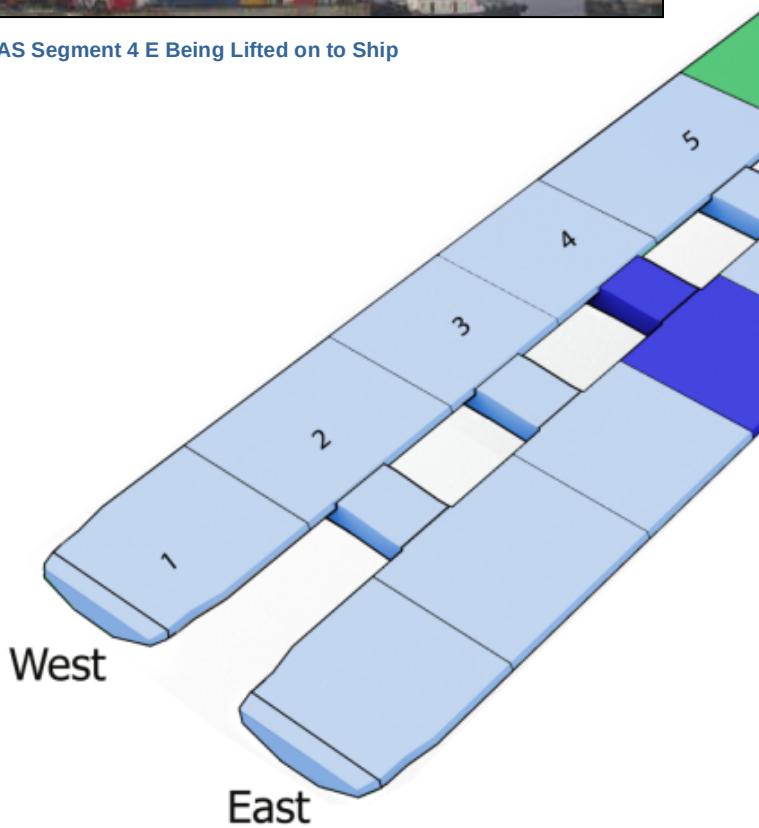
Nearly every component of the SAS above the waterline - from the temporary support structures to the roadway and tower box sections to the main cable and suspender ropes - will be fabricated off-site and erected into place upon arrival in the Bay Area. This project is truly global in nature, with fabrication 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.

SAS Segment 4 E Being Lifted on to Ship

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: Roadway and tower segments are in various stages of fabrication. Roadway sections 1 through 5 east and west have been assembled for paint and fit up, while roadway sections 6 , 7 and 8 are undergoing assembly. Roadway sections 1, 2, 3, and 4 are scheduled to leave China in the next quarter. Roadway box segments 1 through 4 are currently being prepared for voyage 1 and the shipment is expected by October 2009 (see photo above).

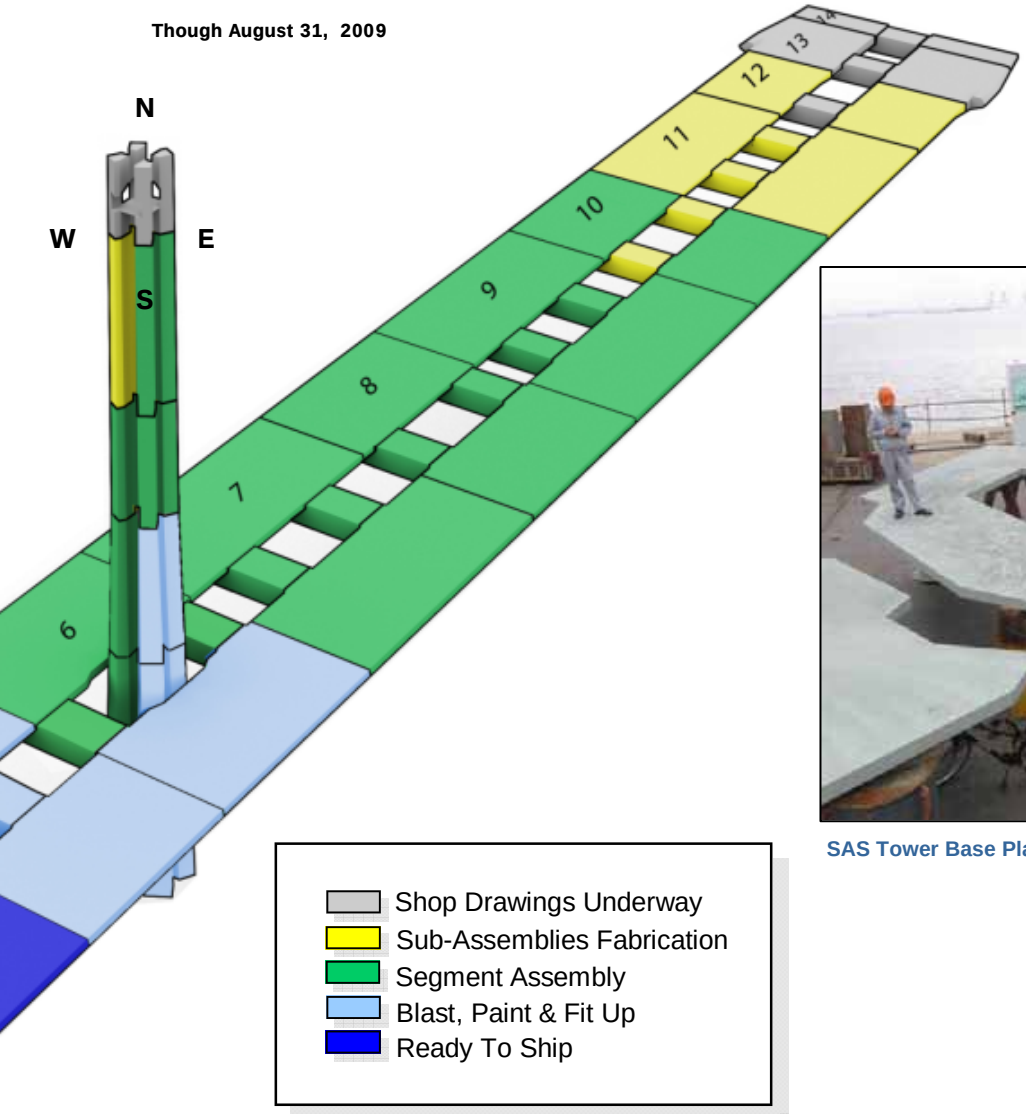


Individual subassemblies for roadway sections 9, 10, 11, and 12 are being fabricated. Delays in the preparation of shop drawings for the fabrication of the roadway sections 13 and 14 are putting schedule pressure on the westbound opening of the bridge in 2012.

On the tower sections, assembly of the first of five tower lifts is well underway. The second tower lifts have also started to allow for trial fit-up prior to the first lift as per specification (see additional progress photos on pages 74 through 77). The first tower lift shipment is expected by Spring of 2010.

Fabrication Progress Diagram

Though August 31, 2009



SAS Tower Base Plates

SAS OBG Trial Assembly East Line Lifts 3 & 4

SAS Roadway Opening in the OBG (Roadway Box) Sections

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Self-Anchored Suspension (SAS) Superstructure Fabrication Activities

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 one side of Pier E2, go over the main tower at T1, loop around the western end of the roadway decks at Pier W2, and then back over main tower to the other end of Pier E2. The main cable will be made up of bundles of individual wire strands. Lifting up 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.

Status: Initial trial testing of the main cable strands is in progress.

SAS Fabricated Galvanized Wire Green Tagged in New Hampshire

SAS Fabricated Bushings in Pennsylvania

Saddles, Bearings, Hinges, and Other Bridge Components

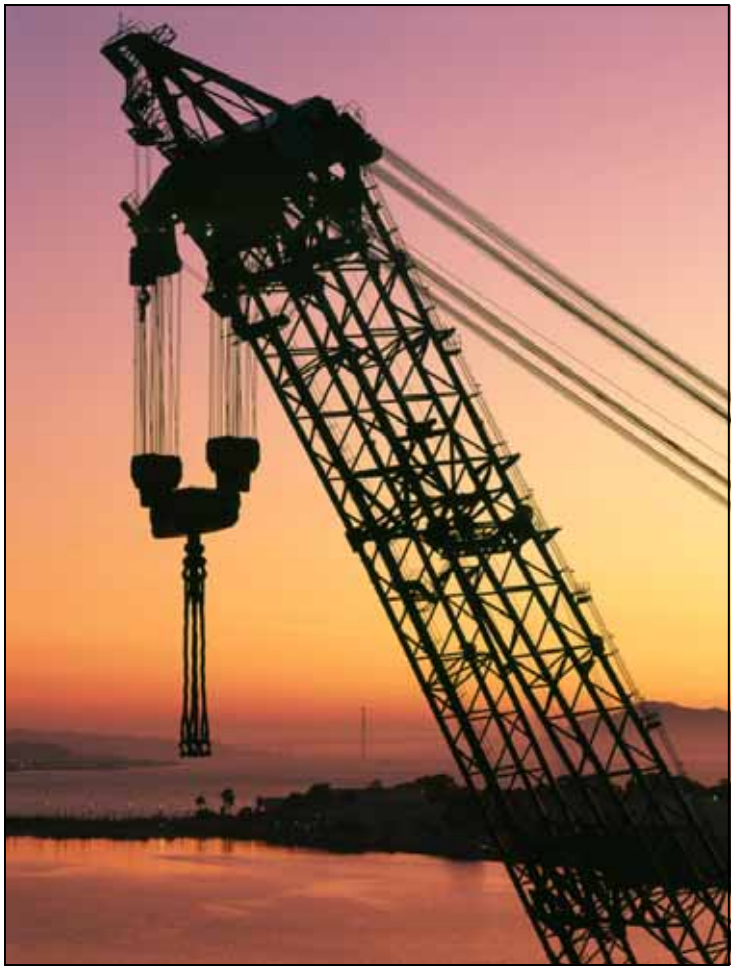
The mounts on which the main cable and suspender ropes will sit are made from solid steel castings. Castings for the main cable saddles are being made by Japan Steel Works, while the cable bands and brackets are being made by Goodwin Steel in the United Kingdom.

The bridge bearings and hinges that support, connect, and transfer service loads from the SAS bridge 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 and South Korea, while hinge pipe beams are being fabricated in Oregon.

Status: Under Fabrication.

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 will help 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 Port Machinery 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, which will begin arriving this summer.

The crane has off-loaded all temporary trusses shipped to date and has lifted 50 percent of the temporary towers' trusses 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: At job site.

SAS Completed Cross Beam at Pier 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 and tie down upon them.

Status: Completed.

