

# San Francisco Bay Area Toll Bridge Seismic Retrofit and Regional Measure 1 Programs

2011 Fourth Quarter Report  
Project Progress  
and Financial Update



TOLL BRIDGE PROGRAM  
OVERSIGHT COMMITTEE

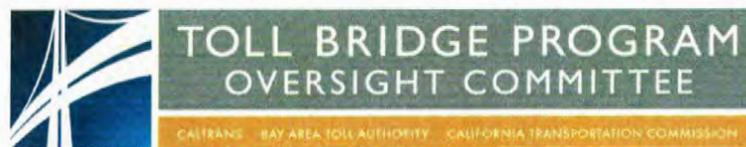
CALTRANS BAY AREA TOLL AUTHORITY CALIFORNIA TRANSPORTATION COMMISSION

Released: February 2012





Looking down at the Self-Anchored Suspension Bridge and Catwalks with Cable Strand Placement Tramway



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

February 1, 2012

Mr. Dario Frommer, Chair  
California Transportation Commission  
1120 N Street, Room 2221  
Sacramento, CA 95814

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

Dear Messrs. Frommer and Ghielmetti:

The Toll Bridge Program Oversight Committee (TBPOC) is pleased to submit the 2011 Fourth Quarter Project Progress and Financial Update for the San Francisco Bay Area Toll Bridge Seismic Retrofit and Regional Measure 1 Programs, prepared pursuant to California Streets and Highways Code Section 30952.

The TBPOC is tasked to perform project oversight and control over the Toll Bridge Seismic Retrofit Program (TBSRP) and is comprised of the Director of the Department of Transportation (Caltrans), the Executive Director of the Bay Area Toll Authority (BATA), and the Executive Director of the California Transportation Commission (CTC). This fourth quarter report includes project progress and activities for the Toll Bridge Seismic Retrofit Program through December 31, 2011 with more recent accomplishments and actions addressed in this letter.

On the new eastern span of the San Francisco-Oakland Bay Bridge, another critical milestone was met on December 22, 2011 as construction crews hauled the first of 137 wire strands that make up the single main cable of the new signature Self-Anchored Suspension Span (SAS). While the strands will be hauled around as they are on a traditional suspension bridge, the single main cable is nontraditional as it anchors into the roadway, rather than to the ground. Starting at the bridge's eastern end, the cable travels up and over the double saddle atop the tower and around to the western end of the span before looping back over the tower to anchor into the east end again. To date, 18 of 137 strands have been hauled on the bridge and this operation will be ongoing for the next four months.

While the start of cable installation marks another critical step on the project, we continue to be mindful of the challenges that remain and of our goal to open the new bridge to traffic as soon as possible. To that end, the TBPOC has been actively working with our contractors to put in place contract incentives and disincentives and selective acceleration of certain critical path activities to expedite the opening of the bridge. The success of those negotiations allows us to report that we are now forecasting a "seismic safety opening" of the bridge by Labor Day 2013, which is several months earlier than our previously reported December 2013 opening date.

One acceleration activity will be the realignment and widening of the eastern end of the existing bridge in Oakland to allow for both eastbound and westbound directions of the new bridge to open to traffic when the Self-Anchored Suspension (SAS) bridge is ready. The eastbound realignment opened as scheduled over the 2011 Memorial Day weekend without significantly impacting traffic. The westbound realignment is scheduled to open over the President's Day weekend in February 2012. The realignment will require a westbound upper-deck closure of the bridge from Oakland to San Francisco. We will endeavor to make the closure as short as possible with an extensive public outreach strategy to keep travelers informed.

Seismic retrofit work on the Dumbarton and Antioch bridges is also ongoing. On the Antioch Bridge, new seismic isolation bearings and steel cross bracing are being installed to provide the bridge more flexibility during an earthquake. We are pleased to report that this retrofit is forecast to achieve seismic safety ahead of schedule in March 2012. On the Dumbarton Bridge, structural steel is being added to the bridge to strengthen it during the next large earthquake and to allow for the installation of new seismic isolation bearings. This work will be on-going through 2013.

As of the end of the fourth quarter of 2011, the 50 percent probable draw on program contingency is \$219 million. The potential draw ranges from about \$130 million to \$300 million. The current \$308 million program contingency balance can be used to cover the costs of these identified risks. In accordance with the approved TBSRP Risk Management Plan, risk mitigation actions are continuously developed and implemented to reduce the potential draw on the program contingency.

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

Sincerely,



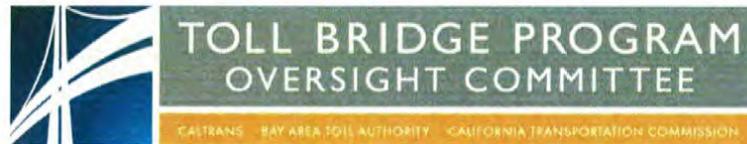
STEVE HEMINGER  
TBPOC Chair  
Executive Director  
Bay Area Toll Authority



BIMLA G. RHINEHART  
TBPOC Vice-Chair  
Executive Director  
California Transportation Commission



MALCOLM DOUGHERTY  
Acting Director  
California Department of Transportation



Toll Bridge Program Oversight Committee  
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February 1, 2012

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

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

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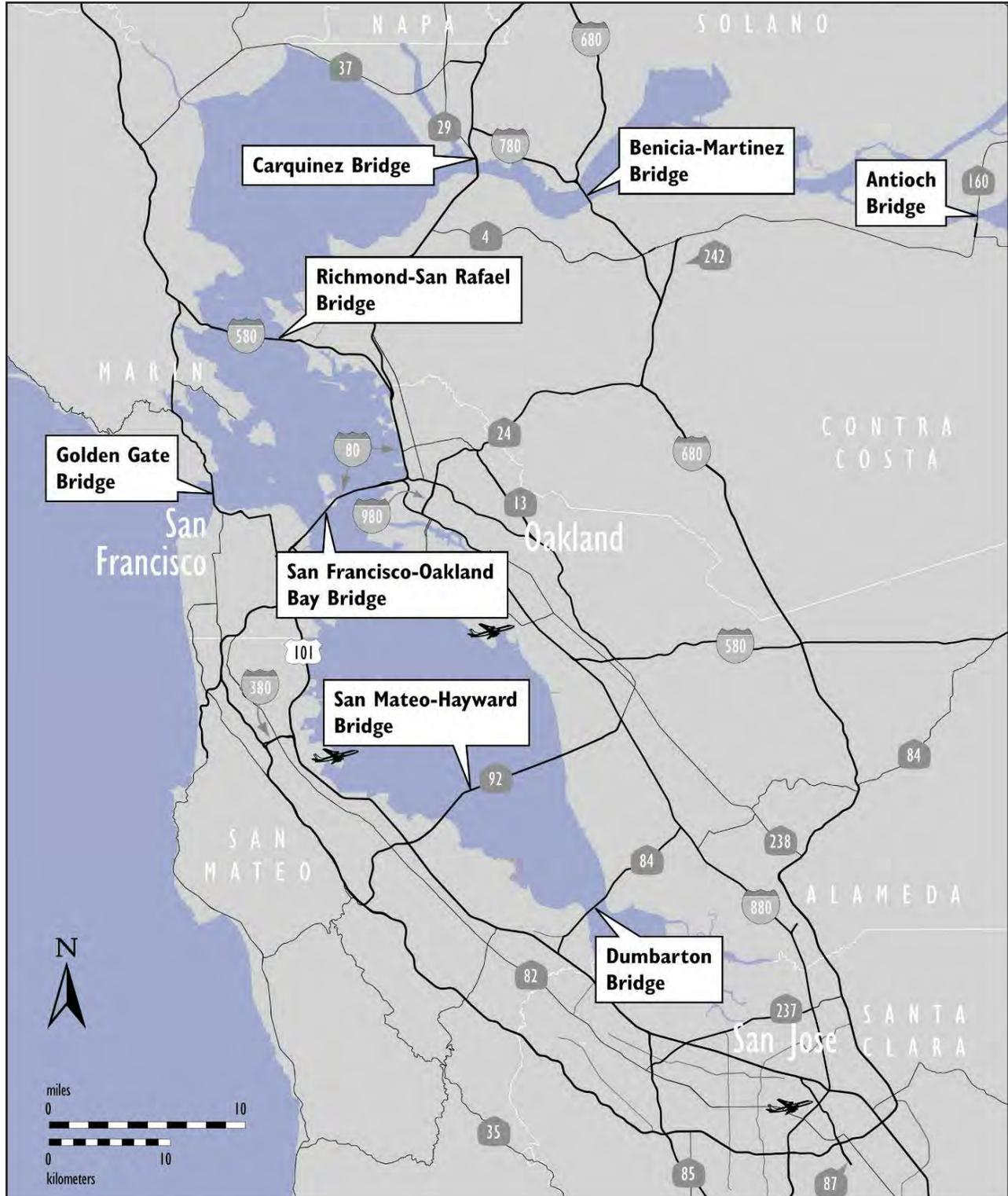


YBITS #1 Westbound Sections of Roadway Deck Pour Progress

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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 new Benicia-Martinez Bridge and State Toll Bridge Seismic Retrofit Program projects. The TBPOC consists of the Director of Caltrans, the Executive Director of the Bay Area Toll Authority (BATA) 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, reviewing and approving significant change orders and claims in excess of \$1 million (as defined by the Committee), and keeping the Legislature and others apprised of current project progress and status. In January 2010, Assembly Bill (AB) 1175 (Torlakson) amended the TBSRP to include the Antioch and Dumbarton Bridges seismic retrofit projects. The current Toll Bridge Seismic Retrofit Program is as follows:

Toll Bridge Seismic Retrofit Projects	Seismic Safety Status
Dumbarton Bridge Seismic Retrofit	Construction
Antioch Bridge Seismic Retrofit	Construction
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	Open
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

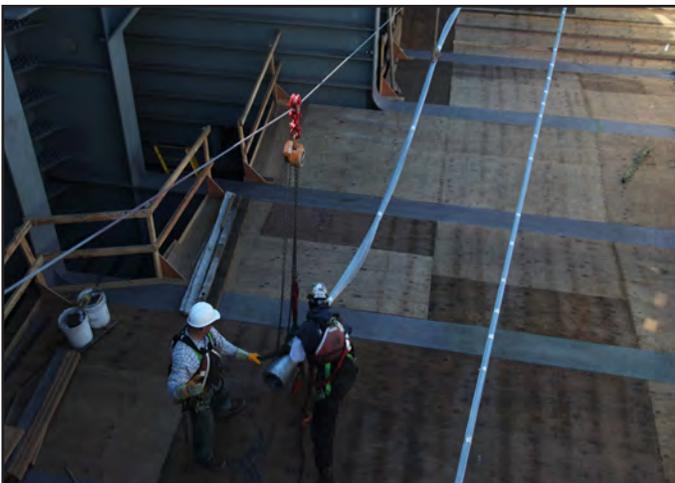
## SUMMARY OF MAJOR PROJECT HIGHLIGHTS, ISSUES, AND ACTIONS



Foundation for the Self-Anchored Suspension Bridge Tower



Self-Anchored Suspension Cable Hauling System



Parallel Wire Strands (PWS) Hauled to the Eastbound Anchorage of the Self-Anchored Suspension Bridge

### Recent Issues

There have been recent questions raised in news articles questioning Caltrans' testing practices for foundations. Subsequently, following Caltrans' dismissal of a materials testing technician who had inspected foundation piles for the signature single tower of the San Francisco-Oakland Bay Bridge's new East Span, the Toll Bridge Program Oversight Committee (TBPOC) requested the Seismic Safety Peer Review Panel - which comprises engineering professors and other technical experts - to conduct an independent review of all records from quality assurance inspections of the piles.

Members of the Seismic Safety Peer Review Panel are Dr. Frieder Seible, who is dean of the Jacobs School of Engineering at the University of California at San Diego; Dr. I.M. Idriss, an independent consulting geotechnical engineer and emeritus professor of civil engineering at the University of California at Davis; Dr. John Fisher, professor emeritus of civil engineering at Lehigh University and director emeritus of the ATLSS Engineering Research Center; and structural engineer Joseph Nicoletti, who served as chair of the Engineering and Design Advisory Panel for the Bay Bridge East Span replacement project. Nicoletti also chairs the peer review panel. The TBPOC has consulted with the external Seismic Safety Peer Review Panel on numerous design and construction decisions over the years. The Seismic Safety Peer Review Panel met in early December 2011, and continues their review.

### Toll Bridge Seismic Retrofit Program Risk Management

A major element of the 2005 AB 144, 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.

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

As of the end of the fourth quarter of 2011, the 50 percent probable draw on Program Contingency is \$219 million. The potential draw ranges from about \$130 million to \$300 million.

The \$308 million program contingency balance can be used to cover the costs of identified risks. In accordance with the approved TBSRP Risk Management Plan, risk mitigation actions are continuously developed and implemented to reduce the potential draw on the program contingency.

## San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Replacement Project SAS Super Structures Contract

The prime contractor constructing the Self-Anchored Suspension (SAS) bridge from the completed Skyway to Yerba Buena Island is a joint venture of American Bridge/Fluor (ABF). Significant progress on the structures that comprise the SA is being made both in the Bay Area and around the world.



Yerba Buena Island Transition Structure #1 Westbound Deck Complete

The structural elements of the main tower are now complete with the saddle in place. Just shy of its 525-foot apex, the signature tower will be crowned with a decorative tower head after the cable is installed early next year. All 28 steel roadway boxes have been erected as of the end of December 2011 along with 19 cross beams, five service platforms, roadway barriers and bike path up to roadway box 11.

These boxes, fabricated in Shanghai, China, join other bridge components that have been arriving from around the country and the world. All bridge components undergo a rigorous quality review by the fabricator, ABF, and Caltrans to ensure that only bridge components that have been built in accordance to the specifications will be shipped. The TBPOC's goal is to open the bridge to traffic in both directions by September 2013.

With installation of all structural elements of the tower and roadway nearing completion, focus is now turning to the placement of the bridge's more than 2.5 - foot in diameter and nearly mile long main cable. The single cable is made up of 137 separate bundled strands which each contain 127 individual pencil thin wires (see diagram on page 24). Each of the 137 bundled strands will be individually pulled by a tramway system from the northeastern end of the bridge, up and over the tower, and around the west end of the bridge before returning over the tower and to the southeastern end of the bridge.

To haul the strands up and around the bridge, a tramway system, similar to a ski lift, is being used to support, haul and place the main cable during installation. Cable strand installation started in December 2011 and will be complete by mid-2012.

## Yerba Buena Island Transition Structure #1 Contract

The YBITS #1 contract was awarded to MCM Construction, Inc., the same contractor that completed the Oakland Touchdown (OTD) #1 contract. The MCM contract includes completing the remaining foundations and the bridge deck structure from the Yerba Buena Island Tunnel to the Self-Anchored Suspension (SAS) bridge.

Work is focused on the westbound transition structure's substructure and superstructure from the tunnel to the SAS bridge.

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



Oakland Detour - Westbound Work in Progress

### Oakland Detour

The detour realigns the existing bridge approach to the south to allow for construction of the remaining portion of OTD #2 that was in conflict with the existing bridge. The eastbound detour was completed on May 30, 2011. The westbound detour is forecast to open in February 2012. The detour will require a closure of the bridge in the westbound direction. The closure is currently scheduled for the February 17, 2012 weekend.

### Oakland Touchdown #2 Contract

The OTD #2 contract for construction was advertised in November 2011 and will be awarded in February 2012. Construction will start on April 28, 2012.



Existing San Francisco-Oakland Bay Bridge Cantilever Section to be Dismantled

### Existing SFOBB Dismantling

To expedite opening of a new eastbound on ramp and the pedestrian/bicycle pathway from Yerba Buena Island, the TBPOC has decided to split the bridge dismantling project into at least two contracts. The dismantling of the superstructure of the main cantilever section of the existing bridge will be incorporated into the YBITS #2 contract, while the remaining portions of the existing bridge will be removed by separate contract or contracts yet to be determined.

### Antioch Bridge Seismic Retrofit

The major retrofit strategy for the bridge includes installing seismic isolation bearings at each of the 41 piers, strengthening piers 12 through 31 with steel cross-bracing between column bents and installing steel casings at all columns located at the Sherman Island approach slab bridge. Staff has reported that work is progressing well and seismic safety is forecast to be completed ahead of schedule by May 2012. Project progress is reported on page 38.



Antioch Bridge - Pier Retrofit within Waterway

### Dumbarton Bridge Seismic Retrofit

The Dumbarton bridge is a combination of three bridge types; reinforced concrete slab approaches supported on multiple pile extension columns, precast - prestressed concrete girders, and steel box girders supported on reinforced concrete piers. The retrofit strategy for the bridge includes superstructure and deck modifications and installation of isolation bearings. Project progress is reported on page 40.