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

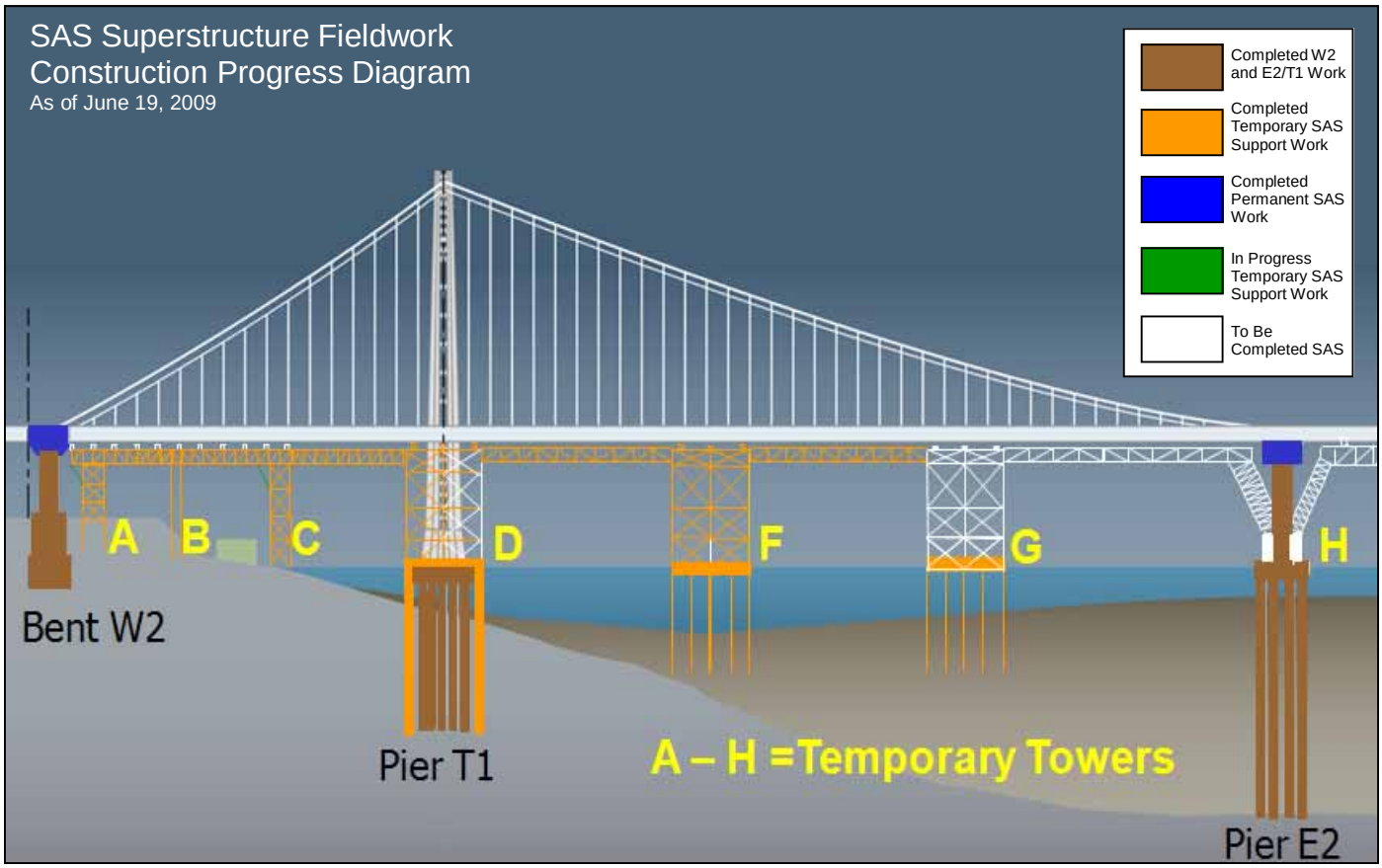
Self-Anchored Suspension (SAS) Superstructure Field Activities

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 and approximately half of the temporary trusses are in place. The last remaining shipment will be here in the next quarter.

SAS Temporary Truss and Towers Erection East and West Bound



SAS Temporary Towers and Truss Erection Westbound and Eastbound

View of SAS Temporary Trusses and Towers from South East

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 grey steel that currently cages drivers, a graceful, elevated roadway supported by piers will provide sweeping views of the bay.

Completed Skyway Left of Existing East Span

E Skyway Contract

Contractor: Kiewit/FCI/Manson Joint Venture
Approved Capital Outlay Budget: $1,254.1 M
Status: Completed

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), and contain 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 winches that were custom made for this project.

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.

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 so that a portion of the upper deck of the existing bridge can be demolished to allow for a smooth transition for the new eastbound lanes in Oakland.

F Oakland Touchdown #1 Contract

Contractor: MCM Construction, Inc.
Current Capital Outlay Forecast: $211.8 M
Status: 77% Complete

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 foundation work and is now proceeding with eastbound superstructure work. Work continues on the eastbound structure's foundations and columns. The contractor MCM re-established temporary construction access to the Skyway structure over the new westbound Oakland Touchdown on August 4th, which was accomplished ahead of schedule.

Finish Work on Oakland Touchdown Westbound Structure

G Oakland Touchdown #2 Contract

Contractor: TBD
Current Capital Outlay Forecast: $64.0 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.

Installation of Junction Box for Traffic Loops at Oakland Touchdown

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 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

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 that 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

The Stormwater Treatment Measures contract implemented a number of best practices for the management and treatment of storm water 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.

Storm Water Retention Basin

Yerba Buena Island Substation

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

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

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: $239.2 M
Status: In Design

Design work on the contract will start in earnest as 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

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 cables were run from Oakland to Treasure Island to replace the existing cable. The extra cable was funded by the Treasure Island Development Authority and its future development plans.

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Other Completed Projects

The State Legislature in the 1990s 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 the bridges have been completed as planned.

High-Rise Section of San Mateo-Hayward Bridge

San Mateo-Hayward Bridge Seismic Retrofit Project
Project Status: Completed 2000

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

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

Vincent Thomas Bridge

San Diego-Coronado Bridge Seismic Retrofit Project
Project Status: Completed 2002

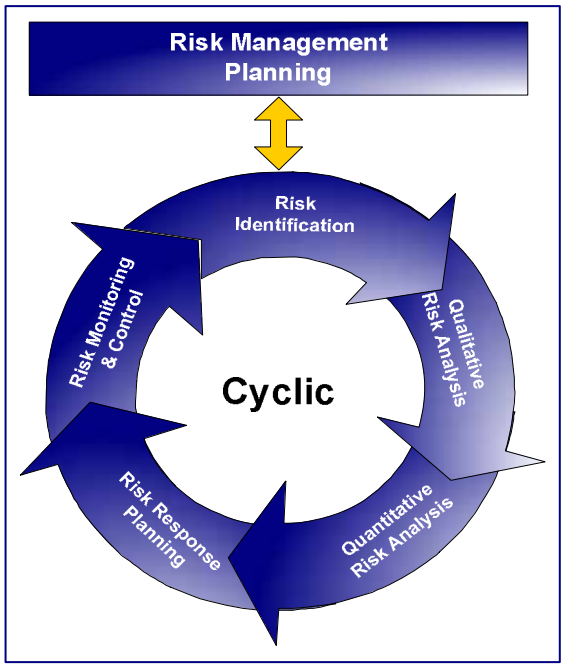
San Diego-Coronado Bridge

TOLL BRIDGE SEISMIC RETROFIT PROGRAM
Risk Management Program Update

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 $740.3 million according to the TBPOC Approved Budget, unchanged from the previous quarter.

The Risk Management Process

Caltrans' approved risk management plan provides for a systemic and continuous process of identifying, analyzing, and responding to project and program risks. Risk management plan implementation provides



for maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives (e.g., cost, schedule and quality). Each element of the risk management process is shown in Figure 1 above and is explained in the following paragraphs. The risk management cyclic process is performed on a quarterly basis and encompasses all identified risks related to the contracts, program, corridor, capital outlay, capital outlay support, and schedule.

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

Although the risk management processes above are presented as discreet elements with well-defined interfaces, in practice they often overlap and interact with each other.

What Risk Management Does and Does Not Include

Risk management addresses risks that may affect its defined project objectives such as cost, time, scope and quality. Given a project plan, risk management generally looks at ways in which the project may not go according to plan. Risk management focuses on the defined project scope and objectives, and therefore does not include 1) risks or possible decisions that may "kill" the project -- if the project ceases to exist, there are no risks to manage. For example, risk management does not include risks such as the loss of funding, natural disaster that destroys all or part of the construction or acts of governments, and 2) risks or possible decisions that may materially change the project -- if the project objectives are changed substantially, risk management will start afresh on the "new" project. For example, the YBI Detour contract

Yerba Buena Island Detour Viaduct Lower Bolt Box Installation

was materially changed by the addition several YBITS1 project foundations by contract change order as well as certain design enhancements that were made to the east and west "tie-ins" of the YBI Detour structure. The risks of such decisions were not in the risk register of the original contract. In a nutshell, risk management is confined to quantifying risks that are intended to be covered by project and program contingency.

About "Risk" and "Opportunity"

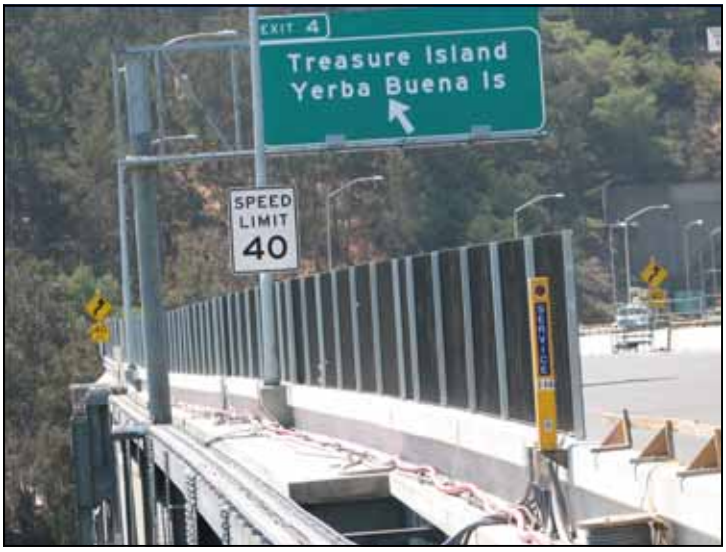
The concept of risk can include both upside as well as downside impacts. This means that the word "risk" can be used to describe uncertainties, which if they occurred, would have a negative or harmful effect, and the same word can also describe uncertainties, which if they occurred, would be helpful. In short, there are two sides to risk - threats and opportunities. A risk that has no threat is a "pure opportunity." It is simply an unplanned good thing which might happen. For example, a new design method might be released, which we can apply to benefit our project. Opportunity is the inverse of threat if a risk has both threat and opportunity. Where a risk variable exists on a continuous scale and there is uncertainty over the eventual outcome, instead of just defining the risk as the downside it might also be possible to consider upside potential. For example, if we have included escalation at 5 percent in our budget for future contracts and this rate could range from say 3 to 7 percent depending on economic conditions at the time of advertisement, we have an opportunity in the 3 to 5 percent range and a threat in the 5 to 7 percent range. Opportunity and threat exist in the one risk. If the budget were based on 7 percent escalation we would have only opportunity. If based on 3 percent we would have only threat. Threat and opportunity can also depend on how we define the risk. For example, if the risk is that an external agency may relax its requirements and this saves us money relative to what we have budgeted currently in our plan, this is an opportunity. If the risk is defined as the agency may tighten its requirements and this adds to our costs, this is a threat. We can only separate the opportunity and threat if we are certain that the agency may act only one way and not the other. If the risk is that the agency may change its requirements, we could have impacts that range from positive to negative. We would have both opportunity and threat in the same risk, and the degree of each would depend on what we have budgeted in our plan. Uncertainty in the cost of major contract change orders is another example of opportunity. If we enter an estimate into the change order log and the final outcome could range from less than the estimate to more than the estimate, we have both an opportunity and a threat. The degree of opportunity and threat depends on where the estimate lies within the range.

Risk Management for Projects in Design and Construction

Projects in design have the greatest potential for opportunities, because the project is still open to changes. Risk reduction and avoidance are opportunities, as are value analysis, constructability reviews and innovations in design, construction methods and materials. Once a project enters construction, the project objectives (scope, time and cost) are fixed contractually. Any changes are made using a contract change order. The only opportunity to save money or time is from a negative change order such as resulting from a cost reduction incentive proposal by the Contractor. Otherwise, change orders add cost and/or time to the project. So, the prime opportunity during construction is to reduce or eliminate risks.

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Risk Management Program Update (cont.)



Yerba Buena Island—Viaduct Upper Deck Fencing and Signs

Risk Management Developments in the First Quarter of 2009

The approved TBSRP risk management plan provides for reporting quantitative cost risk results and other risk management information from the previous quarter's risk management assessment. Described below are the main risk management developments and updated quantitative cost risk results for the first quarter of 2009.

SAS Contract

Fabrication and OBG and Tower

Caltrans' quality assurance team (Team China), in concert with the Contractor and its fabricator, continues to implement the "Green Tag" procedures that identify and inspect partially fabricated components at the fabrication shop to ensure that they are in compliance with the contract requirements prior to the next stage of fabrication. "Green Tagging" has streamlined the assembly processes and will mitigate delays from potential rework after assembly.

Team China continues to work to mitigate deck and tower fabrication delays reported in the SAS Contractor's latest schedule update. Efforts to create a new opportunity schedule began last quarter and are expected to continue through the next. Potential responses include the implementation of the additional shop space Contract Change Order (CCO) and the use of shop space intended for other fabricator projects should the opportunity arise. In addition, Team China is assessing the construction of an environmentally controlled temporary shelter to enable work to continue throughout the summer months sheltered from the weather. Work could proceed in multiple shifts to expedite fabrication.

East End Shop Drawings

As discussed in the reports for the third and fourth quarter of 2008, efforts to perform three-dimensional modeling of the east end orthotropic box girder lifts have been undertaken. The modeling has identified conflicts that were resolved or could be resolved prior to fabrication; however, this was only a preliminary step in the development of shop drawings for these elements. The development and approval of shop drawings has yet to be completed.

During this quarter, the urgency of shop drawing development has escalated to a point where it has become one of the most important challenges on the project. To address this, Caltrans, the designer of record, the SAS Contractor, and its detailer have been assessing how to expedite delivery and approval of the shop drawings while maintaining the quality necessary to minimize the passing of risks into fabrication. Actions include the co-location of personnel from all stakeholders to the Contractor detailer's offices in Vancouver, Canada. In addition, methodologies to streamline shop drawing approval and to repackage submittals to coincide with the SAS fabricator's anticipated schedule are expected to be implemented.

SAS Cable Installation

The Cable Focus Team meets weekly to address issues and refine plans. It has retained international experts having expertise and experience in cable installation. The Cable Engineering Risk Management (CERM) Team is scheduled to meet in the second quarter of 2009. Efforts to procure S-Wire samples for the design of the cable wrapping machines have proven fruitful.

SAS Opportunity Schedule

The SAS Contractor's March 2009 schedule update (currently under review by Caltrans) indicates that the certain elements may be as much as 12 months behind the Contractor's original baseline schedule. This schedule update has changed the durations for several activities including extending the time for developing shop drawings and fabricating the east end orthotropic box girder (OBG). The schedule recognizes some opportunities in post-fabrication activities, but does not include all potential delays or opportunities. Fabrication continues in China. The March 2009 schedule update shows the first shipment of OBG lifts leaving China in July 2009. Team China continues to monitor fabrication and to look for ways to recover time. While an agreement was made last quarter to potentially mitigate six months of delay by accelerating fabrication, the saving is likely to be less than six months. Negotiations are still underway concerning acceleration and resolution of previous fabrication issues. Caltrans and the Contractor are have developed a joint opportunity schedule to be used in managing the project with the goal of developing and implementing strategies to accelerate corridor completion.

Yerba Buena Island Detour Contract

East Tie-In

Continuing the collaborative on-site meetings at the different fabrication facilities, Caltrans construction and design personnel, in concert with the Contractor, resolved many issues that might have caused significant delay to the traffic switch schedule. In particular, the subcontractor responsible for the east tie-in bridge moving operation relocated to the designer of record's office in San Francisco for 12 weeks to help resolve all issues with the design of the bridge movement system. Caltrans requires a satisfactory contingency plan from the Contractor before the "roll out/roll in" can commence. The plan is expected to be fully developed in the second quarter of 2009. A full bridge closure is scheduled for the 2009 Labor Day weekend. It is optimal for the corridor construction schedule and presents minimal impact to public traffic. The project management team is looking at the possibility of providing the Contractor a four-day work window to complete the work. The Risk Management Team will conduct workshops to help guide the decision on the appropriate length of time to allocate for this complex work.

Demolition

The initial cost estimates for completing the demolition (Demo) and the W5 foundation by April 30th, 2010 were reassessed this quarter. Several mitigation options were studied in detail. One option was to extend YBID contract time by several months to complete the Demo without incurring any overtime costs and staging the work to not impact the overall corridor schedule. A second option was to add the Demo and W5 work as an addendum to the YBITS #1 project to bid the work in a competitive environment. The Corridor Schedule Team identified additional schedule risks associated with this option.

The contract risk management team had several meetings to assess the cost/benefits of removing the demolition from the YBID project and bidding this work on the YBITS #1 contract. A matrix of risks was quantified which helped the program management to decide that there was less risk by continuing with this work on the YBID contract.

Traffic Switch

The project management team held regular on-site collaborative workshops with the various fabricators to help resolve design and constructability issues in a timely manner. This open line of communication among the Contractor, its subcontractors, and Caltrans' construction, design and material engineering and testing services allows resources to be assigned to critical areas to mitigate any potential delay prior to its occurrence. In addition, this process has also identified innovative ways to accelerate critical components of the work. In particular, the team identified significant bottlenecks in the fabrication processes for the skid beam and truss, and executed a series of CCOs to help accelerate the work to meet the goal of opening the new detour to traffic in the fall of 2009.

Oakland Touchdown Westbound (OTD #1) Contract

The risk of encountering unknown utilities was reduced this quarter, as all the foundations have been completed with no significant conflicts. Unknown utilities were encountered and conflicts resolved quickly. The cost of future potential conflicts is expected to be low. The risk of conflicting or differing opinions over welding has been reduced this quarter. All production piles are complete, and most non-conformance reports were for minor issues. Remaining work includes welding the bike path rails. The cost of remaining potential welding issues is expected to be very low. The OTD #1 Contractor has been successful in reaching 22 percent small business participation.

West Approach Contract

The West Approach construction contract was accepted April 8th 2009. The probable cost of the risks has diminished by approximately 75 percent from the previous quarter. The reduction is due primarily to the retirement of four risks at the completion of construction.

YBI Transition Structure (YBITS #1) Contract

A risk mitigation plan has been adopted to mitigate potential conflicts between electrical/mechanical and structural elements. This plan provides that Integrated Shop Drawings (ISDs) will be performed as part of design to reduce the likelihood of conflicts and potential costs of rework and/or delays. ISD specifications are being prepared that will require the YBITS1 construction Contractor to produce ISDs that include its own work means and methods, as first order of work.

RISK MANAGEMENT LOOK-AHEAD TO THE 2ND QUARTER OF 2009

SAS: Engage Schedule Partnership

The Corridor Schedule Team continues to assess contract schedules. The opportunity schedule development, which began as a joint effort between Caltrans and the Contractor is continuing with a refocused effort with the goal of developing and implementing strategies to accelerate corridor completion.

SAS: East End Detailing

The east end of the OBG (Lifts 12 – 14) is significantly more complicated than the other lifts due to superelevation transitions, horizontal curves, cable anchorages, hinge diaphragms, etc. In the fourth quarter of 2008, three-dimensional modeling of the area was successful in identifying conflicts and complexity issues. The development of shop drawings is expected to be extremely complicated and will require a coordinated effort by Caltrans' design and construction forces and the Contractor. The Working Drawing Campus Team will continue to engage the Contractor and determine ways to expedite shop drawing reviews and minimize rework.

YBI Detour: Detailed event planning for YBI Detour Traffic Switch

The TBPOC, in consultation with the project risk management team, will decide in the second quarter whether a fourth day will be required for the YBI Detour traffic switch. Event and contingency planning will also be finalized in the second quarter and the planning effort will be commensurate with the planning that went into the 2006 and 2007 bridge closures.

YBITS 1: Project Milestone Evaluation and Integrated Shop Drawings (ISDs)

The YBID Contractor must complete the Demo and Pier W5 construction before the YBITS #1 Contractor commences field work. Potential delays may result if

the YBITS#1 structure is ready for Hinge "K" closure, but the SAS Contractor is not ready to vacate the area. To mitigate potential construction delay risks, the bid open date and other project milestones will be continuously reviewed and assessed based on the actual progress of the YBID and SAS contracts.
A decision has been made to perform the YBITS #1 ISDs now to resolve potential electrical-mechanical-structural conflicts and revise the contract plans accordingly.

ADEQUACY OF PROGRAM RESERVE (PROGRAM CONTINGENCY)

Potential Draw on Program Contingency

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 risks, 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). As of the end of the first quarter of 2009, the 50 percent probable draw on Program Contingency is $604 million. The $689.7 million TBPOC Second Quarter of 2009 Approved Budget Program Contingency is sufficient to cover identified risks to a 95% confidence level. Ongoing risk mitigation actions will continue to be developed and implemented to reduce the potential draw on Program Contingency.