Existing San Francisco-Oakland Bay Bridge with New Tower in the background at Dusk

## Toll Bridge Seismic Retrofit Program Cost Summary (Millions)

	Contract Status	AB 144/SB 66 Budget (August 2005)	TBPOC Approved Changes	Current TBPOC Approved Budget (December 2011)	Cost to Date (December 2011)	Current Cost Forecast (December 2011)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
<b>SFOBB East Span Seismic Replacement</b>								
Capital Outlay Construction								
Skyway	Completed	1,293.0	(38.9)	1,254.1	1,237.1	1,245.2	(8.9)	●
SAS Marine Foundations	Completed	313.5	(32.6)	280.9	274.8	278.6	(2.3)	●
SAS Superstructure	Construction	1,753.7	293.1	2,046.8	1,626.8	2,084.7	37.9	●
YBI Detour	Completed	131.9	360.9	492.8	466.0	482.8	(10.0)	●
YBI Transition Structures (YBITS)		299.3	(51.5)	247.8	82.1	328.5	80.7	●
YBITS 1	Construction			185.5	82.1	242.4	56.9	●
YBITS 2	Design			59.0	-	82.8	23.8	●
YBITS Landscaping	Design			3.3	-	3.3	-	●
Oakland Touchdown (OTD)		283.8	55.2	339.0	208.7	330.7	(8.3)	●
OTD 1	Completed			212.0	203.0	203.3	(8.7)	●
OTD 2	Design			62.0	-	56.1	(5.9)	●
Detour	Construction			51.0	-	57.3	6.3	●
OTD Electrical Systems	Design			4.4	-	4.4	-	●
Submerged Electric Cable	Completed			9.6	5.7	9.6	-	●
Existing Bridge Demolition	Design	239.2	(0.1)	239.1	-	241.2	2.1	●
*Cantilever Section	Design			-	-	60.4		
*504/288 Sections	Design			-	-	180.8		
Stormwater Treatment Measures	Completed	15.0	3.3	18.3	16.8	18.3	-	●
Other Completed Contracts	Completed	90.4	-	90.4	89.9	90.4	-	●
Capital Outlay Support		959.3	218.0	1,177.3	1,022.5	1,275.3	98.0	●
Right-of-Way and Environmental Mitigation		72.4	-	72.4	51.7	80.4	8.0	●
Other Budgeted Capital		35.1	(3.3)	31.8	0.7	7.7	(24.1)	●
<b>Total SFOBB East Span Replacement</b>		<b>5,486.6</b>	<b>804.1</b>	<b>6,290.7</b>	<b>5,077.1</b>	<b>6,463.8</b>	<b>173.1</b>	
<b>Antioch Bridge Seismic Retrofit</b>								
Capital Outlay Construction and Mitigation	Construction		70.0	70.0	40.9	51.0	(19.0)	●
Capital Outlay Support			31.0	31.0	21.5	34.7	3.7	●
<b>Total Antioch Bridge Seismic Retrofit</b>		<b>-</b>	<b>101.0</b>	<b>101.0</b>	<b>62.4</b>	<b>85.7</b>	<b>(15.3)</b>	
<b>Dumbarton Bridge Seismic Retrofit</b>								
Capital Outlay Construction and Mitigation	Construction		92.7	92.7	30.0	84.9	(7.8)	●
Capital Outlay Support			56.0	56.0	31.2	59.1	3.1	●
<b>Total Dumbarton Bridge Seismic Retrofit</b>		<b>-</b>	<b>148.7</b>	<b>148.7</b>	<b>61.2</b>	<b>144.0</b>	<b>(4.7)</b>	
Other Program Projects		2,268.4	(64.6)	2,203.8	2,162.2	2,192.2	(11.6)	●
Miscellaneous Program Costs		30.0	-	30.0	25.5	30.0	-	●
Net Programmatic Risks		-	-	-	-	77.1	77.1	●
Program Contingency		900.0	(592.2)	307.8	-	89.2	(218.6)	●
<b>Total Toll Bridge Seismic Retrofit Program<sup>2</sup></b>		<b>8,685.0</b>	<b>397.0</b>	<b>9,082.0</b>	<b>7,388.4</b>	<b>9,082.0</b>	<b>-</b>	

## Toll Bridge Seismic Retrofit Program Schedule Summary (Millions)

	AB 144/SB 66 Project Completion Schedule Baseline (July 2005)	TBPOC Approved Changes (Months)	Current TBPOC Approved Completion Schedule (December 2011)	Current Completion Forecast (December 2011)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i=g+h	j	k=j-i	l	
<b>SFOBB East Span Seismic Replacement</b>							
<b>Contract Completion</b>							
Skyway	Apr 2007	8	Dec 2007	Dec 2007	-	●	See Page 26
SAS Marine Foundations	Jun 2008	(5)	Jan 2008	Jan 2008	-	●	See Page 16
SAS Superstructure	Mar 2012	29	Aug 2014	Aug 2014	-	●	See Page 17
YBI Detour	Jul 2007	39	Oct 2010	Oct 2010	-	●	See Page 13
YBI Transition Structures (YBITS)	Nov 2013	27	Feb 2016	Feb 2016	-	●	See Page 14
YBITS 1			Dec 2013	Dec 2013	-	●	
YBITS 2			Feb 2016	Feb 2016	-	●	
Oakland Touchdown	Nov 2013	10	Sep 2014	Sep 2014	-	●	See Page 27
OTD 1			Jun 2010	Jun 2010	-	●	
OTD 2			Sep 2014	Sep 2014	-	●	
Submerged Electric Cable			Jan 2008	Jan 2008	-	●	
Existing Bridge Demolition	Sep 2014	18	Dec 2015	June 2017	18	●	
Stormwater Treatment Measures	Mar 2008		Mar 2008	Mar 2008	-	●	
<b>SFOBB East Span Bridge Opening and Other Milestones</b>							
Westbound Seismic Safety Open	Sep 2011	27	Dec 2013	Sep 2013	(3)	●	
Eastbound Seismic Safety Open	Sep 2012	15	Dec 2013	Sep 2013	(3)	●	
Bike/Ped Pathway Open to YBI			Sep 2015	Sep 2015	-	●	
Permanent Eastbound On Ramp Open			Sep 2015	Sep 2015	-	●	
Oakland Detour Eastbound Open			May 2011	May 2011	-	●	
Oakland Detour Westbound Open			Feb 2012	Feb 2012	-	●	
OTD Westbound Access			Aug 2009	Aug 2009	-	●	
YBI Detour Open			Sep 2009	Sep 2009	-	●	See Page 13
<b>Antioch Bridge Seismic Retrofit</b>							
Contract Completion			Jun 2012	Jun 2012	-	●	See Page 38
Seismic Safety Completion			Mar 2012	Mar 2012	-	●	
<b>Dumbarton Bridge Seismic Retrofit</b>							
Contract Completion			Sep 2013	Sep 2013	-	●	See Page 40
Seismic Safety Completion			Sep 2013	Sep 2013	-	●	

● 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

<sup>(1)</sup> Figures may not sum up to totals due to rounding effects.

<sup>(2)</sup> Construction administration of the OTD Detour is under the YBITS#1 contract.

<sup>(3)</sup> Construction administration of the Cantilever segment will be under the YBITS#2 contract.





# TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Parallel Wire Strand (PWS) Cables at the Westbound East End Roadway Box

## 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, a critical question lingered: How could the Bay Bridge - a vital regional lifeline structure - be strengthened to withstand the next major earthquake? Seismic experts from around the world determined that to make each separate element seismically safe on a bridge of this size, the work must be divided into numerous projects. Each project presents unique challenges. Yet there is one common challenge - the need to accommodate the more than 280,000 vehicles that cross the bridge each day.



West Approach Overview

#### West Approach Seismic Replacement Project

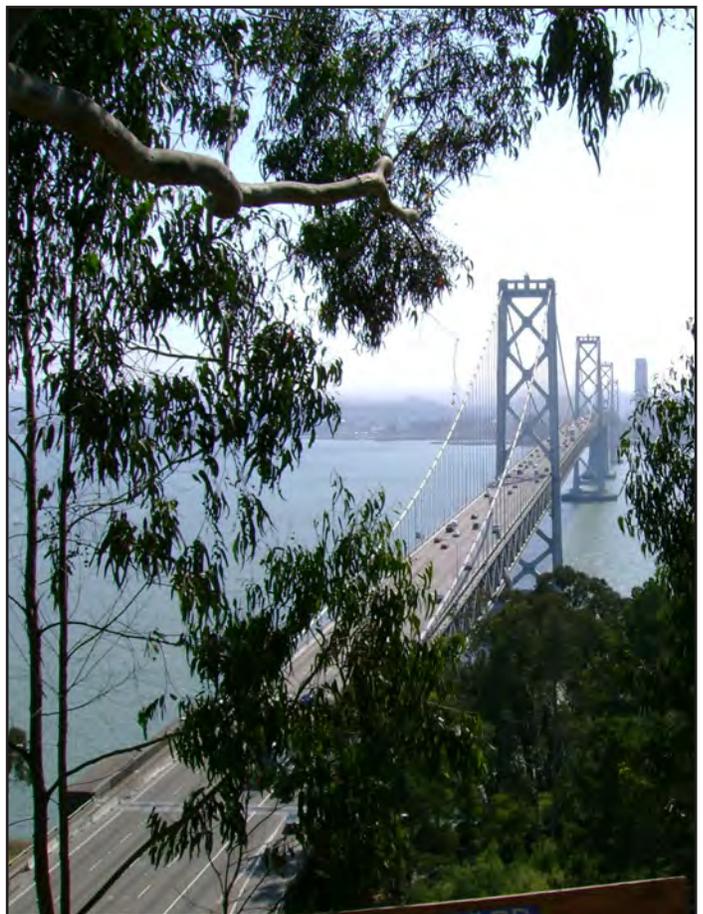
**Project Status: Completed 2009**

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

#### West Span Seismic Retrofit Project

**Project Status: Completed 2004**

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



San Francisco-Oakland Bay Bridge West Span



## East Span Seismic Replacement Project

### Project Status: **In Construction**

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

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

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



Architectural Rendering of the New East Span of the San Francisco-Oakland Bay Bridge



# TOLL BRIDGE SEISMIC RETROFIT PROGRAM

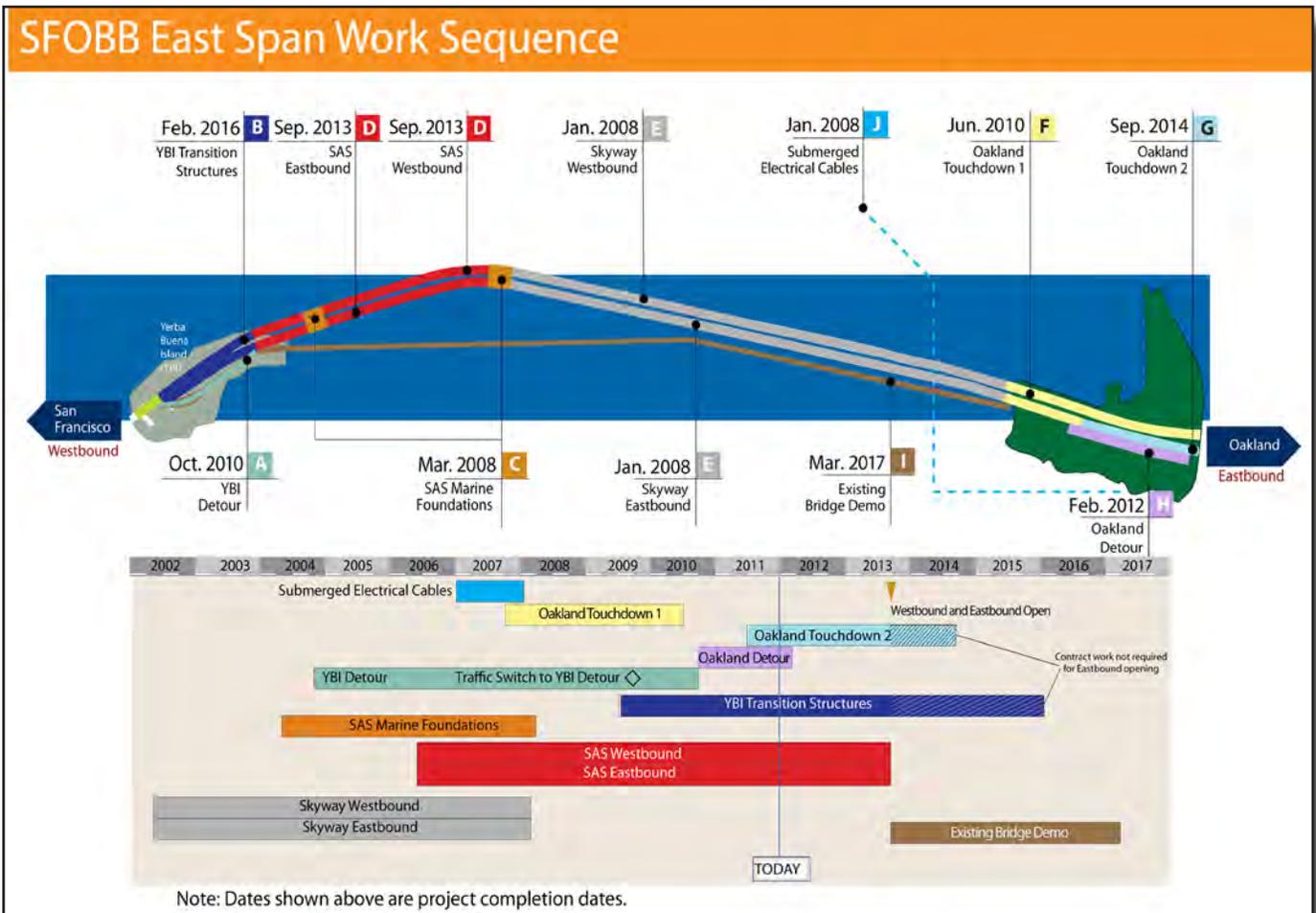
## San Francisco-Oakland Bay Bridge East Span Replacement Project Summary

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

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



Overview of the San Francisco-Oakland Bay Bridge East Span Construction Progress



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

As with all of the Toll Bridge Seismic Retrofit Program's projects, crews built the Yerba Buena Island Detour Structure (YBID) without disrupting traffic. To accomplish this task, YBID eastbound and westbound traffic was shifted off the existing roadway and onto a temporary detour on Labor Day weekend 2009. Drivers will use this detour, just south of the original roadway, until traffic is moved onto the new East Span.

#### A YBID Contract

Contractor: C.C. Myers, Inc.

Approved Capital Outlay Budget: \$492.8 M

Status: Completed October 2010

This contract was originally awarded in early 2004 to construct the detour structure for the planned 2006 opening of the new East Span. Because of a lack of funding, the SAS Superstructure contract was re-advertised in 2005 and the 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 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 increased the budget and forecast for the contract to cover the revised project scope and reduce project risks.



YBID East Tie-In Rolled in on Labor Day 2009 Weekend



West Tie-In Phase #1 Rolled in on Labor Day Weekend 2007

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

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

Contractor: MCM Construction, Inc.

Approved Capital Outlay Budget: \$185.5 M

Status: 50% Complete as of December 2011

The YBITS #1 contract will construct the mainline roadway structure from the SAS bridge to the YBI tunnel. On February 4, 2010, Caltrans awarded the YBITS #1 contract to MCM Construction, Inc.

**Status:** Construction of the eastbound and westbound footings and columns is complete. Work is 90% complete on the westbound roadway deck and the remaining 10% will be completed by February 2012. The eastbound falsework fabrication started in October 2011 and installation began in late December 2011. Westbound post tensioning started in December 2011 and will be completed in January 2012.

#### YBITS #2 Contract

Contractor: TBD

Approved Capital Outlay Budget: \$59.0 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. To expedite opening of a new eastbound on-ramp and the pedestrian/bicycle pathway from Yerba Buena Island, the TBPOC has decided to split the bridge dismantling project into at least two contracts. The dismantling of the superstructure of the main cantilever section of the existing bridge will be incorporated into the YBITS #2 contract, while the remaining portions of the existing bridge will be removed by separate contract or contracts yet to be determined. YBITS #2 cantilever truss will be advertised in March 2012.

#### YBITS Landscaping Contract

Contractor: TBD

Approved Capital Outlay Budget \$3.3 M

Status: In Design

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

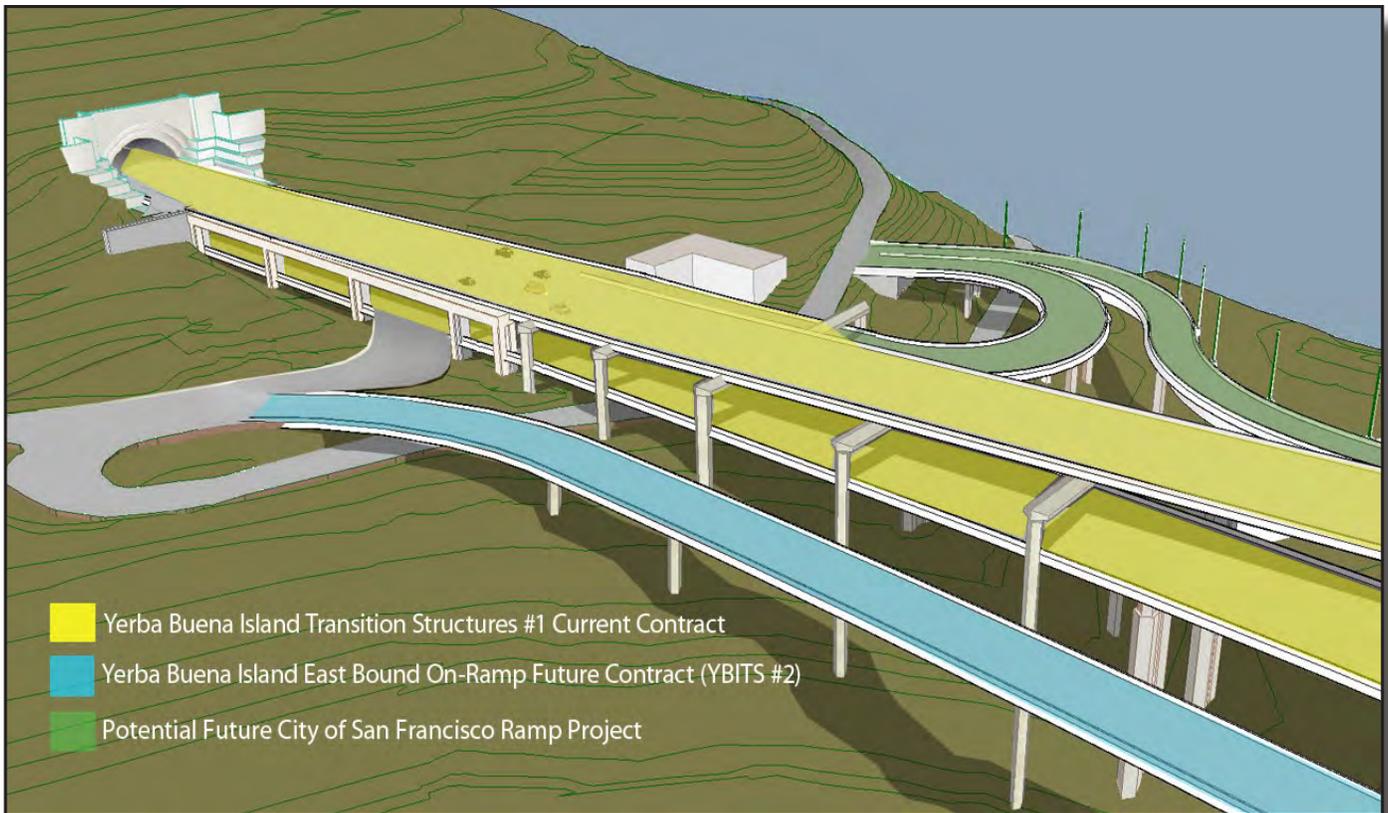




YBITS #1 Westbound Roadway Deck Progress



YBITS #1 Westbound Tensioning of the Roadway Deck

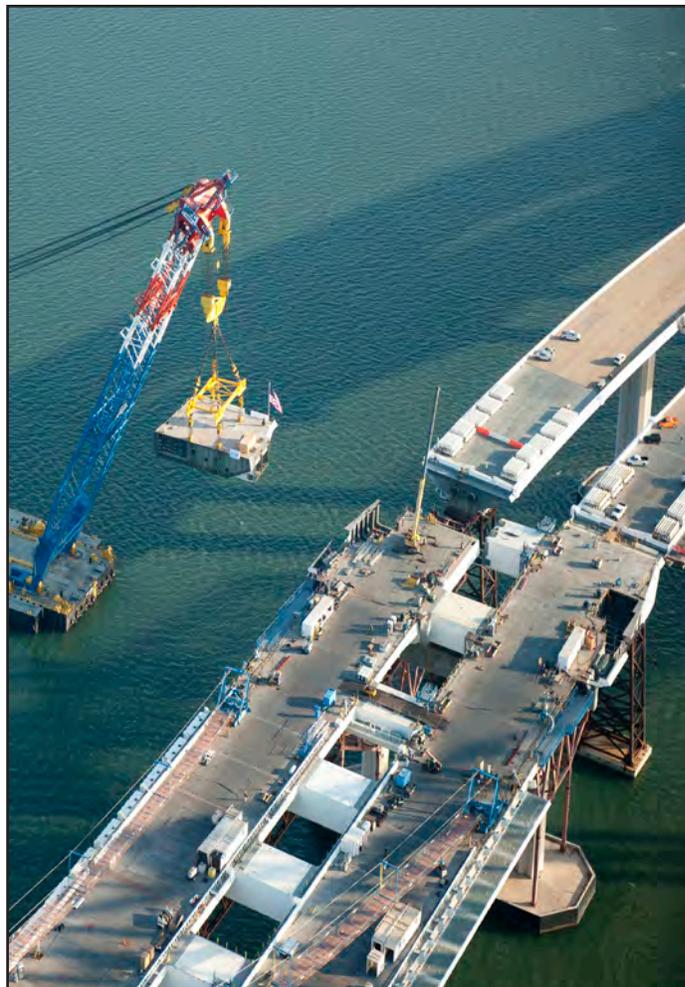


## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

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

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



Aerial View of the Self-Anchored Suspension Bridge with Shear-Leg Crane Barge Hoisting Final Roadway Box into Place

#### SAS Land Foundation Contract

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

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

#### C SAS Marine Foundations Contract

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

Construction of the piers at E2 and T1 (see rendering on facing page) 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: \$2.05 B

Status: 80% Complete as of December 2011

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

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

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



Architectural Rendering of New Self-Anchored Suspension Span and Skyway

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

#### STEP 1 - CONSTRUCT TEMPORARY SUPPORT STRUCTURES

All temporary support foundations and structures completed in September 2010 between the Skyway and Yerba Buena Island to support the westbound and eastbound roadway box erections.



Step 1

#### STEP 2 - INSTALL ROADWAYS

All 28 roadway boxes have been erected as of the end of October 2011.

**Status:** Counterweights concrete placement was completed in early December 2011. Final bolting of service platforms, crossbeams and roadway decks continues. Roadway boxes 12, 13 and 14 eastbound and westbound seam welding will be completed in January 2012 along with roadway boxes 13 and 14 inboard and outboard barrier installation. Bike path handrail installation started in mid-December and will be completed in January 2012.



Step 2

#### STEP 3 - INSTALL TOWER

All tower legs, tower grillage and tower saddle were erected using the self-rising crane as of mid-May 2011. The tower head will be installed after cable erection has been completed in 2012.

**Status:** Tower bolting is complete and work on the base shear plate continues and will be complete in January 2012.



Step 3



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

The main cable haul started in late December 2011 from the east end of the westbound roadway deck moving over the tower saddle, wrapping around pier W2 and returning to the tower saddle to the east end of eastbound roadway deck where it will then be anchored. Suspender cables will be added after all 137 cable bundles have been hauled to lift the roadway deck off the temporary support structure.

**Status:** The parallel wire strand (PWS) cable haul is scheduled for completion in mid-2012.

#### STEP 5 - WESTBOUND AND EASTBOUND SEISMIC SAFETY OPENING

The new bridge will now open simultaneously in both the westbound and eastbound directions in September 2013.

**Status:** The Yerba Buena Island Transition Structure (YBITS) #1 is currently in progress and the Oakland Touchdown Detour (OTD) #2 will begin construction on April 28, 2012. The Self-Anchored Suspension (SAS) segment of the bridge will be ready for seismic safety opening by September 2013.



Step 4



Step 5



Aerial View of the Self-Anchored Suspension Bridge with Shear-Leg Barge Crane Hoisting the Final Roadway Box to Complete the Self-Anchored Suspension Bridge Deck

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

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

Like giant three-dimensional jigsaw puzzles, the roadway and tower lifts 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 strong and yet relatively light and flexible structure to withstand the massive loads placed on the bridge during seismic events.

All components undergo a rigorous quality review by ZPMC, ABF, and Caltrans to ensure that only bridge components that have been built according to contract specifications will be shipped.

**Roadway Box Fabrication Status:** Roadway boxes 1 through 14 east and west have all been installed.

**Tower Fabrication Status:** All tower components have been fabricated and were delivered to the job site in June 2011.

#### ***Cables and Suspenders***

One continuous main cable will be used to support the roadway deck of the SAS bridge. The main cable will be anchored within the westbound and eastbound roadway boxes at the east end of the SAS near pier E2, then extend west over the northeast saddle towards the tower saddle at T1. It will then loop around pier W2 westbound deviation saddle, extend through the jacking beam saddle and extend around the eastbound deviation saddle at W2 over the tower saddle at T1 again to the south east saddle and finally anchor within the eastbound roadway box near pier E2. The main cable is made up of 137 bundles of wire strands and a number of smaller suspender cables will connect the roadway decks to the main cable.

**Status:** All main cable strands, cable bands and the 75mm suspender cables have been shipped to the job site. The last of the 90mm suspender cables arrived in December 2011.



Off Loading the Final Four Roadway Boxes at Pier 7 in Oakland

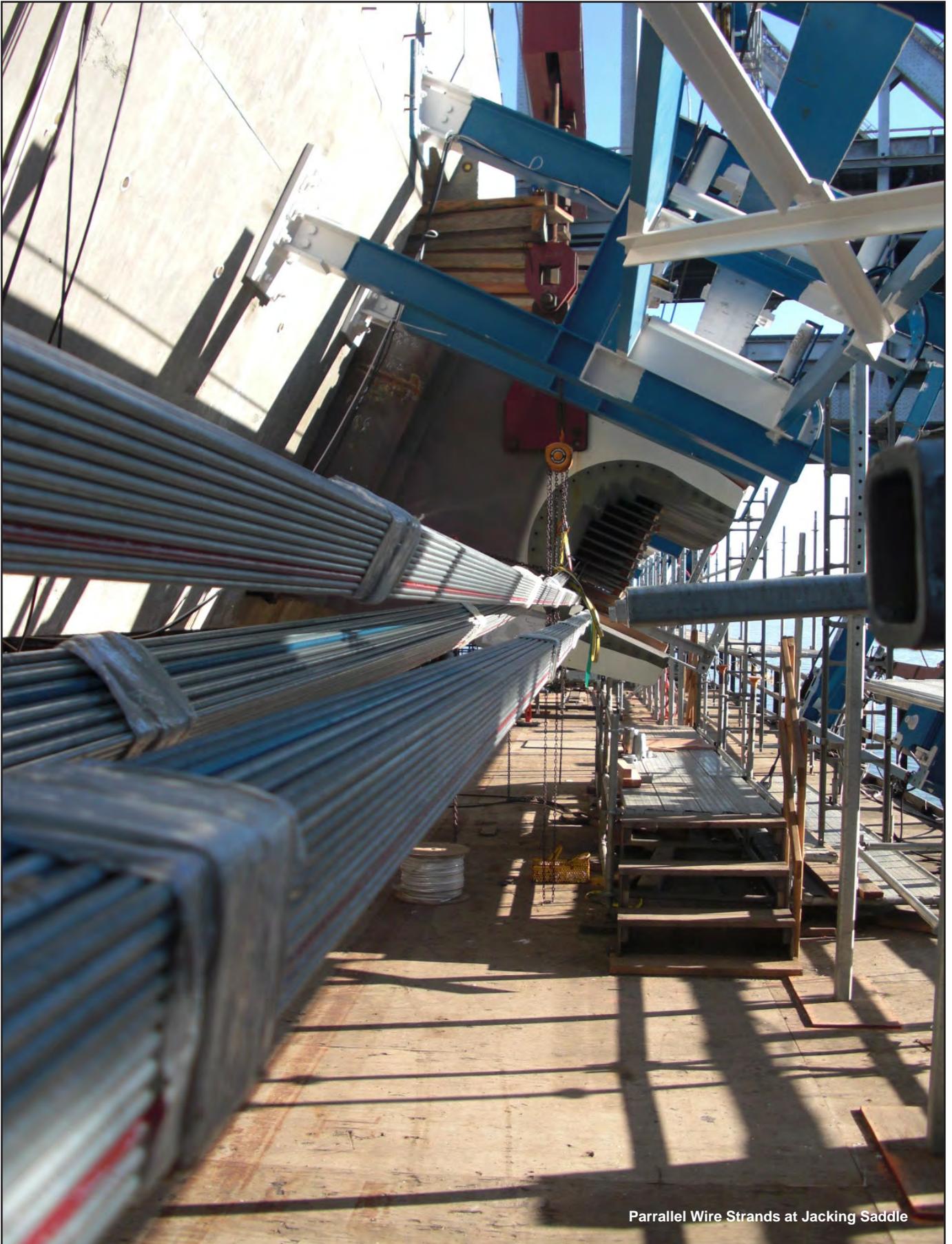
#### ***Saddles, Bearings, Hinges, and Other Bridge Components***

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

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

**Status:** The Hinge K pipe beams have been fabricated and installed. Hinge A seismic expansion joints are in fabrication and are currently scheduled for completion in February 2012. The SAS traveler rails and the Skyway bike path railings and crushable zone arrived in early December 2011. The anchor rods have been installed in roadway boxes 13 east and west. Mechanical, electrical and piping installation is ongoing on the SAS Deck and the tower.





Parallel Wire Strands at Jacking Saddle

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### *Self-Anchored Suspension (SAS) Superstructure Cable Installation Activities*

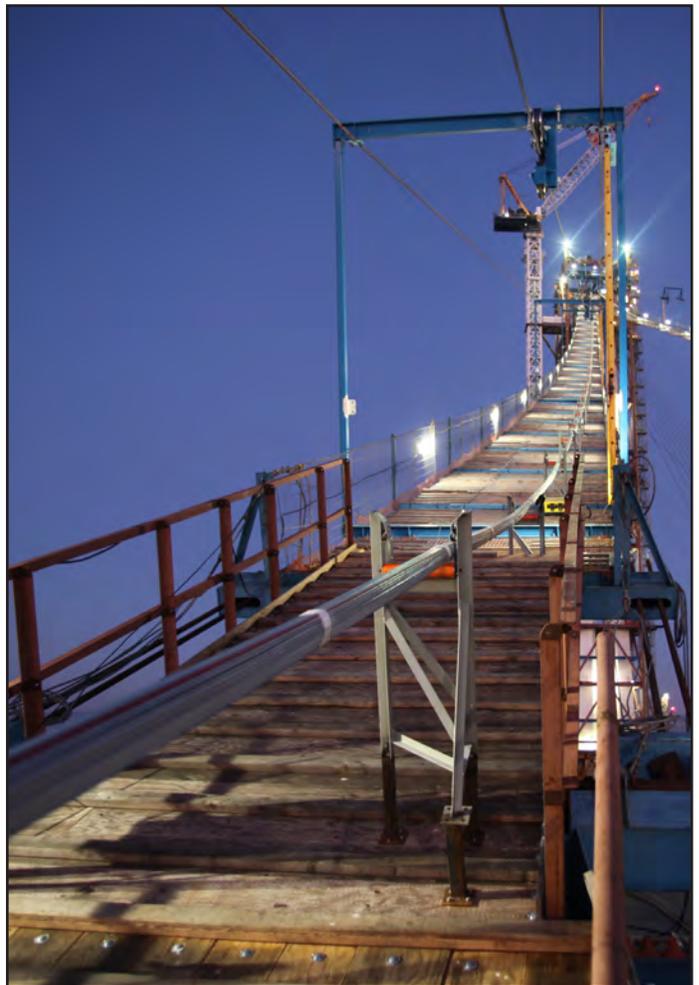
With installation of all structural elements of the tower and roadway nearing completion, focus is now turning to the placement of the bridge's more than 2.5 - foot in diameter and nearly mile long main cable. The single cable is made up of 137 separate bundled strands which contain 127 individual pencil thin wires. Each of the 137 bundled strands will be individually hauled by a tramway system from the northeastern end of the bridge, up and over the tower, and around the west end of the bridge before returning over the tower and to the southeastern end of the bridge (see figure on page 24).

**Status:** The cable hauling started on December 21, 2011 and is scheduled for completion by mid 2012.

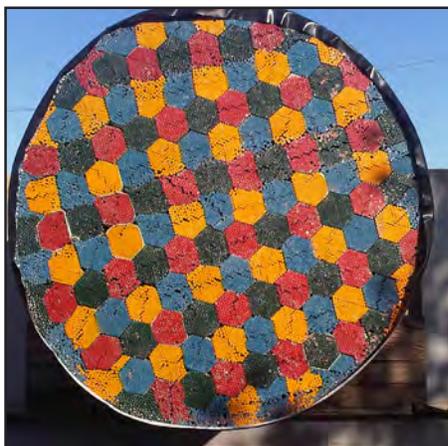
Because the bridge is asymmetric with a longer span to the east than to the west, the tower has been pulled back 20 inches to the west so that the tower will return to a plumb position when the weight of the heavier east side of the bridge is transferred to the main cable. The tower pull back was completed in September 2011.