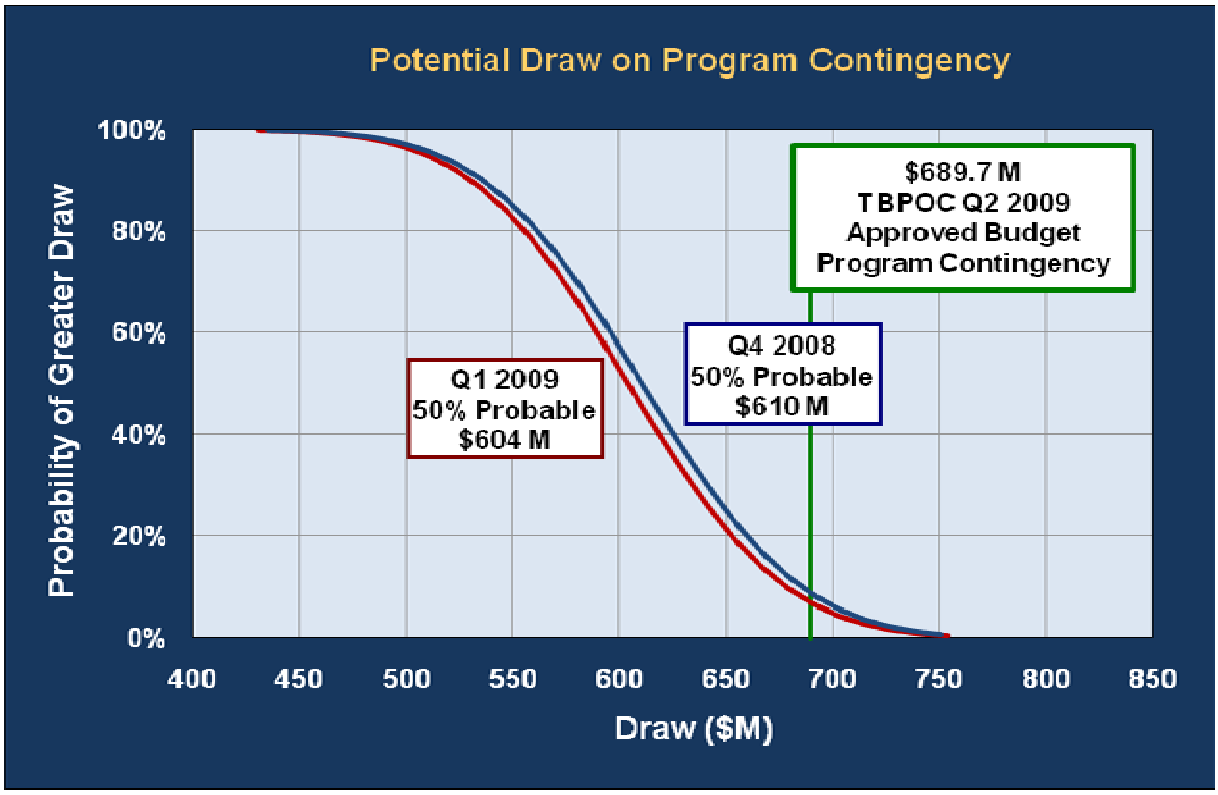


FIGURE 2 – POTENTIAL DRAW ON PROGRAM CONTINGENCY

The curve in Figure 2 can be used to directly read off the probability of exceeding any value of cost. For example, there is about an 80 percent chance that the potential draw on Program Contingency (Reserve) will exceed $560 million while there is only about a 20 percent chance that it will exceed $650 million.

Seismic Retrofit of the Dumbarton and Antioch Bridges

SEISMIC RETROFIT OF DUMBARTON AND ANTIOCH BRIDGES

Dumbarton Bridge Seismic Retrofit Project

Project Status: In Design

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 reevaluated for seismic vulnerability based on more recent seismic engineering, which has shown the bridge to be susceptible to damage from a major earthquake.

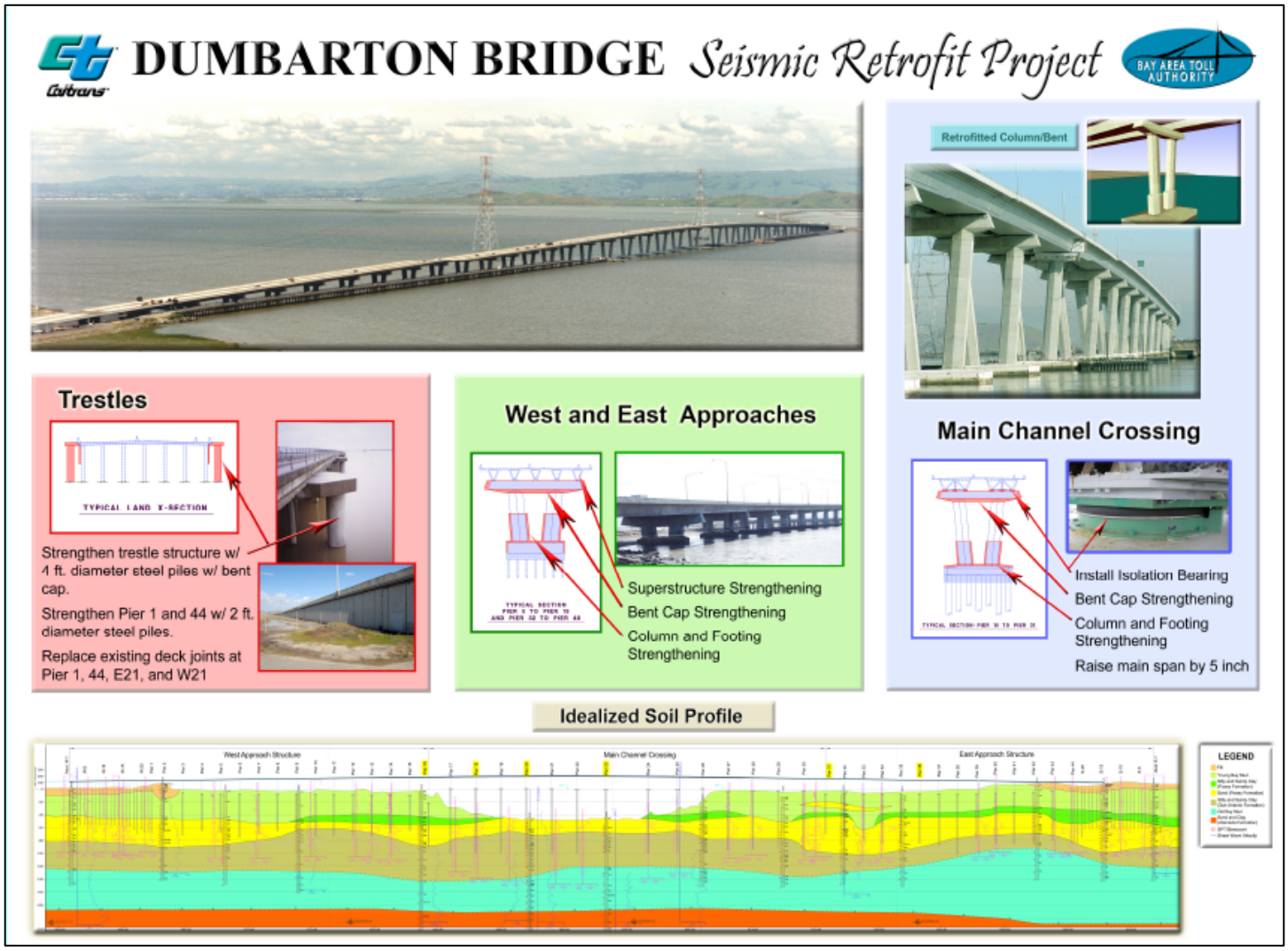
Prototype Bearings for the Dumbarton Bridge Seismic Retrofit

Existing Dumbarton Bridge Looking East towards 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 the development of a seismic retrofit strategy and design plans.

The current retrofit strategy for the Dumbarton Bridge includes superstructure and deck modifications, plus strengthening of 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: Complete plans and specifications are expected by the end of the year. Advertisement of the project is planned for 2010: however, it may be postponed due to delayed environmental permits for the project. The estimated cost of the Dumbarton Bridge seismic retrofit is $637 million. Full funding for the retrofit work has not yet been identified; however, State Assemblyman Tom Torlakson is sponsoring Assembly Bill 1175 to amend the Toll Bridge Seismic Retrofit Program (TBSRP) to incorporate and fund the Antioch and Dumbarton bridge retrofits.



Seismic Retrofit Strategy Summary for Dumbarton Bridge

SEISMIC RETROFIT OF DUMBARTON AND ANTIOCH BRIDGES

Antioch Bridge Seismic Retrofit Project

Project Status: In Design

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 over 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 reevaluated for seismic vulnerability based on more recent seismic engineering, which has shown the bridge to be susceptible to damage from a major earthquake.

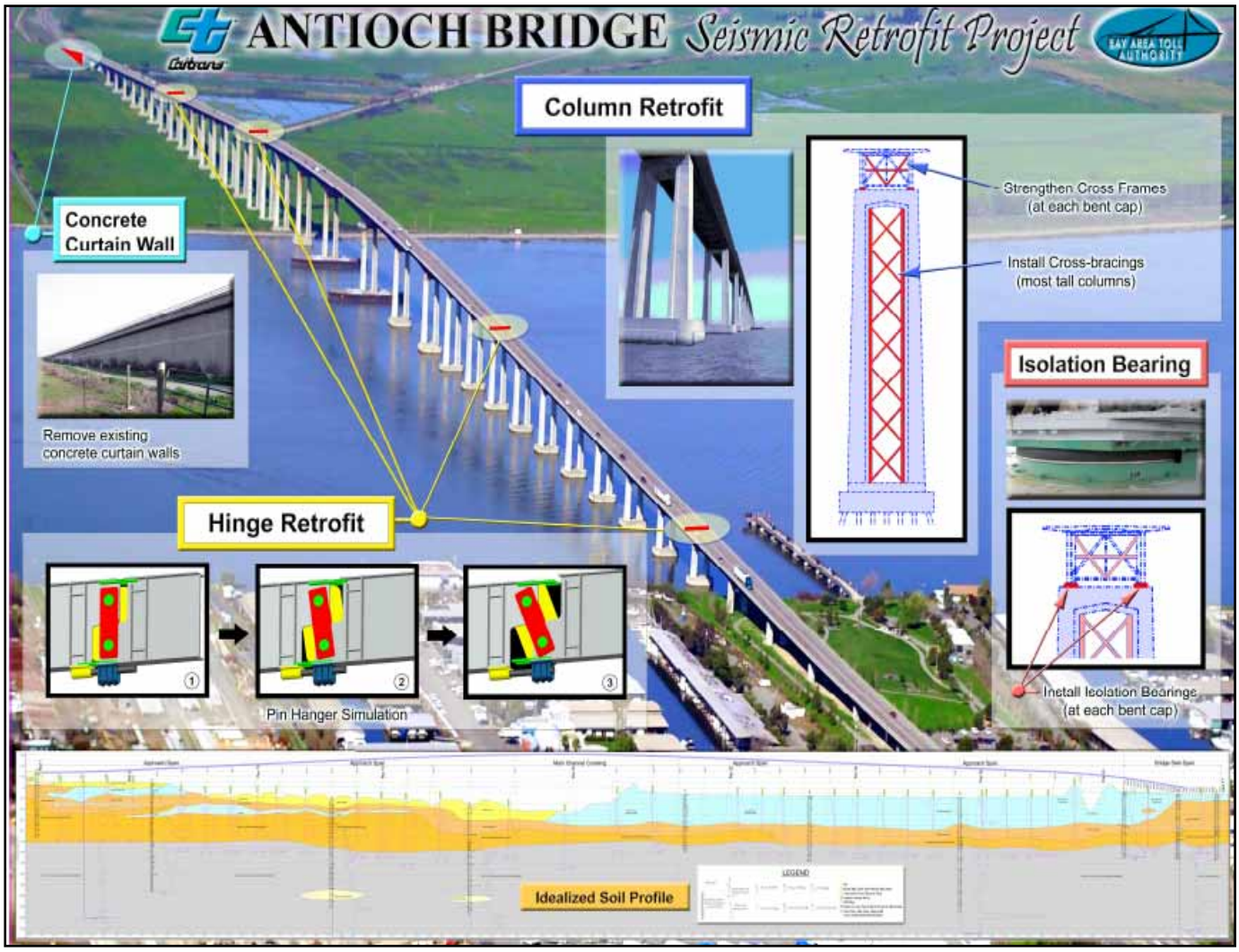
Based on the vulnerability studies and a follow-up sensitivity analysis of seismic risk, Caltrans and BATA decided to take steps towards the retrofitting the Antioch Bridge, even though full funding for the project has not yet be identified. Using BATA toll bridge rehabilitation funding, a comprehensive 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, 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

Status: Complete plans and specifications are expected by the end of the year. Advertisement of the project is planned for 2010; however, it may be postponed due to delayed environmental permits for the project. The estimated cost of the Antioch Bridge seismic retrofit is $313 million. Full funding for the retrofit work has not yet been identified; however, State Assemblyman Tom Torlakson is sponsoring Assembly Bill 1175 to amend the Toll Bridge Seismic Retrofit Program (TBSRP) to incorporate and fund the Antioch and Dumbarton bridge retrofits.