Parallel Wire Strand Anchor Rods



The Self-Anchored Suspension Bridge First Parallel Wire Strand (PWS) Placement Tramway System on the Back Span Catwalk



Sample of 137 Cable Band Compaction Testing Performed at Pier 7 in Oakland





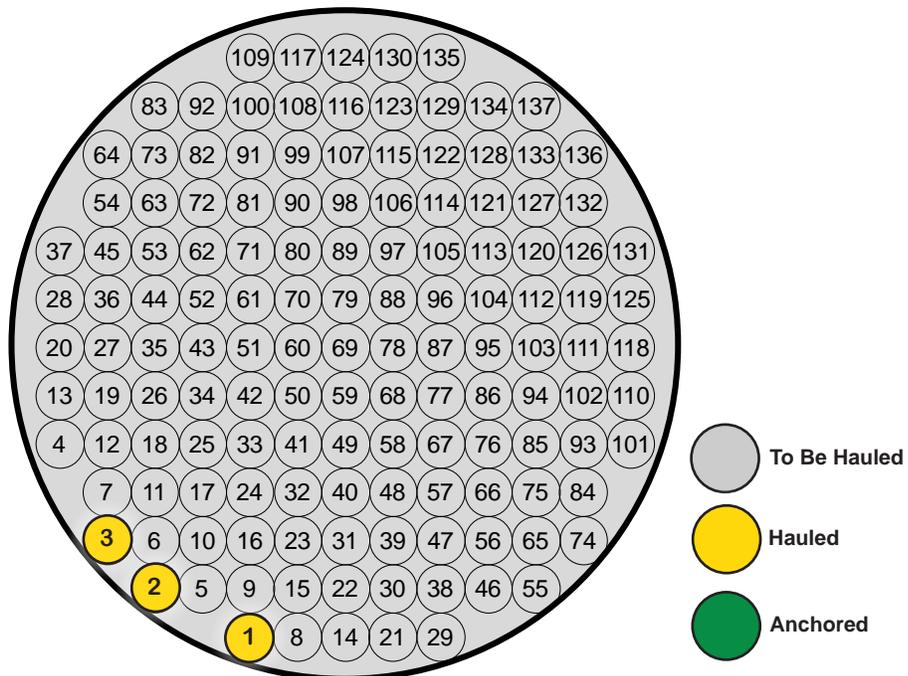
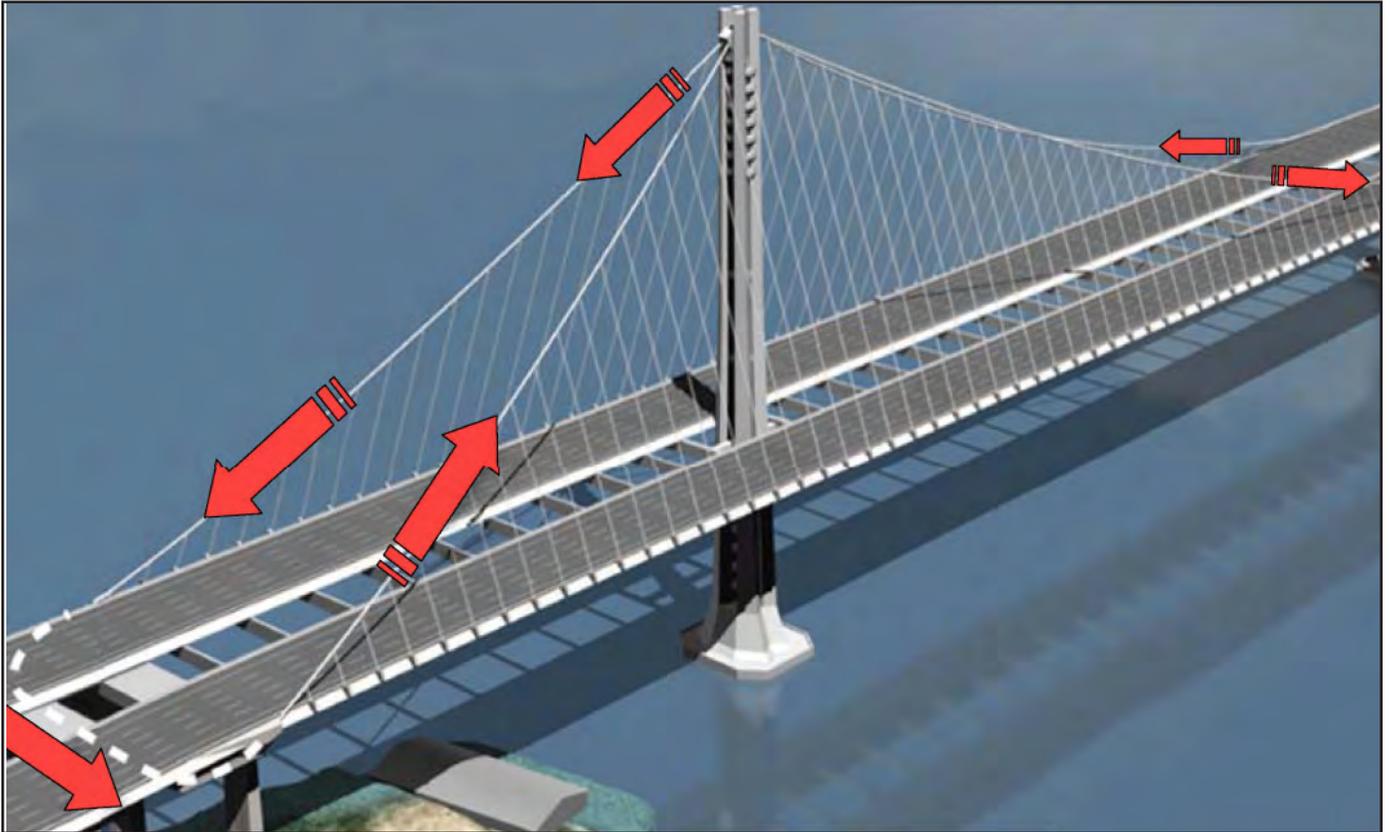
Checking Connection of Haul Rope & Haul Frame Prior to Hauling PWS



Southeast Deviation Saddle First Cable Strand Being Placed in Position

# TOLL BRIDGE SEISMIC RETROFIT PROGRAM

## Self-Anchored Suspension (SAS) Superstructure Cable Installation Activities

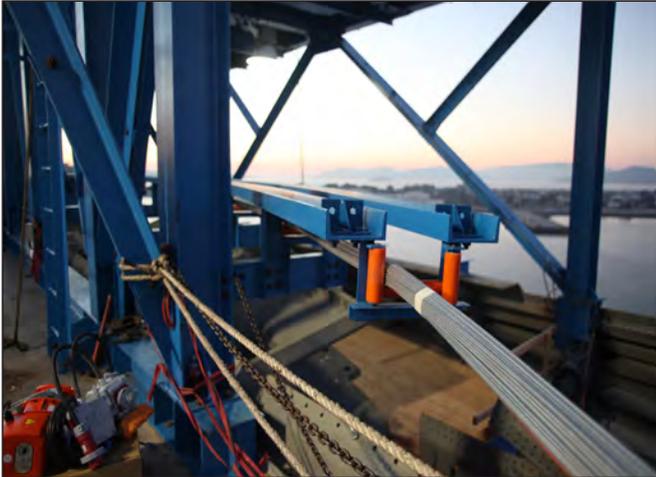


## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

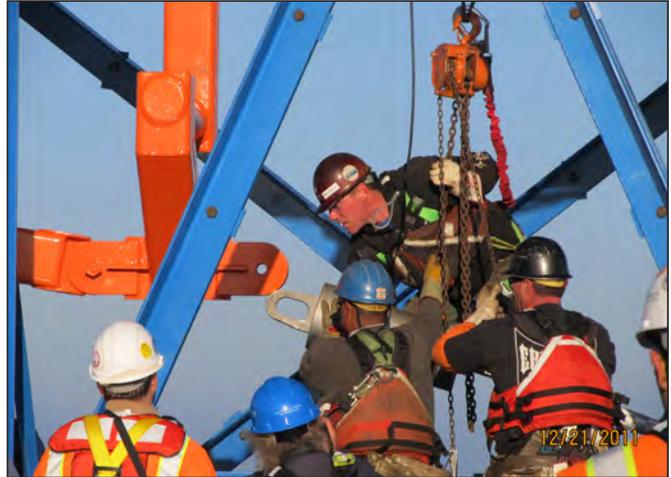
### *Self-Anchored Suspension (SAS) Superstructure Cable Installation Activities*

#### Cable Hauling System

The 137 strands will be hauled up and around the self-anchored suspension span by a custom tramway system similar to a ski lift. Each strand will be brought to the bridge on spools (1) that are unwound and attached to a tram lift hauling arm (2) to be hauled around the bridge. The strand is hauled by the hauling arm starting at the northeast corner of the bridge up (3) and down the tower and around the west end of the bridge before returning over the tower to the southeast end corner of the bridge (4).



(1) Strand Spool Feeding Strand to Cable Trolley Frame



(2) Connecting the Cable Strand Trolley Frame to the Strand Lead Socket



(3) Trolley Frame and Strand Being Hauled up toward the Tower



(4) Strand Haul Complete at Eastbound Anchorage Area

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

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

#### **E** Skyway Contract

Contractor: Kiewit/FCI/Manson, Joint Venture

Approved Capital Outlay Budget: \$1.25 B

Status: Completed March 2008

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

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

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

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



Skyway on the left and Existing Bridge on the Right Looking East toward Oakland



## 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 approach structures to the Skyway will be constructed in three phases. The first phase, constructed under the OTD #1 contract, built the new westbound approach structure. Due to physical constraints with the existing bridge, OTD #1 was only able to construct a portion of the eastbound approach. To facilitate opening the bridge in both directions at the same time, the current phase of work, performed by the Oakland Detour contractor, is widening the upper deck of the Oakland end of the existing bridge to allow for a traffic shift to the north that removes the physical constraint to completing the eastbound structure. The third phase, to be constructed by a future OTD #2 contract, will complete the eastbound lanes and provide the traffic switch to the new structure in both directions. This will allow the bridge to open simultaneously in both directions.

#### **F** Oakland Touchdown #1 Contract

Contractor: MCM Construction, Inc.  
Approved Capital Outlay Budget: \$212.0 M  
Status: Completed June 2010

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

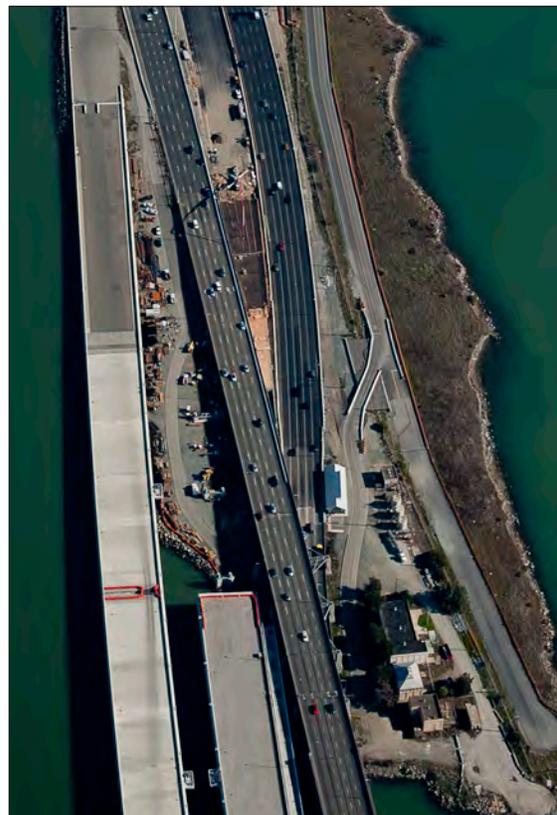
**Status:** MCM Construction, Inc. completed OTD #1 westbound and eastbound phase 1 on June 8, 2010.

#### **G** Oakland Touchdown #2 Contract

Contractor: TBD  
Approved Capital Outlay Budget: \$62.0 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 by September 2013.

**Status:** The TBPOC has approved an acceleration plan that will construct a detour at the Oakland end of the bridge to allow for expedited construction of the OTD #2 contract. OTD #2 was advertised in November and will be awarded in February 2012. Construction will begin on April 28, 2012.



Aerial View of the Eastbound Oakland Detour with the EBMUD Outfall Crossing Structure on the right, the Relocated Clear Channel Sign and the Westbound Oakland Detour under Construction

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

#### **H** Oakland Detour

Contractor: MCM Construction, Inc.

Approved Capital Outlay Budget: \$51.0 M

Status: 88% Complete as of December 2011

To ensure a simultaneous eastbound and westbound opening of the bridge by September 2013, the TBPOC has approved an acceleration plan that will construct a detour at the Oakland end of the bridge to allow for expedited construction of the OTD #2 contract. The detour realigns the existing bridge approach to the south to allow for construction of the remaining portion of OTD that was in conflict with the existing bridge.

**Status:** The westbound detour construction foundations and pier walls are complete with the exception of one wall. The westbound detour is forecast to be completed in February 2012, pending weather or construction delays.



Oakland Detour Westbound Widening Exterior Structural Support Wall



Oakland Detour Westbound Widening Structural Support Walls



Westbound Foundation Hydraulic Jacking Support



# TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

### Existing East Span Bridge Demolition

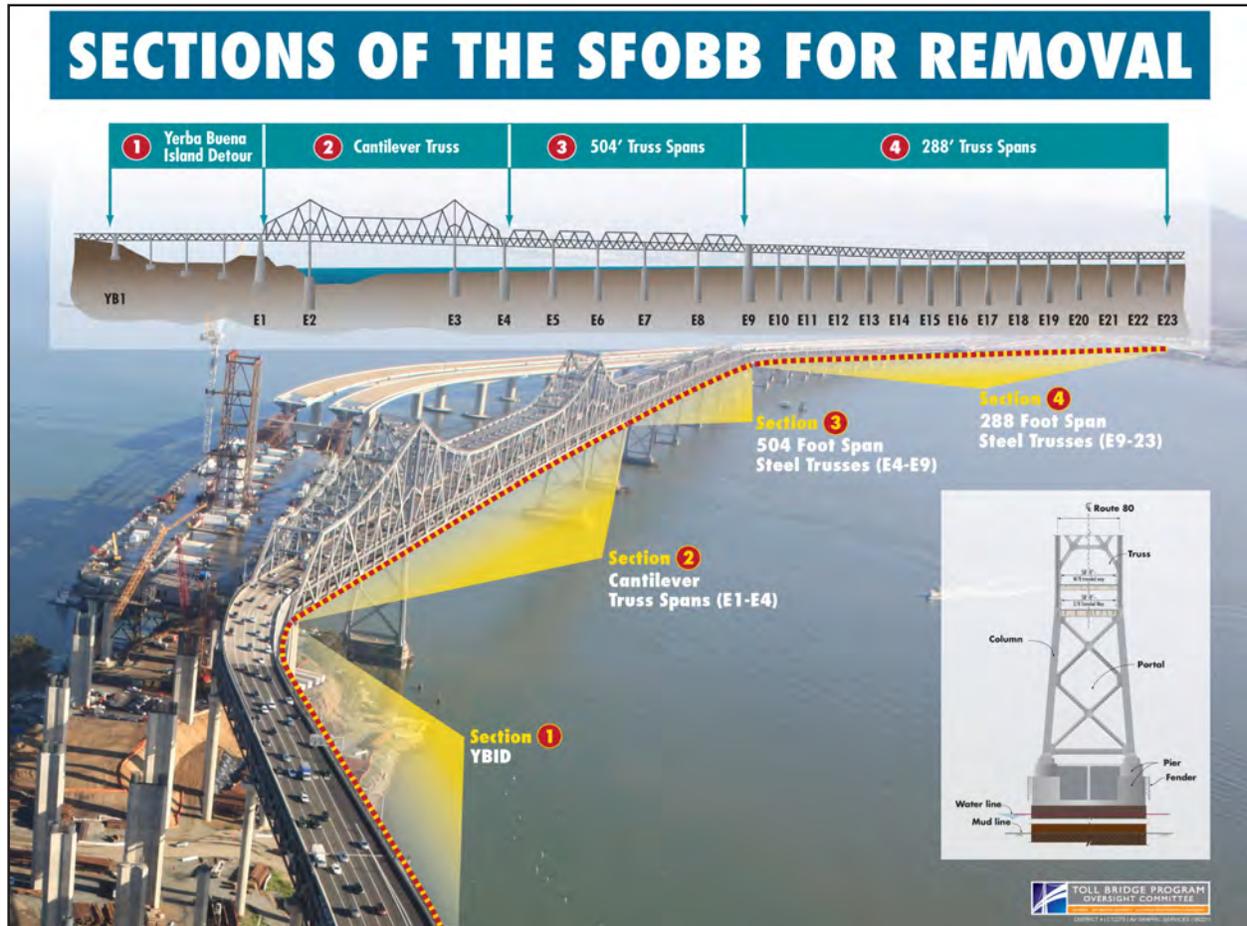
#### Existing East Span Demolition

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

Design work on the demolition of the existing bridge has started. The current plan is to complete the environmental clearance by the end of January 2012, obtain all permits by the end of February 2012, advertise the YBITS #2 contract in March 2012 and award in August 2012. To expedite opening of a new eastbound on-ramp and the pedestrian/bicycle pathway from Yerba Buena Island, the TBPOC has decided to split the bridge dismantling project into at least two contracts. The dismantling of the superstructure of the main cantilever section of the existing east span of the bridge will be incorporated into the YBITS #2 contract, while the remaining portions will be removed by separate contract or contracts yet to be determined for the superstructure and marine foundations.



Dismantling Scope Included in the Future YBITS#2 Contract - YBI Detour at left, E-1 center, Cantilever at right



## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

#### Other Contracts

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

#### **J** Electrical Cable Relocation

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

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

#### Yerba Buena Island Substation

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

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



Archeological Investigations



New YBI Electrical Substation



## Stormwater Treatment Measures

Contractor: Diablo Construction, Inc.  
 Approved Capital Outlay Budget: \$18.3 M  
 Status: Completed December 2008

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



Stormwater Retention Basin

## East Span Interim Seismic Retrofit

Contractors: 1) California Engineering  
 2) Balfour Beatty  
 Approved Capital Outlay Budget: \$30.8 M  
 Status: Completed October 2000

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



Existing East Span of the San Francisco-Oakland Bay Bridge

## Pile Installation Demonstration

Contractor: Manson and Dutra, Joint Venture  
 Approved Capital Outlay Budget: \$9.3 M  
 Status: Completed December 2000

While large-diameter battered piles are common in offshore drilling, the new East Span is one of the first bridges to use them 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.



Battered Pile Installation Demonstration

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM Risk Management Program Update

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

As of the end of the fourth quarter of 2011, the 50 percent probable draw on Program Contingency is \$219 million. The potential draw ranges from about \$130 million to \$300 million.