Prototype of Bearing for the Antioch Bridge Seismic Retrofit Project



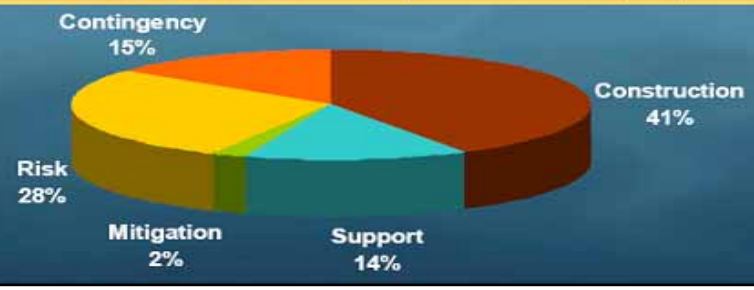
Seismic Retrofit Strategy Summary for Antioch Bridge

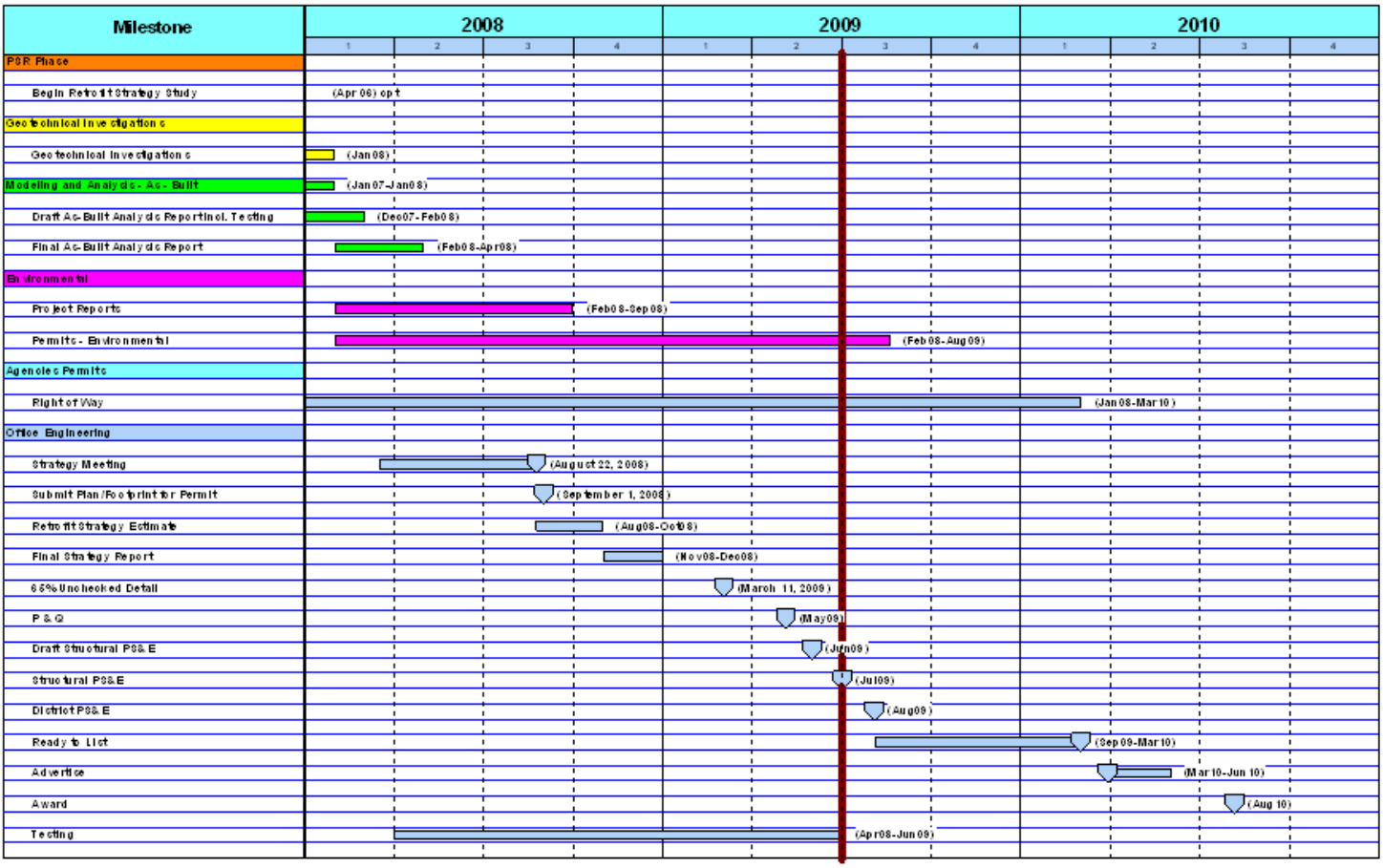
Seismic Retrofits of Dumbarton and Antioch Bridges

Project Cost and Schedule Summaries

Total Project Estimate - $950 Million

Description	Antioch ($ Millions)	Dumbarton ($ Millions)
CONSTRUCTION COST (ESCALATION TO MID YEAR OF CONSTRUCTION)	$125	$267
CONTINGENCIES	44	94
SUBTOTAL CAPITAL COSTS	169	361
SUPPORT COSTS	39	95
MITIGATION COSTS	13	7
RISK COSTS	92	174
TOTAL COST ESTIMATE	$313	$637





Dumbarton 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.

New Benicia-Martinez Bridge Opened to Traffic in August 2007

Decades in 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® express lanes, which vastly increase the throughput of vehicles using electronic toll collection.

1962 Benicia-Martinez Bridge Reconstruction Contract

Contractor: ACC/Top Grade, Joint Venture
Approved Capital Outlay Budget: $59.5 M
Status: 84% 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.

Mococo Bridge Jacking

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 span, and repair of the roadway undulations on the southern approach just south of the Marina Vista interchange.

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: Southbound I-680 was opened to traffic in early August. The Bicycle/Pedestrian path opened to traffic on August 29th. The contract is now substantially complete. Minor punchlist work remains.

Benicia-Martinez Bridge pedestrian/Bicycle Pathway Opening Ceremony with Caltrans' District 4 Director Bijan Sartipi

Completed Benicia-Martinez Bicycle/Pedestrian Pathway Open 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 78 and 79).

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

Interstate 880/State Route 92 Interchange Reconstruction Contract

Contractor: Flatiron/Granite
Approved Capital Outlay Budget: $155.0 M
Status: 52% Complete

Overview of Progress to Date

Bents 2, 3 and 4 of New Separation Bridge in Place

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 SR-92 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 has begun. Foundations and columns have be installed.

Stage 3 – Replace North Side Route 92 Separation Structure

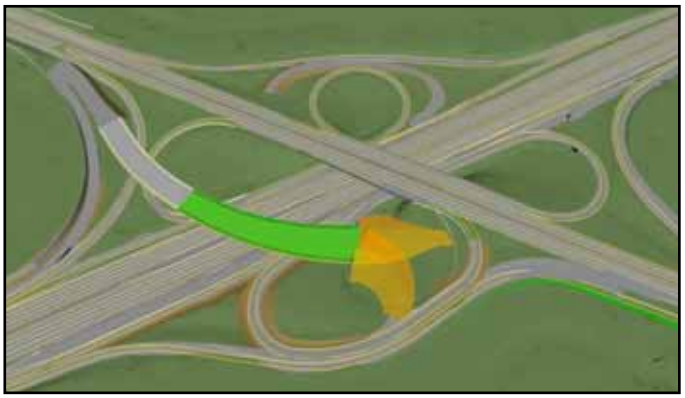
Upon completion of Stage 2, the existing north side of the separation structure will be demolished and replaced. Its traffic will then be shifted onto the newly reconstructed south side.

Status: Pending Stage 2.

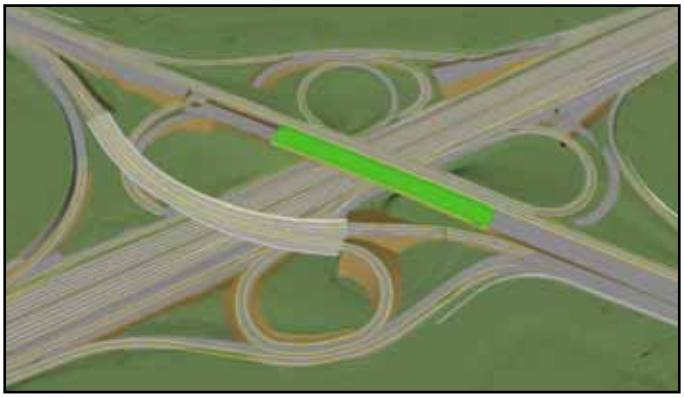
Stage 4 – Final Realignment and Other Work

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 Ave. pedestrian overcrossing. The new pump station is ongoing and scheduled to be completed in February 2010. The Calaroga Bridge is 50% complete.

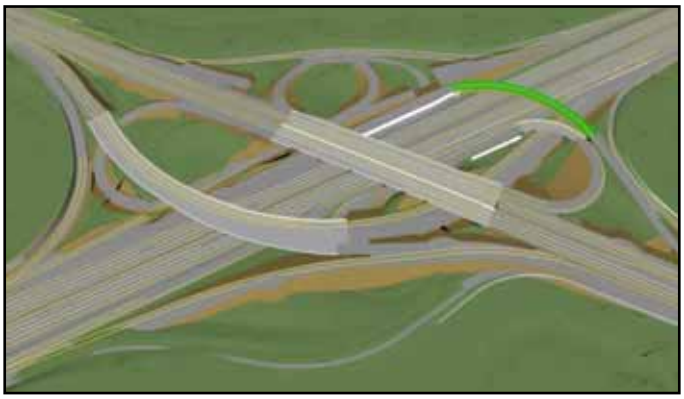


Stage 1 - Construct East Route 92 to North Interstate 880 Direct Connector



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

Widening of the San Mateo-Hayward Bridge Trestle on Left

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 bridge.

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 U.S. 101/Marsh Road interchange by adding additional lanes and turn pockets and improving bicycle and pedestrian access in the area.