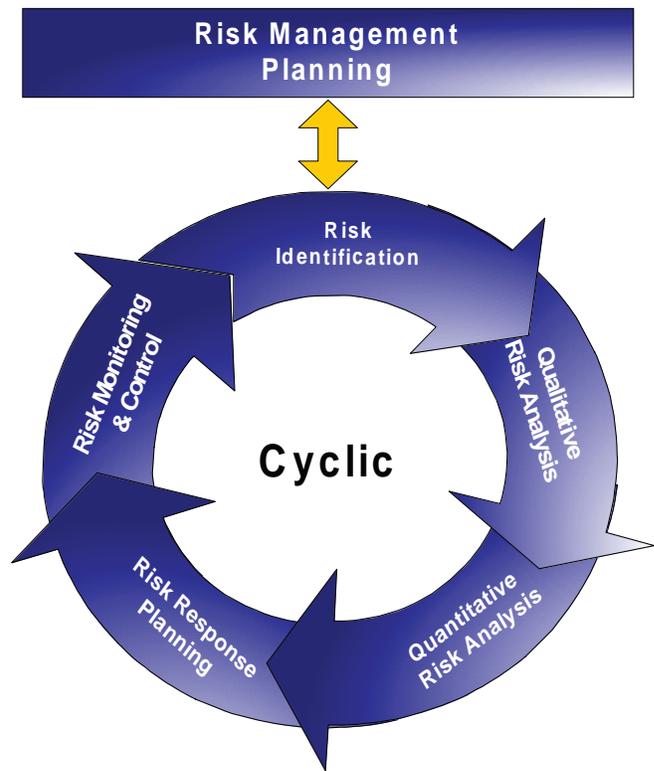
The current Program Contingency balance is sufficient to cover the cost of currently identified risks. In accordance with the approved TBSRP Risk Management Plan, risk mitigation actions are continuously developed and implemented to reduce the potential draw on the Program Contingency.

### RISK MANAGEMENT DEVELOPMENTS

The 50 percent probable remaining Program Contingency Balance (i.e., the approved TBPOC Program Contingency Balance less the 50 percent Probable Draw) did not change noticeably this quarter. Reductions in the cost of risk were generally offset by contract change orders that mitigated or eliminated risks.

Cost and schedule risks on the SAS and YBITS #1 contracts trended downward this quarter primarily due to progress made with completion of the bridge deck installation, YBITS#1 contract acceleration, and the transfer of Hinge K work to the SAS contract. The cost and schedule risk associated with cable system installation, load transfer, and the completion of corridor systems required for bridge opening have not changed substantially this quarter. Cost risks associated with these areas were adjusted to reflect an enhanced assessment of daily acceleration costs. Teams are actively engaged in each of these areas to mitigate the risks to the greatest extent possible.

The SAS contractor's updated schedule that meets the TBPOC's milestones for opening the bridge in 2013. The Hinge K coordination issue between the SAS and YBITS#1 contractors has been resolved by transferring the Hinge K work to the SAS contractor. This removes the Hinge K work from the critical path to bridge opening. The cable system, the next major activities on the critical path to bridge opening, includes installing and compacting the cable, attaching the cable bands and suspenders, wrapping the cable, painting the cable and suspenders, and installing the cable electrical systems. The Cable Erection Risk Management team



has been meeting weekly for the past three years to resolve potential cable issues and many of their recommendations have been implemented, resulting in a reduction of many risks.

### RISK MANAGEMENT LOOK AHEAD

The corridor schedule is aggressive and there are risks to the future activities on the critical paths through SAS cable installation, load transfer, and completion of mechanical, electrical, and plumbing systems required for the bridge opening. The risk management team continues to monitor the SAS contract, YBITS#1 contract, and the updated corridor schedule to alert the TBPOC of approaching critical activities and suggest mitigation responses for impending risks.

While the transfer of Hinge K work to the SAS contractor reduced schedule risk, teams continue to investigate ways to further mitigate the Hinge K completion risk. The YBITS#1 contractor has been issued a contract change order to further accelerate completion of the easternmost frames of the YBITS structures to allow the SAS contractor access to complete Hinge K. These actions reduce the risk of the YBITS#1 contract impacting bridge opening.

Aggressive planning for the future East Span dismantling work is underway. Dismantling of the cantilever span

has been incorporated in the YBITS 2 contract to reduce contractor coordination risk and take advantage of other cost and schedule efficiency opportunities. Project scope for the remainder of the dismantling is being refined and an evaluation of the most prudent and efficient procurement strategy is underway. In concert with this effort, the risk management team will be updating the risk registers for this dismantling work.

Various architectural enhancements and other project improvements are being assessed by the TBPOC and, if approved, will be reflected in the Potential Draw on Program Contingency curve in future quarters.



YBITS #1 Westbound Sections of Roadway on right with Existing Bridge and Yerba Buena Island Detour on Left with Hinge K at bottom right

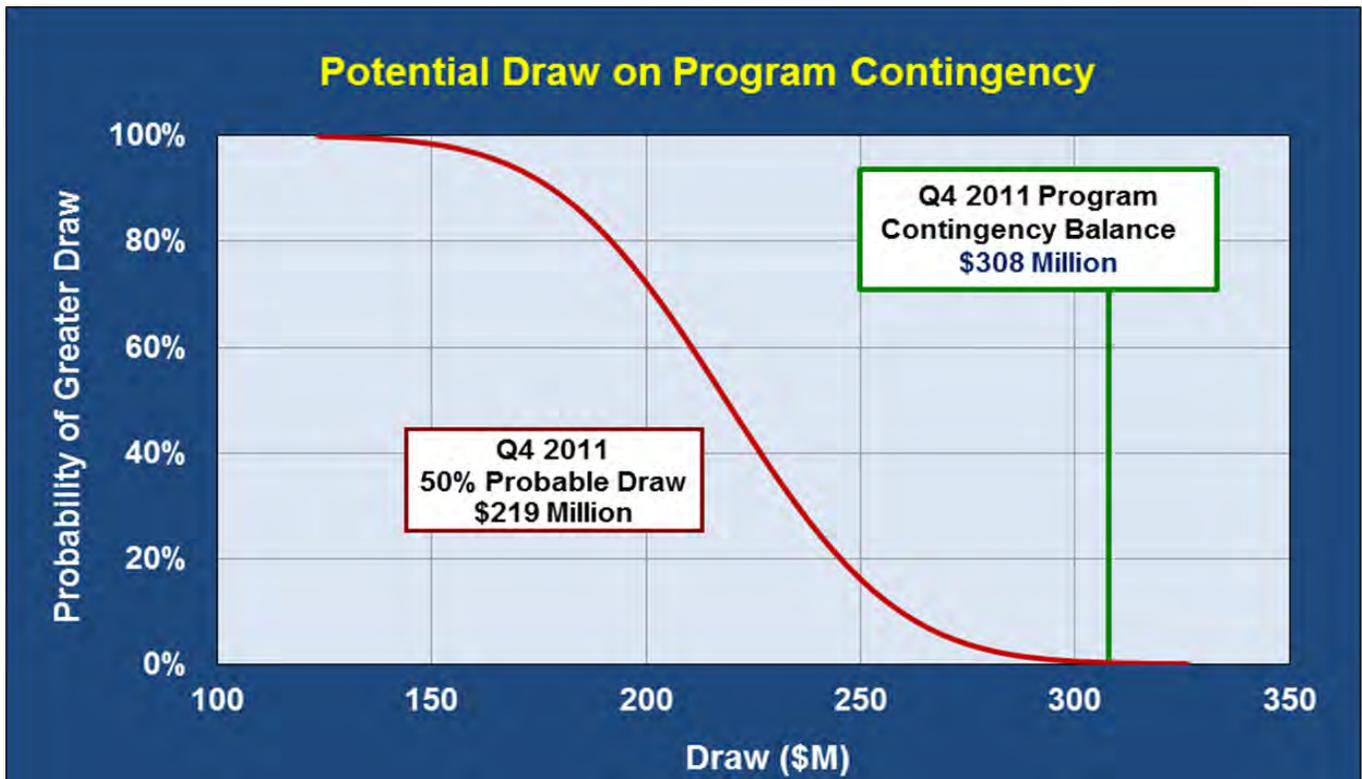


Figure 1 – Potential Draw on Program Contingency\*

\*Figure 1 Notes:

1. The Program Contingency is currently \$308 million per the TBPOC approved budget.
2. Proposed architectural enhancements and project improvements are excluded unless approved by the TBPOC.
3. Program Contingency may be used for other beneficial purposes than to cover risks. Therefore, the potential draw chart may not necessarily represent a forecast of the future balance of Program Contingency funds.

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Program Funding Status

AB 144 established a funding level of \$8.685 billion for the TBSRP. As of January 1, 2010, seismic retrofitting of Antioch and Dumbarton Bridges became part of the Toll Bridge Seismic Retrofit Program with the passage of AB 1175, which provided another \$750 million bringing the total funding to \$9.435 billion. The program funding sources are shown in Table 1- Program Budget.

**Table 1—Program Budget as of December 31, 2011 (\$ Millions)**

	Budgeted	Funding Available & Contribution
<b>Financing</b>		
Seismic Surcharge Revenue AB 1171	2,282.0	2,282.0
Seismic Surcharge Revenue AB 144	2,150.0	2,150.0
Seismic Surcharge Revenue AB 1175	750.0	750.0
BATA Consolidation	820.0	820.0
<b>Subtotal - Financing</b>	<b>6,002.0</b>	<b>6,002.0</b>
<b>Contributions</b>		
Proposition 192	790.0	789.0
San Diego Coronado Toll Bridge Revenue Fund	33.0	33.0
Vincent Thomas Bridge	15.0	6.9
State Highway Account <sup>(1)(2)</sup>	745.0	745.0
Public Transportation Account <sup>(1)(3)</sup>	130.0	130.0
ITIP/SHOPP/Federal Contingency <sup>(4)</sup>	448.0	300.0
Federal Highway Bridge Replacement and Rehabilitation (HBRR)	642.0	642.0
SHA - East Span Demolition	300.0	-
SHA - "Efficiency Savings" <sup>(5)</sup>	130.0	113.0
Redirect Spillover	125.0	125.0
Motor Vehicle Account	75.0	75.0
<b>Subtotal - Contribution</b>	<b>3,433.0</b>	<b>2,958.9</b>
<b>Total Funding</b>	<b>9,435.0</b>	<b>8,960.9</b>
<b>Encumbered to Date</b>		<b>7,563.6</b>
<b>Remaining Unallocated</b>		<b>1,397.3</b>
<b>Expenditures :</b>		
Capital Outlay		5,822.8
State Operations		1,553.4
Antioch and Dumbarton Expenditures by BATA		12.2
	<b>Total Expenditures</b>	<b>7,388.4</b>
<b>Encumbrances :</b>		
Capital Outlay		143.4
State Operations		31.8
	<b>Total Encumbrances</b>	<b>175.2</b>
<b>Total Expenditures and Encumbrances</b>		<b>7,563.6</b>

(1) The California Transportation Commission adopted a new schedule and changed the PTA/SHA split on December 15, 2005.

(2) To date, \$645 million has been transferred from the SHA to the TBSRP, including the full \$290 million transfer scheduled by the CTC to occur in 2005-06. An additional \$100 million has been expended directly from the account.

(3) To date, \$130 million has been transferred from the PTA to the TBSRP, including the full amount of all transfers scheduled by the CTC.

(4) To date, \$300 million has been transferred from the ITIP/SHOPP/Federal Contingency to the TBSRP.

(5) To date, \$113 million has been transferred from the SHA to the TBSRP, representing the commitment of "Efficiency Savings" identified under AB 144. Approximately \$17 million remains to be distributed as scheduled by the CTC.

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

Pursuant to Streets and Highways Code Section 30952.1 (d), expenses incurred by Caltrans, BATA, and the California Transportation Commission (CTC) for costs directly related to the duties associated with the TBPOC are to be reimbursed by toll revenues. Table 3 -Toll Bridge Program Oversight Committee Estimated Expenses: July 1, 2005 through December 31, 2011 shows expenses through December 31, 2011 for TBPOC functioning, support, and monthly and quarterly reporting.

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

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

\* Caltrans Efficiency Savings

\*\* SFOBB East Span Demolition Cost

**Table 3—Toll Bridge Program Oversight Committee  
Estimated Expenses: July 1, 2005 through December 31, 2011 (\$ Millions)**

Agency/Program Activity	Expenses
<b>BATA</b>	2.1
<b>Caltrans</b>	2.4
<b>CTC</b>	2.0
<b>Reporting</b>	4.5
<b>Total Program</b>	<b>11.0</b>

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Quarterly Environmental Compliance Highlights

Overall environmental compliance for the San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project (ESSSP) has been a success during the fourth quarter of 2011. The tasks for the current quarter are focused on mitigation monitoring and environmental permitting. Key successes in this quarter are as follows:

Bird monitoring was conducted weekly in all active construction areas. Monitors did not observe any indication that birds were disturbed due to the SFOBB ESSSP construction activities.

Peregrine falcon monitoring for the 2011/2012 nesting season began on December 6, 2011 and will continue through June 2012. Monitors have observed peregrines flying through and roosting within the project area. During monitoring on December 13, 2011, the resident pair of peregrine falcons was observed attacking a red shouldered hawk which had entered their territory. The biological monitors rescued the injured hawk from the Skyway deck and transported it to the Lindsey Wildlife Museum Hospital, in Walnut Creek, for care and rehabilitation. The recovered hawk was banded and released at the Golden Gate Raptor Observatory in the Marin Headlands on December 21, 2011.

SFOBB environmental compliance and storm water pollution prevention plan (SWPPP) inspections were conducted weekly at all active project sites. The project team continues to work closely with contractors to ensure compliance with environmental permits and regulations and to improve SWPPP and best management practices.

Caltrans oversaw the installation of shotcrete on several large slopes in the Yerba Buena Island Transition Structure (YBITS) portion of the project site from late November to mid December 2011. The stabilization of slopes at YBITS with shotcrete will greatly aid in the management of stormwater runoff during the 2011/2012 rainy season.

Caltrans hosted and participated in a series of Interagency Work Group meetings from late October 2011 through early December with the Bay Conservation and Development Commission (BCDC), the National Marine Fisheries Service (NMFS), the United States Army Corps of

Engineers (USACOE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Game (CDFG), and the United States Coast Guard (USCG). Caltrans provided a brief description of the anticipated dismantling activities and methods, summarized proposed avoidance and minimization measures, and summarized anticipated permitting actions required by each agency.

During this quarter Caltrans submitted to the National Marine Fisheries Service (NMFS) an application for a Letter of Authorization, under Section 101 of the Marine Mammal Protection Act, to transfer a small number of marine mammals incidental to construction of the new East Span and dismantling of the existing East Span of the SFOBB.

A draft bird management plan for the dismantling of the existing east span was prepared to provide a management framework for avoiding impacts to birds nesting on the existing bridge during dismantling activities.

During the fourth quarter of 2011, a strategy was developed, in coordination with construction, to address the avoidance of impacts to nesting birds during the 2012 Presidents' Day traffic diversion and associated dismantling work. An internal memo was developed to address all aspects of the nesting bird management strategy. Pre-dismantling nesting bird surveys will continue to be performed during the first quarter of 2012.



Peregrine Falcon Flying from the San Francisco-Oakland Bay Bridge  
Photo taken from 30th Story Balcony of 201 Mission by Glenn Nevill

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Antioch Bridge Seismic Retrofit Project

Contractor: California Engineering Contractors, Inc.

Approved Capital Outlay Budget: \$70.0 M

Status: 93% Complete as of December 2011

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 1.8-mile-long steel plate girder bridge was opened in 1978 with one lane in each direction. The major retrofit measure for the bridge includes installing seismic isolation bearings at each of the 41 piers, strengthening piers 12 through 31 with steel cross-bracing between column bents, and installing steel casings at all columns located at the Sherman Island approach slab bridge.

**Status:** Work is progressing well and seismic safety is forecast to be completed ahead of schedule in June of 2012.

Seismic isolation bearings will allow the superstructure of the bridge to move independently from the pier and column substructure during an earthquake. All seismic isolation bearings have been fabricated, tested, and made ready for delivery. Seventy-two bearings (88% complete) have been installed at 41 piers.

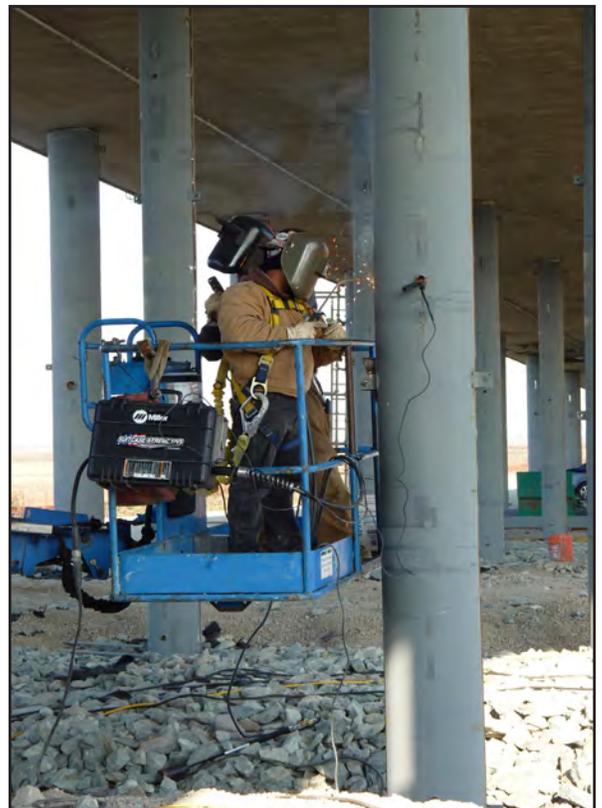
At piers 12 through 31, center steel cross-bracing is being added between the pier columns to strengthen the pier. The work requires off-site fabrication of the steel cross-bracing and on-site preparation of the existing columns to ensure proper bond with the new bracing. Installation of cross-bracing has been completed at all 20 piers.

Columns supporting the approach slab bridge located on Sherman Island are being strengthened with steel column casing jackets. Ninety-five (95%) of the 116 column casing jackets have been installed and welded. Seventy-six (66%) of the column casings have been grouted. The approach slab bridge expansion joints are being retrofitted with seat extenders. Eight (67%) of the 12 seat extenders have been installed.

In addition to the retrofit work, seismic monitoring equipment is being installed to provide ground and structure motion information during future seismic events. The monitoring equipment is being installed at 250, 160, 80, 50, 20 and 4 feet below the ground surface.



Pier Retrofits on Sherman Island Completed



Welding of Column Casings at Sherman Island Approach Structure



Installing Isolation Bearing



Pier Retrofit within Waterway

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Dumbarton Bridge Seismic Retrofit Project

Contractor: Shimmick Construction Company, Inc.

Approved Capital Outlay Budget: \$92.7 M

Status: 40% Complete as of December 2011

The current 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 has six lanes (three in each direction) and an eight-foot bicycle/pedestrian pathway. The bridge is a combination of three bridge types; reinforced concrete slab approaches supported on multiple pile extension columns, precast-prestressed concrete delta girders and steel box girders supported on reinforced concrete piers. The current retrofit strategy for the bridge includes superstructure and deck modifications and installation of isolation bearings.

**Status:** The main bridge structure between piers 16-31 will be raised approximately 5 inches in order for isolation bearings to be installed to separate the superstructure from the substructure during seismic events. In preparation, the bridge piers are being widened with reinforced concrete to accommodate the new bearings. Work continues with reinforcing steel and concrete placement at these main bridge piers.

Along the reinforced concrete slab approaches, the bent caps are being extended and tied to new 48-inch diameter steel piles that have been installed to strengthen the bridge. Bent cap extensions along the east and west trestle approach are now complete.

The concrete coring operation to widen the pier caps is complete at all of the 14 locations. Concrete has been placed at 12 of 16 piers. The installation of jacking frames is complete at piers 17 through 21. Welding is ongoing at piers 22, 29 and 30.

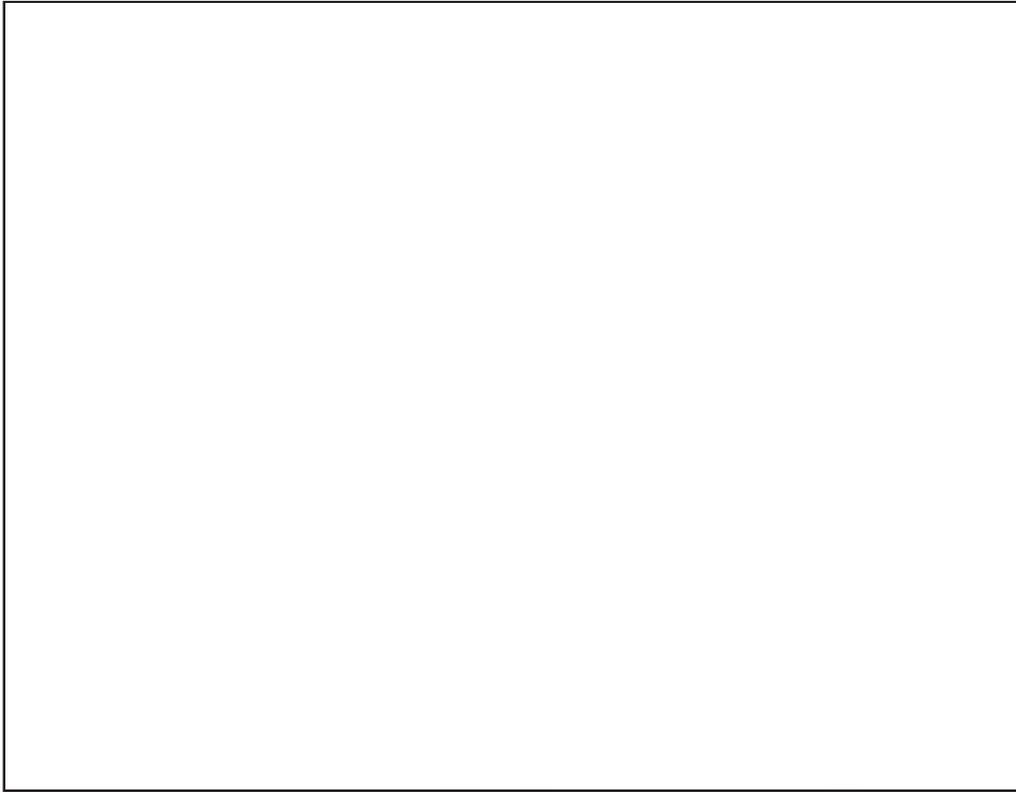
Work at the pumping plant is substantially complete. Fender rehabilitation work is ongoing at piers 23 and 24. Pier footing overlay concrete has been placed at piers 17 through 22 and pier 25. Drill and bond dowel and rebar placement is ongoing at Pier 27.



Pier 24 Pier Cap Widening



Pier 19



Pier 26 Pier Cap and Footing



Pier 24 Fender Rehabilitation

## TOLL BRIDGE SEISMIC RETROFIT PROGRAM

### Other Completed Projects

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

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

**Project Status: Completed 2000**

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



High-Rise Section of San Mateo-Hayward Bridge

#### 1958 Carquinez Bridge Seismic Retrofit Project

**Project Status: Completed 2002**

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

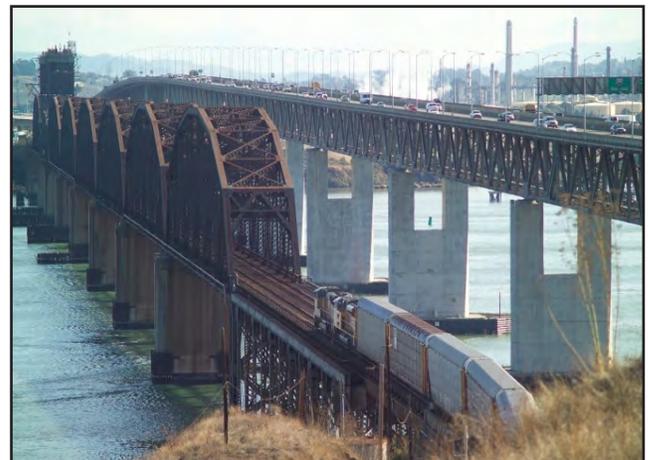


1958 Carquinez Bridge (foreground) with the 1927 Span (middle) under Demolition and the New Alfred Zampa Memorial Bridge (background)

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

**Project Status: Completed 2003**

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

The Vincent Thomas Bridge is a 1,500-foot long suspension bridge crossing the Los Angeles Harbor in Los Angeles that links San Pedro with Terminal Island. The bridge was one of two state-owned toll bridges in Southern California (the other being the San Diego-Coronado Bridge). Opened in 1963, the bridge was seismically retrofitted as part of the TBSRP in 2000.



Los Angeles-Vincent Thomas Bridge

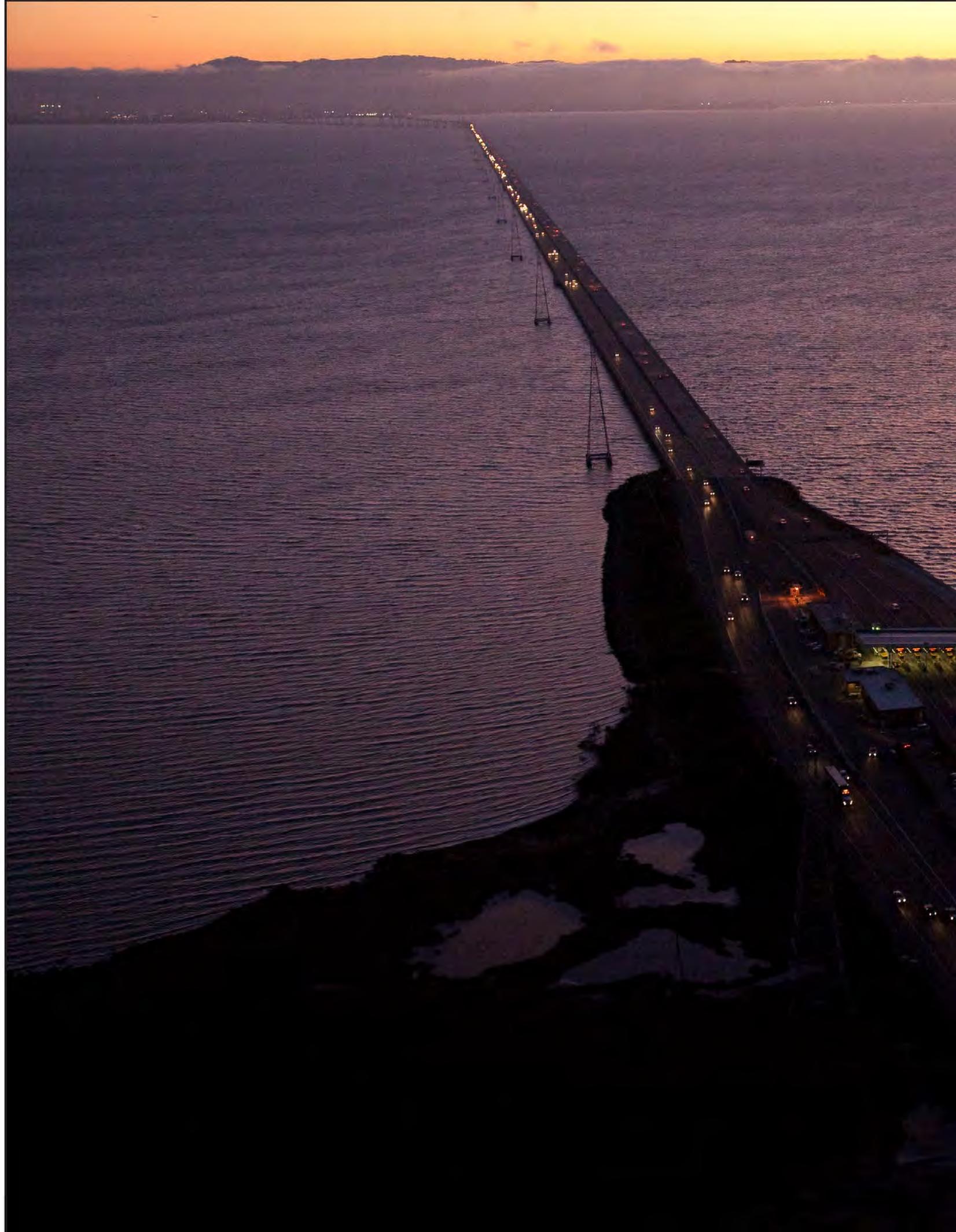
## San Diego-Coronado Bridge Seismic Retrofit Project

**Project Status: Completed 2002**

The San Diego-Coronado Bridge crosses over San Diego Bay and links the cities of San Diego and Coronado. Opened in 1969, the 2.1-mile long bridge was seismically retrofitted as part of the TBSRP in 2002.



San Diego-Coronado Bridge





San Mateo Bridge

# REGIONAL MEASURE 1 TOLL BRIDGE PROGRAM

## REGIONAL MEASURE 1 PROGRAM

### Completed Projects

In November 1988, Bay Area voters approved Regional Measure 1 (RM 1), which authorized a standard auto toll of \$1 for all seven state-owned Bay Area toll bridges. The additional revenues generated by the toll increase were identified for use for certain highway and bridge improvements, public transit rail extensions, and other projects that reduce congestion in the bridge corridors.

The toll bridge projects identified by RM 1 are complete and are as follows:

#### 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.

#### San Mateo-Hayward Bridge Widening Project

**Project Status: Completed 2003**

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



Widening of the San Mateo-Hayward Bridge Trestle on Left

#### 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/pedestrian pathway.



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

#### Bayfront Expressway (State Route 84) Widening Project

**Project Status: Completed 2004**

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

## 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

## Benicia-Martinez Bridge Project Project Status: **Completed 2009**

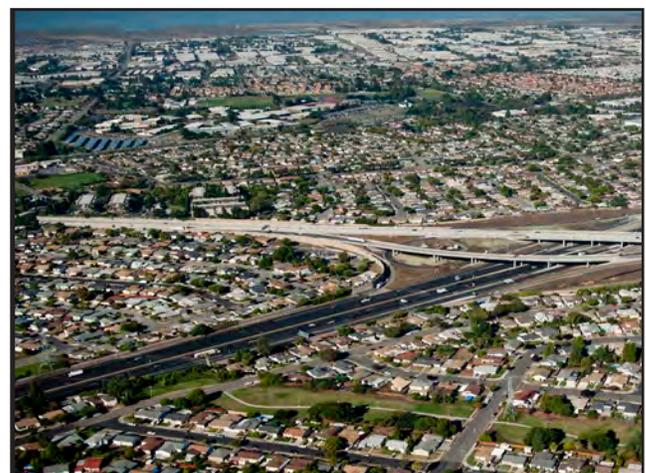
A two-year project to rehabilitate and reconfigure the original Benicia-Martinez Bridge began shortly after the opening of the new Congressman George Miller Bridge. The existing 1.2-mile roadway surface on the steel deck truss bridge was modified to carry four lanes of southbound traffic (one more than before) - with shoulders on both sides - plus a bicycle/pedestrian path on the west side of the span that connects to Park Road in Benicia and to Marina Vista Boulevard in Martinez. Reconstruction of the east side of the bridge and approaches was completed in August 2008. Reconstruction of the west side of the bridge and its approaches and construction of the bicycle/pedestrian pathway were completed in August 2009.



Benicia-Martinez Bridge Bicycle/Pedestrian Pathway Opened to the Public in August 2009

## Interstate 880/State Route 92 Project Status: **Completed 2011**

This corridor was consistently one of the Bay Area's most congested during the evening commute. This was due in part to the lane merging and weaving that was required by the then-existing cloverleaf interchange. The new interchange features direct freeway-to-freeway connector ramps that now increase traffic capacity and improve overall safety and traffic operations in the area. With the new direct-connector ramps, drivers coming off of 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 in appendices). A Caltrans landscaping project will be undertaken in 2012.



Aerial View of Construction Progress

## Regional Measure 1 Program Cost Summary (Millions)

	Contract Status	BATA Baseline Budget (July 2005)	BATA Approved Changes	Current BATA Approved Budget (December 2011)	Cost to Date (December 2011)	Current Cost Forecast (December 2011)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
<b>Interstate 880/Route 92 Interchange Reconstruction</b>								
Capital Outlay Construction	Complete	94.8	68.4	163.2	149.0	163.2	-	●
Capital Outlay Support		28.8	35.8	64.6	61.7	64.6	-	●
Capital Outlay Right-of-Way		9.9	7.3	17.2	14.7	17.2	-	●
Project Reserve		0.3	(0.3)	-	-	-	-	
<b>Total I-880/SR-92 Interchange Reconstruction</b>		<b>133.8</b>	<b>111.2</b>	<b>245.0</b>	<b>225.4</b>	<b>245.0</b>	-	
Other Completed Program Projects		1,978.8	182.6	2,161.4	2,088.8	2,161.4	-	
<b>Total Regional Measure 1 Toll Bridge Program<sup>1</sup></b>		<b>2,112.6</b>	<b>293.8</b>	<b>2,406.4</b>	<b>2,314.2</b>	<b>2,406.4</b>	-	

- Within approved schedule and budget
  - Identified potential project risks that could significantly impact approved schedules and budgets if not mitigated
  - Known project impacts with forthcoming changes to approved schedules and budgets
- <sup>1</sup> Figures may not sum up to totals due to rounding effects.