APPENDICES

A. TBSRP AB144/SB 66 Baseline Budget, Forecasts and Expenditures through July 31, 2009 (A-1 and A-2)…….…. 62

B. TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures Through July 31, 2009 ……..……..…..64

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Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
SFOBB East Span Replacement Project						
Capital Outlay Support	959.3	-	959.3	749.6	1,203.1	243.8
Capital Outlay Construction	4,492.2	269.4	4,761.6	2,997.3	5,109.1	347.5
Other Budgeted Capital	35.1	(3.3)	31.8	0.7	7.7	(24.1)
Total	5,486.6	266.1	5,752.7	3,747.6	6,319.9	567.2
SFOBB West Approach Replacement						
Capital Outlay Support	120.0	-	120.0	116.5	117.0	(3.0)
Capital Outlay Construction	309.0	41.7	350.7	327.9	340.7	(10.0)
Total	429.0	41.7	470.7	444.4	457.7	(13.0)
SFOBB West Span Retrofit						-
Capital Outlay Support	75.0	-	75.0	74.8	75.0	-
Capital Outlay Construction	232.9	-	232.9	227.2	232.9	-
Total	307.9	-	307.9	302.0	307.9	-
Richmond-San Rafael Bridge Retrofit						
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	-
Total	914.0	(97.5)	816.5	794.2	816.5	-
Benicia-Martinez Bridge Retrofit						-
Capital Outlay Support	38.1	-	38.1	38.1	38.1	-
Capital Outlay Construction	139.7	-	139.7	139.7	139.7	-
Total	177.8	-	177.8	177.8	177.8	-
Carquinez Bridge Retrofit						
Capital Outlay Support	28.7	-	28.7	28.8	28.7	-
Capital Outlay Construction	85.5	-	85.5	85.4	85.5	-
Total	114.2	-	114.2	114.2	114.2	-
San Mateo-Hayward Bridge Retrofit						-
Capital Outlay Support	28.1	-	28.1	28.1	28.1	-
Capital Outlay Construction	135.4	-	135.4	135.3	135.4	-
Total	163.5	-	163.5	163.4	163.5	-
Vincent Thomas Bridge Retrofit (Los Angeles)						
Capital Outlay Support	16.4	-	16.4	16.4	16.4	-
Capital Outlay Construction	42.1	-	42.1	42.0	42.1	-
Total	58.5	-	58.5	58.4	58.5	-
San Diego-Coronado Bridge Retrofit						
Capital Outlay Support	33.5	-	33.5	33.2	33.5	-
Capital Outlay Construction	70.0	-	70.0	69.4	70.0	-
Total	103.5	-	103.5	102.6	103.5	-
Subtotal Capital Outlay Support	1,433.1	(7.0)	1,426.1	1,212.2	1,666.9	240.8
Subtotal Capital Outlay	6,286.8	220.6	6,507.4	4,691.7	6,844.9	337.5
Subtotal Other Budgeted Capital	35.1	(3.3)	31.8	0.7	7.7	(24.1)
Miscellaneous Program Costs	30.0	-	30.0	24.7	30.0	-
Subtotal Toll Bridge Seismic Retrofit Program	7,785.0	210.3	7,995.3	5,929.3	8,549.5	554.2
Programatic Risk	-	-	-	-	49.8	49.8
Program Contingency	900.0	(210.3)	689.7	-	85.7	(604.0)
Total Toll Bridge Seismic Retrofit Program	8,685.0	-	8,685.0	5,929.3	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 July 31, 2009 ($ Millions)

Bridge	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and Encumbrances as of Jul 2009 See Note (1)	Estimated Costs not yet Spent or Encumbered as of Jul 2009	Total Forecast as of Jul 2009
a	b	c	d	e	f = d + e
Other Completed Projects					
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
Richmond-San Rafael					
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
West Span Retrofit					
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
West Approach					
Capital Outlay Support	120.0	120.0	117.2	(0.2)	117.0
Capital Outlay	309.0	350.7	342.5	(1.8)	340.7
Total	429.0	470.7	459.7	(2.0)	457.7
SFOBB East Span -Skyway					
Capital Outlay Support	197.0	181.0	181.2	(0.1)	181.1
Capital Outlay	1,293.0	1,254.1	1,412.1	(158.0)	1,254.1
Total	1,490.0	1,435.1	1,593.3	(158.1)	1,435.2
SFOBB East Span -SAS- Superstructure					
Capital Outlay Support	214.6	214.6	170.5	242.4	412.9
Capital Outlay	1,753.7	1,753.7	1,649.6	409.0	2,058.6
Total	1,968.3	1,968.3	1,820.1	651.4	2,471.5
SFOBB East Span -SAS- Foundations					
Capital Outlay Support	62.5	41.0	37.6	1.0	38.6
Capital Outlay	339.9	307.3	308.7	(1.4)	307.3
Total	402.4	348.3	346.3	(0.4)	345.9
Small YBI Projects					
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
YBI Detour					
Capital Outlay Support	29.5	66.0	70.8	14.7	85.5
Capital Outlay	131.9	492.8	442.4	84.3	526.7
Total	161.4	558.8	513.2	99.0	612.2
YBI - Transition Structures					
Capital Outlay Support	78.7	78.7	16.4	89.1	105.5
Capital Outlay	299.4	276.1	0.1	285.8	285.9
Total	378.1	354.8	16.5	374.9	391.4
Oakland Touchdown					
Capital Outlay Support	74.4	74.4	64.2	31.1	95.3
Capital Outlay	283.8	283.8	218.0	71.8	289.8
Total	358.2	358.2	282.2	102.9	385.1
East Span Other Small Project					
Capital Outlay Support	212.3	213.3	207.1	6.4	213.5
Capital Outlay	170.8	170.8	94.0	52.6	146.6
Total	383.1	384.1	301.1	59.0	360.1
Existing Bridge Demolition					
Capital Outlay Support	79.7	79.7	0.4	59.6	60.0
Capital Outlay	239.2	239.2	-	232.1	232.1
Total	318.9	318.9	0.4	291.7	292.1
Miscellaneous Program Costs	30.0	30.0	28.9	1.1	30.0
Total Capital Outlay Support (2)	1,463.2	1,456.2	1,250.5	446.4	1,696.9
Total Capital Outlay	6,321.8	6,539.1	5,863.5	989.1	6,852.6
Program Total	7,785.0	7,995.3	7,114.0	1,435.5	8,549.5

(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 July 31, 2009 ($ Millions)

Contract	EA Number	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
San Francisco-Oakland Bay Bridge East Span Replacement Project							
East Span - Skyway	01202X						
Capital Outlay Support		197.0	(16.0)	181.0	181.1	181.1	0.1
Capital Outlay Construction		1,293.0	(38.9)	1,254.1	1,236.9	1,254.1	-
Total		1,490.0	(54.9)	1,435.1	1,418.0	1,435.2	0.1
East Span - SAS E2/T1 Foundations	0120EX						-
Capital Outlay Support		52.5	(21.5)	31.0	28.4	28.6	(2.4)
Capital Outlay Construction		313.5	(32.6)	280.9	275.0	280.9	-
Total		366.0	(54.1)	311.9	303.4	309.5	(2.4)
East Span - SAS Superstructure	0120FX						
Capital Outlay Support		214.6	-	214.6	167.1	412.9	198.3
Capital Outlay Construction		1,753.7	-	1,753.7	786.7	2,058.6	304.9
Total		1,968.3	-	1,968.3	953.8	2,471.5	503.2
SAS W2 Foundations	0120CX						
Capital Outlay Support		10.0	-	10.0	9.2	10.0	-
Capital Outlay Construction		26.4	-	26.4	25.8	26.4	-
Total		36.4	-	36.4	35.0	36.4	-
YBI South/South Detour	0120RX						
Capital Outlay Support		29.4	36.6	66.0	68.1	85.5	19.5
Capital Outlay Construction		132.0	360.8	492.8	358.4	526.7	33.9
Total		161.4	397.4	558.8	426.5	612.2	53.4
YBI Transition Structures (see notes below)	0120PX						
Capital Outlay Support		78.7	-	78.7	25.6	105.5	26.8
Capital Outlay Construction		299.3	(23.2)	276.1	-	285.9	9.8
Total		378.0	(23.2)	354.8	25.6	391.4	36.6
* YBI- Transition Structures Contract No. 1							
Capital Outlay Support					6.2	65.1	
Capital Outlay Construction					-	223.2	
Total					6.2	288.3	
* YBI- Transition Structures Contract No. 2							
Capital Outlay Support					3.0	23.4	
Capital Outlay Construction					-	59.4	
Total					3.0	82.8	
* YBI- Transition Structures Contract No. 3 Landscape							
Capital Outlay Support					-	1.0	
Capital Outlay Construction					-	3.3	
Total					-	4.3	
below)	01204X						
Capital Outlay Support		74.4	-	74.4	61.8	95.3	20.9
Capital Outlay Construction		283.8	-	283.8	183.2	289.8	6.0
Total		358.2	-	358.2	245.0	385.1	26.9
* OTD Submarine Cable	0120K4						
Capital Outlay Support					0.9	0.9	
Capital Outlay Construction					7.9	9.6	
Total					8.8	10.5	
* OTD No. 1 (Westbound)	0120L4						
Capital Outlay Support					36.6	50.4	
Capital Outlay Construction					175.4	211.8	
Total					212.0	262.2	
* OTD No. 2 (Eastbound)	0120M4						
Capital Outlay Support					3.6	20.5	
Capital Outlay Construction					-	64.0	
Total					3.6	84.5	
* OTD Electrical Systems	0120N4						
Capital Outlay Support					0.8	1.5	
Capital Outlay Construction					-	4.4	
Total					0.8	5.9	

Notes: YBI Transition Structures and Oakland Touchdown Cost-to-Date and Cost Forecast includes prior-to-split Capital Outlay

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 July 31, 2009 ($ Millions) (continued)

Contract	EA Number	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
Existing Bridge Demolition	01209X						
Capital Outlay Support		79.7	-	79.7	0.4	60.0	(19.7)
Capital Outlay Construction		239.2	-	239.2	-	232.1	(7.1)
Total		318.9	-	318.9	0.4	292.1	(26.8)
YBI/SAS Archeology	01207X						
Capital Outlay Support		1.1	-	1.1	1.1	1.1	-
Capital Outlay Construction		1.1	-	1.1	1.1	1.1	-
Total		2.2	-	2.2	2.2	2.2	-
YBI - USCG Road Relocation	0120QX						
Capital Outlay Support		3.0	-	3.0	2.7	3.0	-
Capital Outlay Construction		3.0	-	3.0	2.8	3.0	-
Total		6.0	-	6.0	5.5	6.0	-
YBI - Substation and Viaduct	0120GX						
Capital Outlay Support		6.5	-	6.5	6.4	6.5	-
Capital Outlay Construction		11.6	-	11.6	11.3	11.6	-
Total		18.1	-	18.1	17.7	18.1	-
Oakland Geofill	01205X						-
Capital Outlay Support		2.5	-	2.5	2.5	2.5	-
Capital Outlay Construction		8.2	-	8.2	8.2	8.2	-
Total		10.7	-	10.7	10.7	10.7	-
Pile Installation Demonstration Project	01208X						
Capital Outlay Support		1.8	-	1.8	1.8	1.8	-
Capital Outlay Construction		9.2	-	9.2	9.3	9.2	-
Total		11.0	-	11.0	11.1	11.0	-
Stormwater Treatment Measures	0120JX						
Capital Outlay Support		6.0	2.0	8.0	8.1	8.2	0.2
Capital Outlay Construction		15.0	3.3	18.3	16.7	18.3	-
Total		21.0	5.3	26.3	24.8	26.5	0.2
Right-of-Way and Environmental Mitigation	0120X9						
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay & Right-of-Way		72.4	-	72.4	51.1	72.4	-
Total		72.4	-	72.4	51.1	72.4	-
Sunk Cost - Existing East Span Retrofit	04343X & 04300X						
Capital Outlay Support		39.5	-	39.5	39.5	39.5	-
Capital Outlay Construction		30.8	-	30.8	30.8	30.8	-
Total		70.3	-	70.3	70.3	70.3	-
Other Capital Outlay Support							
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	(1.0)	19.0	3.2	19.0	-
Total		162.6	(1.0)	161.6	145.8	161.6	-
Subtotal Capital Outlay Support		959.3	-	959.3	749.6	1,203.1	243.8
Subtotal Capital Outlay Construction		4,492.2	269.4	4,761.6	2,997.3	5,109.1	347.5
Other Budgeted Capital		35.1	(3.3)	31.8	0.7	7.7	(24.1)
							-
Total SFOBB East Span Replacement Project		5,486.6	266.1	5,752.7	3,747.6	6,319.9	567.2

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 (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
New Benicia-Martinez Bridge Project							
New Bridge	**00603_**						
Capital Outlay Support							
BATA Funding		84.9	6.9	91.8	91.7	91.8	-
Non-BATA Funding		-	0.1	0.1	0.1	0.1	-
Subtotal		84.9	7.0	91.9	91.8	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	-
Total		756.9	101.6	858.5	855.7	858.5	-
I-680/I-780 Interchange Reconstruction	**00606_**						
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	-
Total		102.6	37.3	139.9	135.2	139.9	-
I-680/Marina Vista Interchange Reconstruction	**00605_**						
Capital Outlay Support		18.3	1.7	20.0	20.0	20.0	-
Capital Outlay Construction		51.5	4.9	56.4	56.1	56.4	-
Total		69.8	6.6	76.4	76.1	76.4	-
New Toll Plaza and Administration Building	**00604_**						
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	-
Total		36.2	5.8	42.0	40.8	42.0	-
Existing Bridge & Interchange Modifications	**0060A_**						
Capital Outlay Support							
BATA Funding		4.3	13.5	17.8	16.7	17.8	-
Non-BATA Funding		-	0.9	0.9	0.8	0.9	-
Subtotal		4.3	14.4	18.7	17.5	18.7	-
Capital Outlay Construction							
BATA Funding		17.2	32.8	50.0	31.8	50.0	-
Non-BATA Funding		-	9.5	9.5	-	9.5	-
Subtotal		17.2	42.3	59.5	31.8	59.5	-
Total		21.5	56.7	78.2	49.3	78.2	-
Other Contracts	**See note below**						
Capital Outlay Support		11.4	(2.3)	9.1	8.4	9.1	-
Capital Outlay Construction		20.3	3.3	23.6	17.1	23.6	-
Capital Outlay Right-of-Way		20.4	(0.1)	20.3	17.0	20.3	-
Total		52.1	0.9	53.0	42.5	53.0	-
Subtotal BATA Capital Outlay Support		155.7	28.9	184.5	182.6	184.5	-
Subtotal BATA Capital Outlay Construction		829.9	164.5	994.4	961.0	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	3.7	24.5	-	24.5	-
Total New Benicia-Martinez Bridge Project		1,059.9	212.7	1,272.5	1,199.6	1,272.5	-

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 (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	At-Completion Variance
a	b	c	d	e = c + d	f	g	h = g - e
Carquinez Bridge Replacement Project							
New Bridge	**01301_**						
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	-
Total		313.8	2.4	316.2	316.1	316.2	-
Crockett Interchange Reconstruction	**01305_**						
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	-
Total		105.9	(2.0)	103.9	103.8	103.9	-
Existing 1927 Bridge Demolition	**01309_**						
Capital Outlay Support		16.1	(0.5)	15.6	15.6	15.6	-
Capital Outlay Construction		35.2	-	35.2	34.8	35.2	-
Total		51.3	(0.5)	50.8	50.4	50.8	-
Other Contracts	**See note below**						
Capital Outlay Support		15.8	1.2	17.0	16.2	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	-
Total		45.1	(0.1)	45.0	42.3	45.0	-
Subtotal BATA Capital Outlay Support		124.4	0.3	124.7	123.9	124.7	-
Subtotal BATA Capital Outlay Construction		381.2	(0.4)	380.8	378.8	380.8	-
Subtotal Capital Outlay Right-of-Way		10.5	(0.1)	10.4	9.9	10.4	-
Project Reserves		12.1	(9.8)	2.3	-	2.3	-
Total Carquinez Bridge Replacement Project		528.2	(10.0)	518.2	512.6	518.2	-

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 (07/2009)	Cost To Date (07/2009)	Cost Forecast (07/2009)	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 [1] 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	33.4	33.4	-
Non-BATA Funding		51.1	-	51.1	51.1	51.1	-
Subtotal		91.3	(6.8)	84.5	84.5	84.5	-
Project Reserves		-	0.8	0.8	-	0.8	-
Total		102.1	(5.0)	97.1	96.3	97.1	-
Rehabilitation	04152_						
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	-
Total		25.0	(5.0)	20.0	19.6	20.0	-
Richmond Parkway Project (RM 1 Share Only)	Non-Caltrans						
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay Construction		5.9	-	5.9	4.3	5.9	-
Total		5.9	-	5.9	4.3	5.9	-
San Mateo-Hayward Bridge Widening	See note [2] below						
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	-
Total		217.8	(8.0)	209.8	208.7	209.8	-
I-880/SR-92 Interchange Reconstruction	EA's 23317_, 01601_, and 01602_						
Capital Outlay Support		28.8	34.6	63.4	48.7	63.4	-
Capital Outlay Construction							
BATA Funding		85.2	60.2	145.4	72.2	145.4	-
Non-BATA Funding		9.6	-	9.6	-	9.6	-
Subtotal		94.8	60.2	155.0	72.2	155.0	-
Capital Outlay Right-of-Way		9.9	7.0	16.9	11.7	16.9	-
Project Reserves		0.3	9.4	9.7	-	9.7	-
Total		133.8	111.2	245.0	132.6	245.0	-
Bayfront Expressway Widening	EA's 00487_, 01511_, and 01512_						
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	-
Total		36.1	(2.0)	34.1	33.4	34.1	-
US 101/University Avenue Interchange Modification	Non-Caltrans						
Capital Outlay Support		-	-	-	-	-	-
Capital Outlay Construction		3.8	-	3.8	3.7	3.8	-
Total		3.8	-	3.8	3.7	3.8	-
Subtotal BATA Capital Outlay Support		358.3	61.6	419.8	402.3	419.8	-
Subtotal BATA Capital Outlay Construction		1,569.8	209.3	1,779.1	1,668.7	1,779.1	-
Subtotal Capital Outlay Right-of-Way		42.5	5.9	48.4	39.3	48.4	-
Subtotal Non-BATA Capital Outlay Support		14.0	4.0	18.0	17.6	18.0	-
Subtotal Non-BATA Capital Outlay Construction		92.4	9.5	101.9	82.9	101.9	-
Project Reserves		35.6	3.6	39.2	-	39.2	-
Total RM1 Program		2,112.6	293.9	2,406.4	2,210.8	2,406.4	-

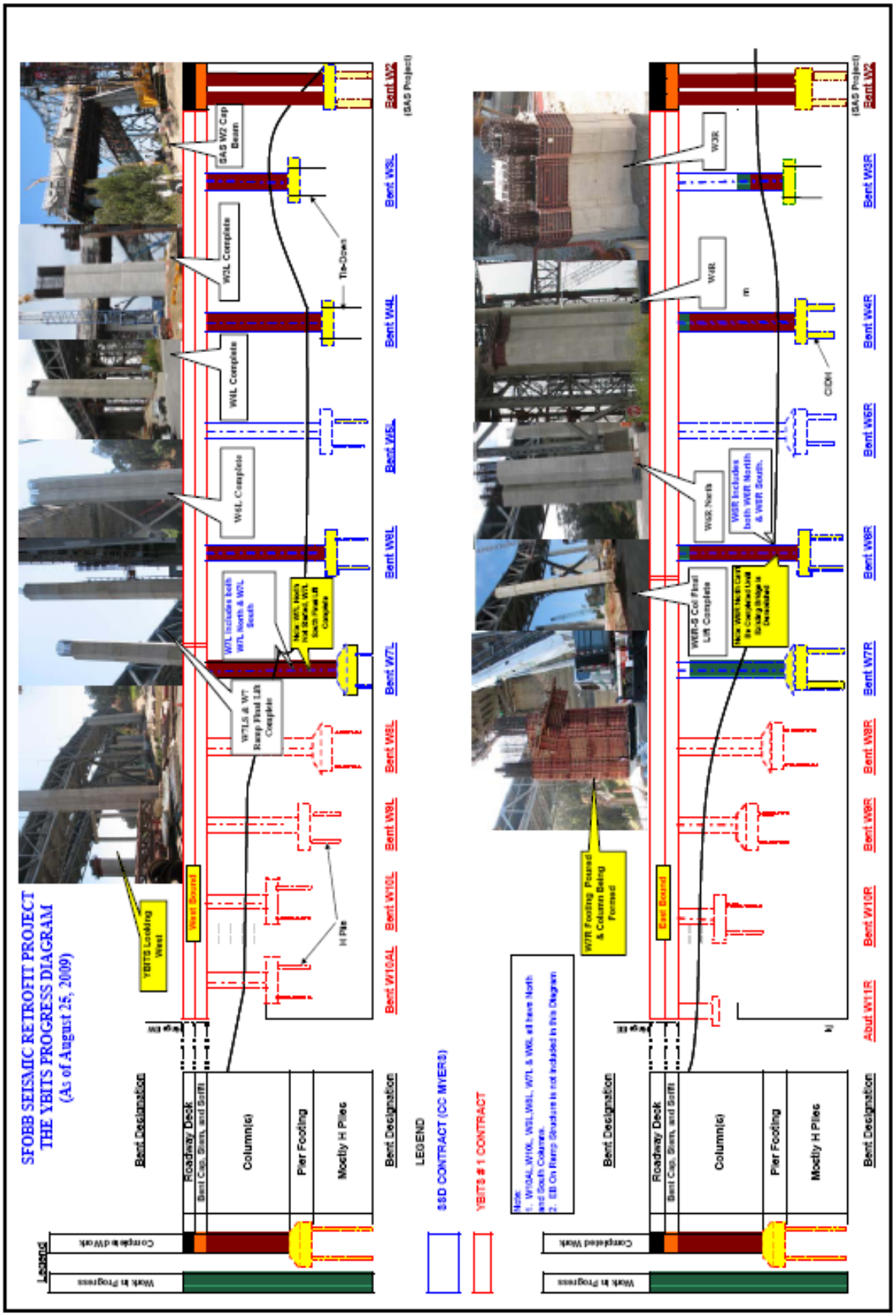
Notes:

1 Richmond-San Rafael Bridge Trestle, Fender, and Deck Joint Rehabilitation Includes Non-TBSRA Expenses for EA 0438U_ and 04157_

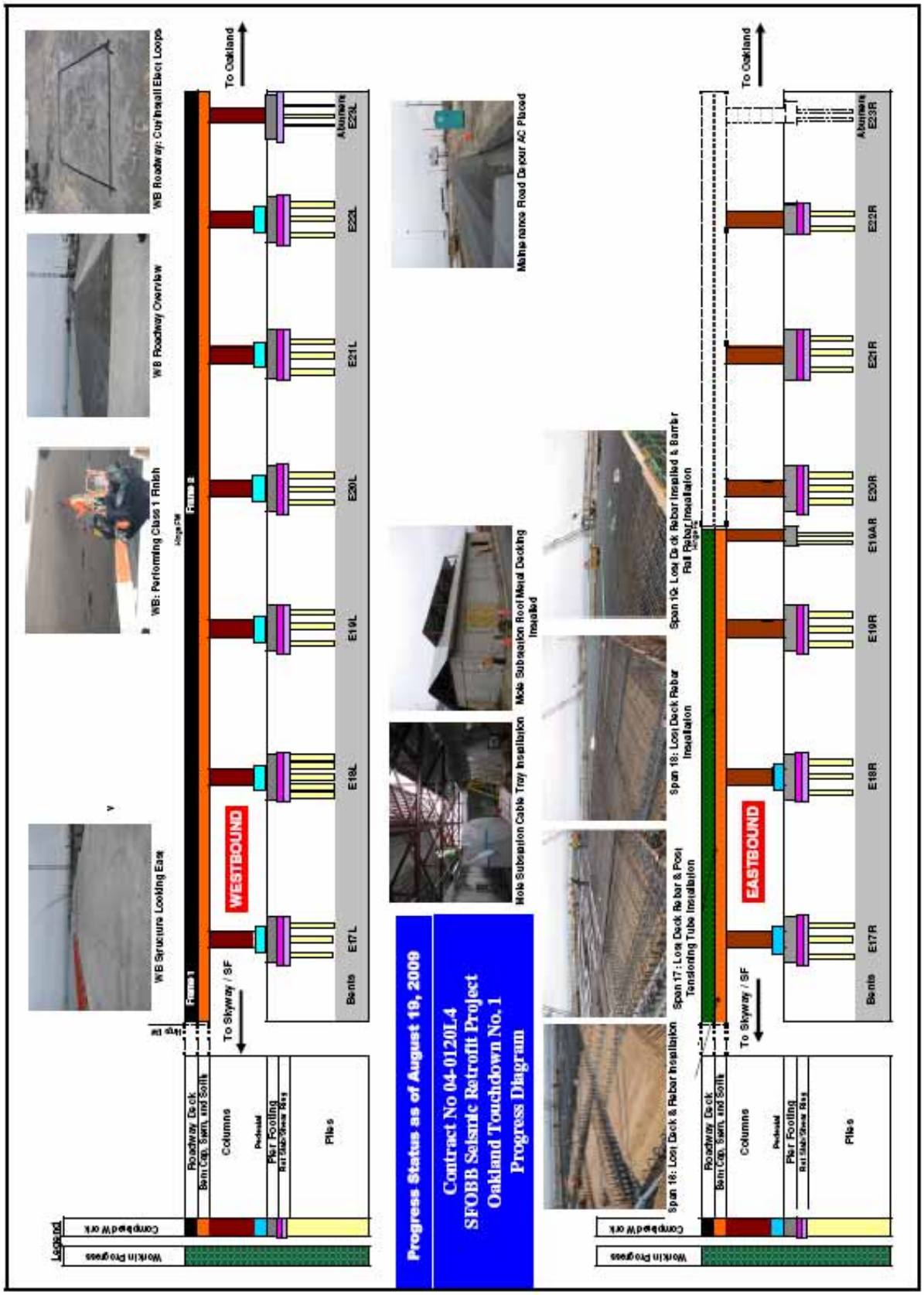
2 San Mateo-Hayward Bridge Widening Includes EA's 00305_, 04501_, 04502_, 04503_, 04504_, 04505_, 04506_, 04507_, 04508_, 04509_, 27740_, 27790_, 04860_

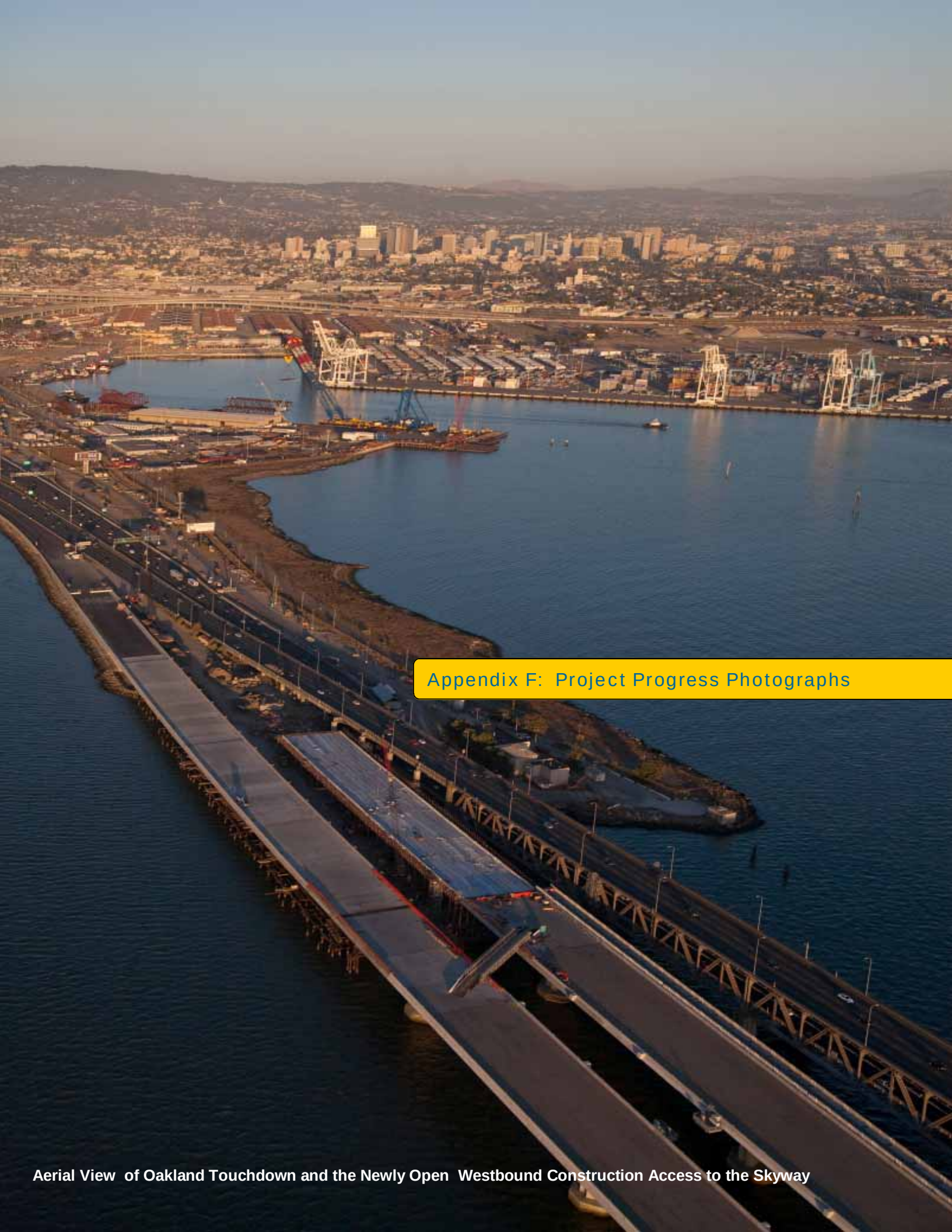
Note: Details may not sum to totals due to rounding effects.

Appendix D: YBITS Advanced Work Project Progress Diagram



Appendix E: OTD #1 Program Diagram





Appendix F: Project Progress Photographs

Aerial View of Oakland Touchdown and the Newly Open Westbound Construction Access to the Skyway

Appendix F: Project Progress Photographs

Yerba Buena Island Detour

East Tie-In Detour Mammoet Skid System Motors

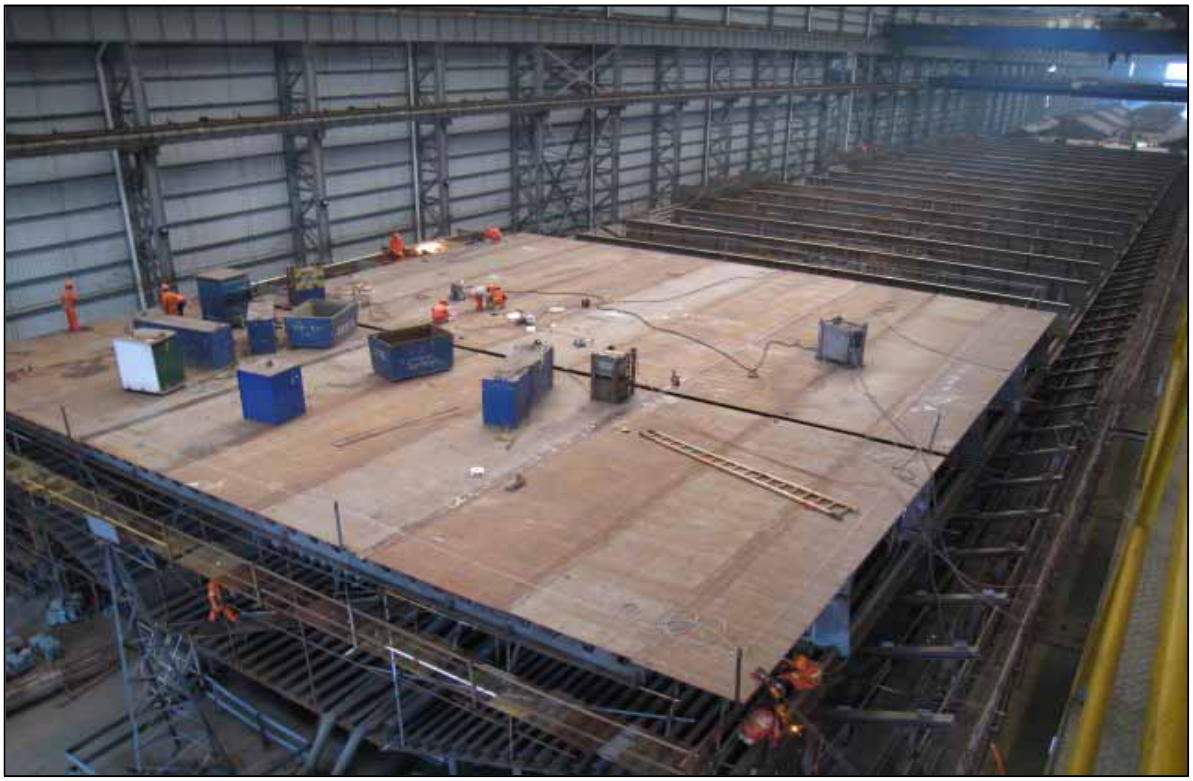
East Tie-In Detour Roll-Out Skid Bent System & Span Lowering

East Tie-In Detour Skid Bent and Truss

Appendix F: Project Progress Photographs

Self-Anchored Suspension Bridge Fabrication

Overview of SAS Lift 8 Segment Assembly in Bay 13



Overview of SAS East Jig in Bay 14

Overview of SAS OBG Trial Assembly

Overview of SAS OBG Trial Assembly

Appendix F: Project Progress Photographs

Oakland Touchdown

Oakland Touchdown Finish Work

Oakland Touchdown Electric Loops Installed

Oakland Touchdown Hinge

Oakland Touchdown Overview of Westbound

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.

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