## Regional Measure 1 Program Schedule Summary (Millions)

	BATA Baseline Completion Schedule (September 2005)	BATA Approved Changes (Months)	Current BATA Approved Completion Schedule (December 2011)	Current Completion Forecast (December 2011)	Schedule Variance (Months)	Schedule Status	Remarks/Notes
	g	h	i=g+h	j	k=j-i	l	
<a href="#">Interstate 880/Route 92 Interchange Reconstruction</a>							
Contract Completion							
Interchange Reconstruction	Dec 2010	9	Sep 2011	Sep 2011	-	●	See Page 47



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APPENDICES

A. TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (A-1 and A-2).....	52
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## Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions)

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>SFOBB East Span Replacement Project</b>						
Capital Outlay Support	959.3	218.0	1,177.3	1,022.5	1,275.3	98.0
Capital Outlay Construction	4,492.2	589.4	5,081.6	4,053.9	5,180.8	99.2
Other Budgeted Capital	35.1	(3.3)	31.8	0.7	7.7	(24.1)
<b>Total</b>	<b>5,486.6</b>	<b>804.1</b>	<b>6,290.7</b>	<b>5,077.1</b>	<b>6,463.8</b>	<b>173.1</b>
<b>SFOBB West Approach Replacement</b>						
Capital Outlay Support	120.0	(2.0)	118.0	118.6	119.0	1.0
Capital Outlay Construction	309.0	41.7	350.7	330.6	338.1	(12.6)
<b>Total</b>	<b>429.0</b>	<b>39.7</b>	<b>468.7</b>	<b>449.2</b>	<b>457.1</b>	<b>(11.6)</b>
<b>SFOBB West Span Retrofit</b>						
Capital Outlay Support	75.0	(0.2)	74.8	74.9	74.8	-
Capital Outlay Construction	232.9	(5.5)	227.4	227.4	227.4	-
<b>Total</b>	<b>307.9</b>	<b>(5.7)</b>	<b>302.2</b>	<b>302.3</b>	<b>302.2</b>	<b>-</b>
<b>Richmond-San Rafael Bridge Retrofit</b>						
Capital Outlay Support	134.0	(7.0)	127.0	126.8	127.0	-
Capital Outlay Construction	780.0	(90.5)	689.5	667.5	689.5	-
<b>Total</b>	<b>914.0</b>	<b>(97.5)</b>	<b>816.5</b>	<b>794.3</b>	<b>816.5</b>	<b>-</b>
<b>Benicia-Martinez Bridge Retrofit</b>						
Capital Outlay Support	38.1	-	38.1	38.1	38.1	-
Capital Outlay Construction	139.7	-	139.7	139.7	139.7	-
<b>Total</b>	<b>177.8</b>	<b>-</b>	<b>177.8</b>	<b>177.8</b>	<b>177.8</b>	<b>-</b>
<b>Carquinez Bridge Retrofit</b>						
Capital Outlay Support	28.7	0.1	28.8	28.8	28.8	-
Capital Outlay Construction	85.5	(0.1)	85.4	85.4	85.4	-
<b>Total</b>	<b>114.2</b>	<b>-</b>	<b>114.2</b>	<b>114.2</b>	<b>114.2</b>	<b>-</b>
<b>San Mateo-Hayward Retrofit</b>						
Capital Outlay Support	28.1	-	28.1	28.1	28.1	-
Capital Outlay Construction	135.4	(0.1)	135.3	135.3	135.3	-
<b>Total</b>	<b>163.5</b>	<b>(0.1)</b>	<b>163.4</b>	<b>163.4</b>	<b>163.4</b>	<b>-</b>
<b>Vincent Thomas Bridge Retrofit (Los Angeles)</b>						
Capital Outlay Support	16.4	-	16.4	16.4	16.4	-
Capital Outlay Construction	42.1	(0.1)	42.0	42.0	42.0	-
<b>Total</b>	<b>58.5</b>	<b>(0.1)</b>	<b>58.4</b>	<b>58.4</b>	<b>58.4</b>	<b>-</b>
<b>San Diego-Coronado Bridge Retrofit</b>						
Capital Outlay Support	33.5	(0.3)	33.2	33.2	33.2	-
Capital Outlay Construction	70.0	(0.6)	69.4	69.4	69.4	-
<b>Total</b>	<b>103.5</b>	<b>(0.9)</b>	<b>102.6</b>	<b>102.6</b>	<b>102.6</b>	<b>-</b>

## Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>Antioch Bridge</b>						
Capital Outlay Support	-	31.0	31.0	15.3	34.7	3.7
Capital Outlay Support by BATA				6.2		
Capital Outlay Construction	-	70.0	70.0	40.9	51.0	(19.0)
<b>Total</b>	<b>-</b>	<b>101.0</b>	<b>101.0</b>	<b>62.4</b>	<b>85.7</b>	<b>(15.3)</b>
<b>Dumbarton Bridge</b>						
Capital Outlay Support	-	56.0	56.0	25.2	59.1	3.1
Capital Outlay Support by BATA				6.0		
Capital Outlay Construction	-	92.7	92.7	30.0	84.9	(7.8)
<b>Total</b>	<b>-</b>	<b>148.7</b>	<b>148.7</b>	<b>61.2</b>	<b>144.0</b>	<b>(4.7)</b>
Subtotal Capital Outlay Support	1,433.1	295.6	1,728.7	1,540.1	1,834.5	105.8
Subtotal Capital Outlay	6,286.8	696.9	6,983.7	5,822.1	7,043.5	59.8
<b>Subtotal Other Budgeted Capital</b>	<b>35.1</b>	<b>(3.3)</b>	<b>31.8</b>	<b>0.7</b>	<b>7.7</b>	<b>(24.1)</b>
Miscellaneous Program Costs	30.0	-	30.0	25.5	30.0	-
<b>Subtotal Toll Bridge Seismic Retrofit Program</b>	<b>7,785.0</b>	<b>989.2</b>	<b>8,774.2</b>	<b>7,388.4</b>	<b>8,915.7</b>	<b>141.5</b>
Net Programmatic Risks*	-	-	-	-	77.1	77.1
Program Contingency	900.0	(592.2)	307.8	-	89.2	(218.6)
<b>Total Toll Bridge Seismic Retrofit Program <sup>1</sup></b>	<b>8,685.0</b>	<b>397.0</b>	<b>9,082.0</b>	<b>7,388.4</b>	<b>9,082.0</b>	<b>-</b>

<sup>1</sup> Figures may not sum up to totals due to rounding effects.

## Appendix A-2: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions)

Bridge	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and Encumbrances as of December 2011 see Note (1)	Estimated costs not yet spent or Encumbered as of December 2011	Total Forecast as of December 2011
a	b	c	d	e	f = d + e
<b>Other Completed Projects</b>					
Capital Outlay Support	144.9	144.6	144.6	-	144.6
Capital Outlay	472.6	471.9	472.6	(0.8)	471.8
<b>Total</b>	<b>617.5</b>	<b>616.5</b>	<b>617.2</b>	<b>(0.8)</b>	<b>616.4</b>
<b>Richmond-San Rafael</b>					
Capital Outlay Support	134.0	127.0	126.8	0.2	127.0
Capital Outlay	698.0	689.5	667.8	21.7	689.5
Project Reserves	82.0	-	-	-	-
<b>Total</b>	<b>914.0</b>	<b>816.5</b>	<b>794.6</b>	<b>21.9</b>	<b>816.5</b>
<b>West Span Retrofit</b>					
Capital Outlay Support	75.0	74.8	74.8	-	74.8
Capital Outlay	232.9	227.4	227.4	-	227.4
<b>Total</b>	<b>307.9</b>	<b>302.2</b>	<b>302.2</b>	<b>-</b>	<b>302.2</b>
<b>West Approach</b>					
Capital Outlay Support	120.0	118.0	118.6	0.4	119.0
Capital Outlay	309.0	350.7	345.9	(7.8)	338.1
<b>Total</b>	<b>429.0</b>	<b>468.7</b>	<b>464.5</b>	<b>(7.4)</b>	<b>457.1</b>
<b>SFOBB East Span - Skyway</b>					
Capital Outlay Support	197.0	181.2	181.2	-	181.2
Capital Outlay	1,293.0	1,254.1	1,237.1	8.1	1,245.2
<b>Total</b>	<b>1,490.0</b>	<b>1,435.3</b>	<b>1,418.3</b>	<b>8.1</b>	<b>1,426.4</b>
<b>SFOBB East Span - SAS - Superstructure</b>					
Capital Outlay Support	214.6	375.5	382.0	96.7	478.7
Capital Outlay	1,753.7	2,046.8	1,629.0	455.7	2,084.7
<b>Total</b>	<b>1,968.3</b>	<b>2,422.3</b>	<b>2,011.0</b>	<b>552.4</b>	<b>2,563.4</b>
<b>SFOBB East Span - SAS - Foundations</b>					
Capital Outlay Support	62.5	37.6	37.6	-	37.6
Capital Outlay	339.9	307.3	309.3	(4.3)	305.0
<b>Total</b>	<b>402.4</b>	<b>344.9</b>	<b>346.9</b>	<b>(4.3)</b>	<b>342.6</b>
<b>Small YBI Projects</b>					
Capital Outlay Support	10.6	10.6	10.2	0.4	10.6
Capital Outlay	15.6	15.6	15.5	0.2	15.7
<b>Total</b>	<b>26.2</b>	<b>26.2</b>	<b>25.7</b>	<b>0.6</b>	<b>26.3</b>
<b>YBI Detour</b>					
Capital Outlay Support	29.5	90.7	87.8	(0.1)	87.7
Capital Outlay	131.9	492.8	492.7	(9.9)	482.8
<b>Total</b>	<b>161.4</b>	<b>583.5</b>	<b>580.5</b>	<b>(10.0)</b>	<b>570.5</b>
<b>YBI- Transition Structures</b>					
Capital Outlay Support	78.7	106.4	65.6	46.2	111.8
Capital Outlay	299.4	247.8	131.7	196.8	328.5
<b>Total</b>	<b>378.1</b>	<b>354.2</b>	<b>197.3</b>	<b>243.0</b>	<b>440.3</b>

## Appendix A-2: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions) Cont.

Contract	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and Encumbrances as of December 2011 see Note (1)	Estimated Costs not yet spent or Encumbered as of December 2011	Total Forecast as of December 2011
a	b	c	d	e	f = d + e
<b>Oakland Touchdown</b>					
Capital Outlay Support	74.4	108.9	89.8	30.0	119.8
Capital Outlay	283.8	339.0	215.3	115.4	330.7
<b>Total</b>	<b>358.2</b>	<b>447.9</b>	<b>305.1</b>	<b>145.4</b>	<b>450.5</b>
<b>East Span Other Small Projects</b>					
Capital Outlay Support	212.3	206.5	197.9	8.7	206.6
Capital Outlay	170.8	170.8	118.9	35.7	154.6
<b>Total</b>	<b>383.1</b>	<b>377.3</b>	<b>316.8</b>	<b>44.4</b>	<b>361.2</b>
<b>Existing Bridge Demolition</b>					
Capital Outlay Support	79.7	59.9	1.6	39.7	41.3
Capital Outlay	239.2	239.1	-	241.2	241.2
<b>Total</b>	<b>318.9</b>	<b>299.0</b>	<b>1.6</b>	<b>280.9</b>	<b>282.5</b>
<b>Antioch Bridge</b>					
Capital Outlay Support	-	31.0	15.5	13.0	28.5
Capital Outlay Support by BATA	-	-	6.2	-	6.2
Capital Outlay	-	70.0	47.4	3.6	51.0
<b>Total</b>	<b>-</b>	<b>101.0</b>	<b>69.1</b>	<b>16.6</b>	<b>85.7</b>
<b>Dumbarton Bridge</b>					
Capital Outlay Support	-	56.0	25.7	27.4	53.1
Capital Outlay Support by BATA	-	-	6.0	-	6.0
Capital Outlay	-	92.7	55.6	29.3	84.9
<b>Total</b>	<b>-</b>	<b>148.7</b>	<b>87.3</b>	<b>56.7</b>	<b>144.0</b>
Miscellaneous Program Costs	30.0	30.0	25.5	4.5	30.0
<b>Total Capital Outlay Support</b>	<b>1,463.2</b>	<b>1,758.7</b>	<b>1,597.4</b>	<b>267.1</b>	<b>1,864.5</b>
<b>Total Capital Outlay</b>	<b>6,321.8</b>	<b>7,015.5</b>	<b>5,966.2</b>	<b>1,085.0</b>	<b>7,051.2</b>
<b>Program Total <sup>1</sup></b>	<b>7,785.0</b>	<b>8,774.2</b>	<b>7,563.6</b>	<b>1,352.1</b>	<b>8,915.7</b>

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

(2). BSA provided a distribution of program contingency in December 2004 based in 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.

<sup>1</sup> Figures may not sum up to totals due to rounding effects.

## Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions)

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>San Francisco-Oakland Bay Bridge East Span Replacement Project</b>						
<b>East Span - SAS Superstructure</b>						
Capital Outlay Support	214.6	160.9	375.5	358.1	478.7	103.2
Capital Outlay Construction	1,753.7	293.1	2,046.8	1,626.8	2,084.7	37.9
<b>Total</b>	<b>1,968.3</b>	<b>454.0</b>	<b>2,422.3</b>	<b>1,984.9</b>	<b>2,563.4</b>	<b>141.1</b>
<b>SAS W2 Foundations</b>						
Capital Outlay Support	10.0	(0.8)	9.2	9.2	9.2	-
Capital Outlay Construction	26.4	-	26.4	26.5	26.4	-
<b>Total</b>	<b>36.4</b>	<b>(0.8)</b>	<b>35.6</b>	<b>35.7</b>	<b>35.6</b>	<b>-</b>
<b>YBI South/South Detour</b>						
Capital Outlay Support	29.4	61.3	90.7	87.4	87.7	(3.0)
Capital Outlay Construction	131.9	360.9	492.8	466.0	482.8	(10.0)
<b>Total</b>	<b>161.3</b>	<b>422.2</b>	<b>583.5</b>	<b>553.4</b>	<b>570.5</b>	<b>(13.0)</b>
<b>East Span - Skyway</b>						
Capital Outlay Support	197.0	(15.8)	181.2	181.2	181.2	-
Capital Outlay Construction	1,293.0	(38.9)	1,254.1	1,237.1	1,245.2	(8.9)
<b>Total</b>	<b>1,490.0</b>	<b>(54.7)</b>	<b>1,435.3</b>	<b>1,418.3</b>	<b>1,426.4</b>	<b>(8.9)</b>
<b>East Span - SAS E2/T1 Foundations</b>						
Capital Outlay Support	52.5	(24.1)	28.4	28.4	28.4	-
Capital Outlay Construction	313.5	(32.6)	280.9	274.8	278.6	(2.3)
<b>Total</b>	<b>366.0</b>	<b>(56.7)</b>	<b>309.3</b>	<b>303.2</b>	<b>307.0</b>	<b>(2.3)</b>
<b>YBI Transition Structures (see notes below)</b>						
Capital Outlay Support	78.7	27.7	106.4	59.8	111.8	5.4
Capital Outlay Construction	299.3	(51.5)	247.8	82.1	328.5	80.7
<b>Total</b>	<b>378.0</b>	<b>(23.8)</b>	<b>354.2</b>	<b>141.9</b>	<b>440.3</b>	<b>86.1</b>
<b>* YBI- Transition Structures</b>						
Capital Outlay Support			16.4	16.4	16.4	-
Capital Outlay Construction			-	-	-	-
<b>Total</b>			<b>16.4</b>	<b>16.4</b>	<b>16.4</b>	<b>-</b>
<b>* YBI- Transition Structures Contract No. 1</b>						
Capital Outlay Support			57.0	33.3	62.1	5.1
Capital Outlay Construction			185.5	82.1	242.4	56.9
<b>Total</b>			<b>242.5</b>	<b>115.4</b>	<b>304.5</b>	<b>62.0</b>
<b>* YBI- Transition Structures Contract No. 2</b>						
Capital Outlay Support			32.0	10.1	32.3	0.3
Capital Outlay Construction			59.0	-	82.8	23.8
<b>Total</b>			<b>91.0</b>	<b>10.1</b>	<b>115.1</b>	<b>24.1</b>
<b>* YBI- Transition Structures Contract No. 3 Landscape</b>						
Capital Outlay Support			1.0	-	1.0	-
Capital Outlay Construction			3.3	-	3.3	-
<b>Total</b>			<b>4.3</b>	<b>-</b>	<b>4.3</b>	<b>-</b>

## Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>Oakland Touchdown (see notes below)</b>						
Capital Outlay Support	74.4	34.5	108.9	88.9	119.8	10.9
Capital Outlay Construction	283.8	55.2	339.0	208.7	330.7	(8.3)
<b>Total</b>	<b>358.2</b>	<b>89.7</b>	<b>447.9</b>	<b>297.6</b>	<b>450.5</b>	<b>2.6</b>
<b>* OTD Prior-to-Split Costs</b>						
Capital Outlay Support			21.7	20.0	21.7	-
Capital Outlay Construction			-	-	-	-
<b>Total</b>			<b>21.7</b>	<b>20.0</b>	<b>21.7</b>	<b>-</b>
<b>* OTD Submarine Cable(1)</b>						
Capital Outlay Support			0.9	0.9	0.9	-
Capital Outlay Construction			9.6	5.7	9.6	-
<b>Total</b>			<b>10.5</b>	<b>6.6</b>	<b>10.5</b>	<b>-</b>
<b>* OTD No. 1 (Westbound)</b>						
Capital Outlay Support			47.3	51.1	51.4	4.1
Capital Outlay Construction			212.0	203.0	203.3	(8.7)
<b>Total</b>			<b>259.3</b>	<b>254.1</b>	<b>254.7</b>	<b>(4.6)</b>
<b>* OTD No. 2 (Eastbound)</b>						
Capital Outlay Support			22.5	12.5	30.7	8.2
Capital Outlay Construction			62.0	-	56.1	(5.9)
<b>Total</b>			<b>84.5</b>	<b>12.5</b>	<b>86.8</b>	<b>2.3</b>
<b>* OTD Touchdown 2 Detour(2)</b>						
Capital Outlay Support			15.0	3.7	13.6	(1.4)
Capital Outlay Construction			51.0	-	57.3	6.3
<b>Total</b>			<b>66.0</b>	<b>3.7</b>	<b>70.9</b>	<b>4.9</b>
<b>* OTD Electrical Systems</b>						
Capital Outlay Support			1.5	0.8	1.5	-
Capital Outlay Construction			4.4	-	4.4	-
<b>Total</b>			<b>5.9</b>	<b>0.8</b>	<b>5.9</b>	<b>-</b>
<b>Existing Bridge Demolition</b>						
Capital Outlay Support	79.7	(19.8)	59.9	1.4	41.3	(18.6)
Capital Outlay Construction	239.2	(0.1)	239.1	-	241.2	2.1
<b>Total</b>	<b>318.9</b>	<b>(19.9)</b>	<b>299.0</b>	<b>1.4</b>	<b>282.5</b>	<b>(16.5)</b>
<b>* Cantilever Section</b>						
Capital Outlay Support			-	-	15.0	
Capital Outlay Construction			-	-	60.4	
<b>Total</b>			<b>-</b>	<b>-</b>	<b>75.4</b>	
<b>* 504/288 Sections</b>						
Capital Outlay Support			-	1.4	26.3	
Capital Outlay Construction			-	-	180.8	
<b>Total</b>			<b>-</b>	<b>1.4</b>	<b>207.1</b>	
<b>YBI/SAS Archeology</b>						
Capital Outlay Support	1.1	-	1.1	1.1	1.1	-
Capital Outlay Construction	1.1	-	1.1	1.1	1.1	-
<b>Total</b>	<b>2.2</b>	<b>-</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>-</b>

## Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through December 31, 2011 (\$ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>YBI - USCG Road Relocation</b>						
Capital Outlay Support	3.0	-	3.0	2.7	3.0	-
Capital Outlay Construction	3.0	-	3.0	2.8	3.0	-
<b>Total</b>	<b>6.0</b>	<b>-</b>	<b>6.0</b>	<b>5.5</b>	<b>6.0</b>	<b>-</b>
<b>YBI - Substation and Viaduct</b>						
Capital Outlay Support	6.5	-	6.5	6.4	6.5	-
Capital Outlay Construction	11.6	-	11.6	11.3	11.6	-
<b>Total</b>	<b>18.1</b>	<b>-</b>	<b>18.1</b>	<b>17.7</b>	<b>18.1</b>	<b>-</b>
<b>Oakland Geofill</b>						
Capital Outlay Support	2.5	-	2.5	2.5	2.5	-
Capital Outlay Construction	8.2	-	8.2	8.2	8.2	-
<b>Total</b>	<b>10.7</b>	<b>-</b>	<b>10.7</b>	<b>10.7</b>	<b>10.7</b>	<b>-</b>
<b>Pile Installation Demonstration Project</b>						
Capital Outlay Support	1.8	-	1.8	1.8	1.8	-
Capital Outlay Construction	9.3	-	9.3	9.2	9.3	-
<b>Total</b>	<b>11.1</b>	<b>-</b>	<b>11.1</b>	<b>11.0</b>	<b>11.1</b>	<b>-</b>
<b>Stormwater Treatment Measures</b>						
Capital Outlay Support	6.0	2.2	8.2	8.2	8.2	-
Capital Outlay Construction	15.0	3.3	18.3	16.8	18.3	-
<b>Total</b>	<b>21.0</b>	<b>5.5</b>	<b>26.5</b>	<b>25.0</b>	<b>26.5</b>	<b>-</b>
<b>Right-of-Way and Environmental Mitigation</b>						
Capital Outlay Support	-	-	-	-	-	-
Capital Outlay & Right-of-Way	72.4	-	72.4	51.7	80.4	8.0
<b>Total</b>	<b>72.4</b>	<b>-</b>	<b>72.4</b>	<b>51.7</b>	<b>80.4</b>	<b>8.0</b>
<b>Sunk Cost - Existing East Span Retrofit</b>						
Capital Outlay Support	39.5	-	39.5	39.5	39.5	-
Capital Outlay Construction	30.8	-	30.8	30.8	30.8	-
<b>Total</b>	<b>70.3</b>	<b>-</b>	<b>70.3</b>	<b>70.3</b>	<b>70.3</b>	<b>-</b>
<b>Other Capital Outlay Support</b>						
<b>Environmental Phase</b>						
Pre-Split Project Expenditures	44.9	-	44.9	44.9	44.9	-
Non-Project Specific Costs	20.0	(8.0)	12.0	3.2	12.0	-
<b>Total</b>	<b>162.6</b>	<b>(8.0)</b>	<b>154.6</b>	<b>145.9</b>	<b>154.6</b>	<b>-</b>
Subtotal Capital Outlay Support	959.3	218.0	1,177.3	1,022.5	1,275.3	98.0
Subtotal Capital Outlay Construction	4,492.2	589.4	5,081.6	4,053.9	5,180.8	99.2
Other Budgeted Capital	35.1	(3.3)	31.8	0.7	7.7	(24.1)
<b>Total SFOBB East Span Replacement Project</b>	<b>5,486.6</b>	<b>804.1</b>	<b>6,290.7</b>	<b>5,077.1</b>	<b>6,463.8</b>	<b>173.1</b>

<sup>1</sup> Figures may not sum up to totals due to rounding effects.

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

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>New Benicia-Martinez Bridge Project</b>						
<b>New Bridge</b>						
Capital Outlay Support						
BATA Funding	84.9	7.2	92.1	91.9	92.1	-
Non-BATA Funding	-	0.1	0.1	0.1	0.1	-
Subtotal	84.9	7.3	92.2	92.0	92.2	-
Capital Outlay Construction						
BATA Funding	661.9	94.6	756.5	753.7	756.5	-
Non-BATA Funding	10.1	-	10.1	10.1	10.1	-
Subtotal	672.0	94.6	766.6	763.8	766.6	-
<b>Total</b>	<b>756.9</b>	<b>101.9</b>	<b>858.8</b>	<b>855.8</b>	<b>858.8</b>	<b>-</b>
<b>I-680/I-780 Interchange Reconstruction</b>						
Capital Outlay Support						
BATA Funding	24.9	5.2	30.1	30.1	30.1	-
Non-BATA Funding	1.4	5.2	6.6	6.2	6.6	-
Subtotal	26.3	10.4	36.7	36.3	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	21.7	0.1
Subtotal	76.3	26.9	103.2	98.8	103.3	0.1
<b>Total</b>	<b>102.6</b>	<b>37.3</b>	<b>139.9</b>	<b>135.1</b>	<b>140.0</b>	<b>0.1</b>
<b>I-680/Marina Vista Interchange Reconstruction</b>						
Capital Outlay Support	18.3	1.9	20.2	20.2	20.2	-
Capital Outlay Construction	51.5	4.9	56.4	56.1	56.4	-
<b>Total</b>	<b>69.8</b>	<b>6.8</b>	<b>76.6</b>	<b>76.3</b>	<b>76.6</b>	<b>-</b>
<b>New Toll Plaza and Administration Building</b>						
Capital Outlay Support	11.9	3.8	15.7	15.7	15.7	-
Capital Outlay Construction	24.3	2.0	26.3	25.1	26.3	-
<b>Total</b>	<b>36.2</b>	<b>5.8</b>	<b>42.0</b>	<b>40.8</b>	<b>42.0</b>	<b>-</b>
<b>Existing Bridge &amp; Interchange Modifications</b>						
Capital Outlay Support						
BATA Funding	4.3	13.7	18.0	18.0	18.0	-
Non-BATA Funding	-	0.9	0.9	0.8	0.9	-
Subtotal	4.3	14.6	18.9	18.8	18.9	-
Capital Outlay Construction						
BATA Funding	17.2	32.8	50.0	37.2	50.0	-
Non-BATA Funding	-	9.5	9.5	-	9.5	-
Subtotal	17.2	42.3	59.5	37.2	59.5	-
<b>Total</b>	<b>21.5</b>	<b>56.9</b>	<b>78.4</b>	<b>56.0</b>	<b>78.4</b>	<b>-</b>
<b>Other Contracts</b>						
Capital Outlay Support	11.4	(0.9)	10.5	9.7	10.5	-
Capital Outlay Construction	20.3	3.3	23.6	18.6	23.6	-
Capital Outlay Right-of-Way	20.4	(0.1)	20.3	17.0	20.3	-
<b>Total</b>	<b>52.1</b>	<b>2.3</b>	<b>54.4</b>	<b>45.3</b>	<b>54.4</b>	<b>-</b>

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

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
New Benicia-Martinez Bridge Project continued...						
Subtotal BATA Capital Outlay Support	155.7	30.9	186.6	185.6	186.6	-
Subtotal BATA Capital Outlay Construction	829.9	164.5	994.4	967.8	994.4	-
<b>Subtotal Capital Outlay Right-of-Way</b>	<b>20.4</b>	<b>(0.1)</b>	<b>20.3</b>	<b>17.0</b>	<b>20.3</b>	<b>-</b>
Subtotal Non-BATA Capital Outlay Support	1.4	6.2	7.6	7.1	7.6	-
Subtotal Non-BATA Capital Outlay Construction	31.7	9.5	41.2	31.8	41.3	0.1
<b>Project Reserves</b>	<b>20.8</b>	<b>1.6</b>	<b>22.4</b>	<b>-</b>	<b>22.3</b>	<b>(0.1)</b>
<b>Total New Benicia-Martinez Bridge Project</b>	<b>1,059.9</b>	<b>212.6</b>	<b>1,272.5</b>	<b>1,209.3</b>	<b>1,272.5</b>	<b>-</b>
<b>Notes:</b>	Includes EAs 00601_00603_00605_00606_00608_00609_0060A_0060C_0060E_0060F_0060G_0060H_ and all Project Right-of-Way					
Carquinez Bridge Replacement Project						
New Bridge						
Capital Outlay Support	60.5	(0.3)	60.2	60.2	60.2	-
Capital Outlay Construction	253.3	2.7	256.0	255.9	256.0	-
<b>Total</b>	<b>313.8</b>	<b>2.4</b>	<b>316.2</b>	<b>316.1</b>	<b>316.2</b>	<b>-</b>
<b>Crockett Interchange Reconstruction</b>						
Capital Outlay Support	32.0	(0.1)	31.9	31.9	31.9	-
Capital Outlay Construction	73.9	(1.9)	72.0	71.9	72.0	-
<b>Total</b>	<b>105.9</b>	<b>(2.0)</b>	<b>103.9</b>	<b>103.8</b>	<b>103.9</b>	<b>-</b>
<b>Existing 1927 Bridge Demolition</b>						
Capital Outlay Support	16.1	(0.3)	15.8	15.8	15.8	-
Capital Outlay Construction	35.2	-	35.2	35.0	35.2	-
<b>Total</b>	<b>51.3</b>	<b>(0.3)</b>	<b>51.0</b>	<b>50.8</b>	<b>51.0</b>	<b>-</b>
<b>Other Contracts</b>						
Capital Outlay Support	15.8	0.9	16.7	16.5	16.7	-
Capital Outlay Construction	18.8	(1.2)	17.6	16.4	17.6	-
Capital Outlay Right-of-Way	10.5	(0.1)	10.4	9.9	10.4	-
<b>Total</b>	<b>45.1</b>	<b>(0.4)</b>	<b>44.7</b>	<b>42.8</b>	<b>44.7</b>	<b>-</b>
Subtotal BATA Capital Outlay Support	124.4	0.2	124.6	124.4	124.6	-
Subtotal BATA Capital Outlay Construction	381.2	(0.4)	380.8	379.2	380.8	-
<b>Subtotal Capital Outlay Right-of-Way</b>	<b>10.5</b>	<b>(0.1)</b>	<b>10.4</b>	<b>9.9</b>	<b>10.4</b>	<b>-</b>
<b>Project Reserves</b>	<b>12.1</b>	<b>(9.7)</b>	<b>2.4</b>	<b>-</b>	<b>2.4</b>	<b>-</b>
<b>Total Carquinez Bridge Replacement Project <sup>1</sup></b>	<b>528.2</b>	<b>(10.0)</b>	<b>518.2</b>	<b>513.5</b>	<b>518.2</b>	<b>-</b>
<b>Notes</b>	<b>Other Contracts include EAs 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</b>					

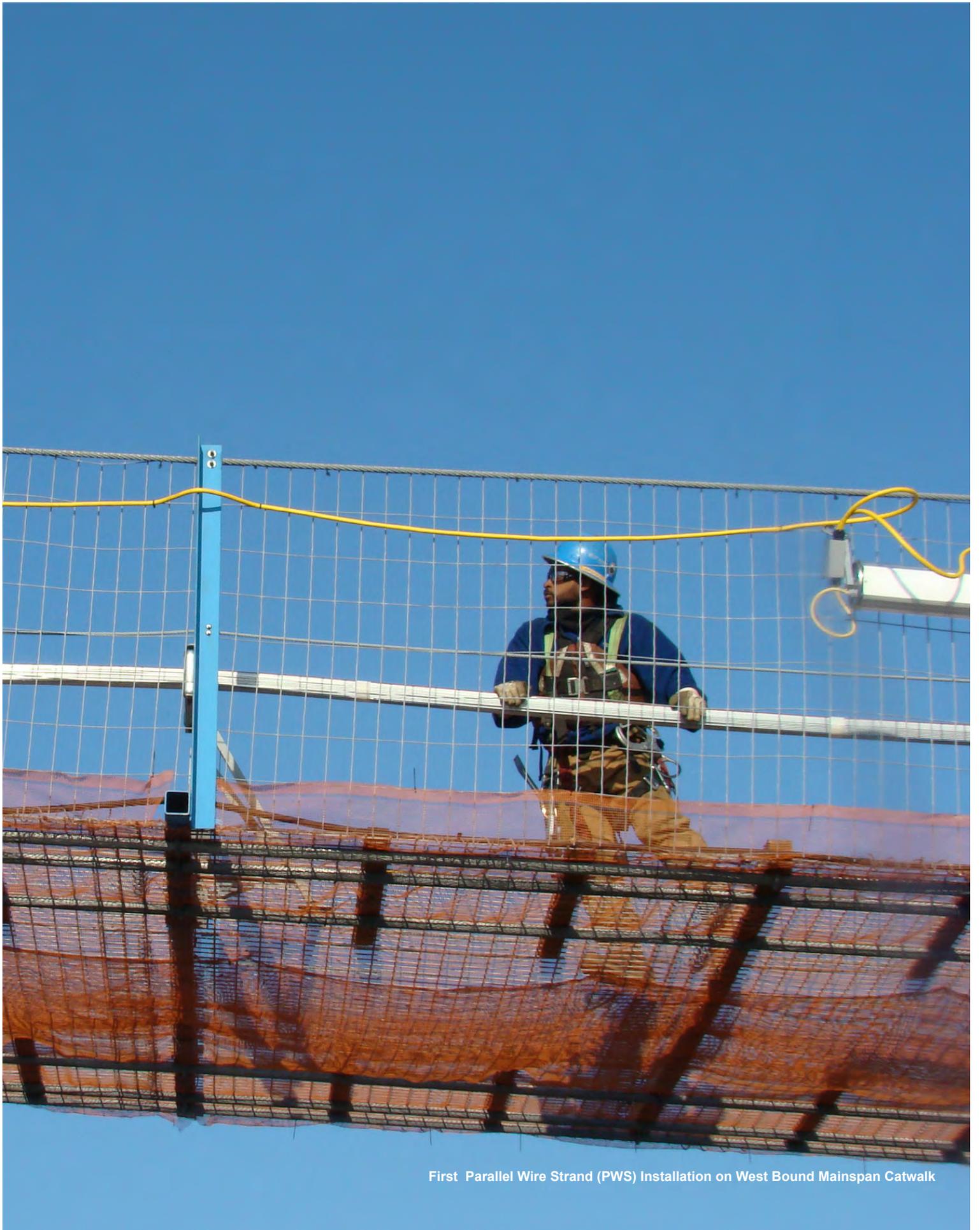
<sup>1</sup> Figures may not sum up to totals due to rounding effects.

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

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>Richmond-San Rafael Bridge Trestle, Fender, and Deck Joint Rehabilitation</b>						
Capital Outlay Support						
BATA Funding	2.2	(0.8)	1.4	1.4	1.4	-
Non-BATA Funding	8.6	1.8	10.4	10.4	10.4	-
Subtotal	10.8	1.0	11.8	11.8	11.8	-
Capital Outlay Construction						
BATA Funding	40.2	(6.8)	33.4	33.3	33.4	-
Non-BATA Funding	51.1	-	51.1	51.1	51.1	-
Subtotal	91.3	(6.8)	84.5	84.4	84.5	-
Project Reserves	-	0.8	0.8	-	0.8	-
<b>Total</b>	<b>102.1</b>	<b>(5.0)</b>	<b>97.1</b>	<b>96.2</b>	<b>97.1</b>	<b>-</b>
<b>Richmond-San Rafael Bridge Deck Overlay Rehabilitation</b>						
Capital Outlay Support						
BATA Funding	4.0	(0.7)	3.3	3.3	3.3	-
Non-BATA Funding	4.0	(4.0)	-	-	-	-
Subtotal	8.0	(4.7)	3.3	3.3	3.3	-
Capital Outlay Construction	16.9	(0.6)	16.3	16.3	16.3	-
Project Reserves	0.1	0.3	0.4	-	0.4	-
<b>Total</b>	<b>25.0</b>	<b>(5.0)</b>	<b>20.0</b>	<b>19.6</b>	<b>20.0</b>	<b>-</b>
<b>Richmond Parkway Project (RM 1 Share Only)</b>						
Capital Outlay Support	-	-	-	-	-	-
Capital Outlay Construction	5.9	-	5.9	4.3	5.9	-
<b>Total</b>	<b>5.9</b>	<b>-</b>	<b>5.9</b>	<b>4.3</b>	<b>5.9</b>	<b>-</b>
<b>San Mateo-Hayward Bridge Widening</b>						
Capital Outlay Support	34.6	(0.5)	34.1	34.1	34.1	-
Capital Outlay Construction	180.2	(6.1)	174.1	174.1	174.1	-
Capital Outlay Right-of-Way	1.5	(0.9)	0.6	0.5	0.6	-
Project Reserves	1.5	(0.5)	1.0	-	1.0	-
<b>Total</b>	<b>217.8</b>	<b>(8.0)</b>	<b>209.8</b>	<b>208.7</b>	<b>209.8</b>	<b>-</b>
<b>I-880/SR-92 Interchange Reconstruction</b>						
Capital Outlay Support	28.8	35.8	64.6	61.7	64.6	-
Capital Outlay Construction						
BATA Funding	85.2	68.4	153.6	149.0	153.6	-
Non-BATA Funding	9.6	-	9.6	-	9.6	-
Subtotal	94.8	68.4	163.2	149.0	163.2	-
Capital Outlay Right-of-Way	9.9	7.3	17.2	14.7	17.2	-
Project Reserves	0.3	(0.3)	-	-	-	-
<b>Total</b>	<b>133.8</b>	<b>111.2</b>	<b>245.0</b>	<b>225.4</b>	<b>245.0</b>	<b>-</b>
<b>Bayfront Expressway Widening</b>						
Capital Outlay Support	8.6	(0.2)	8.4	8.4	8.4	-
Capital Outlay Construction	26.5	(1.5)	25.0	24.9	25.0	-
Capital Outlay Right-of-Way	0.2	-	0.2	0.2	0.2	-
Project Reserves	0.8	(0.3)	0.5	-	0.5	-
<b>Total</b>	<b>36.1</b>	<b>(2.0)</b>	<b>34.1</b>	<b>33.5</b>	<b>34.1</b>	<b>-</b>

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

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (12/2011)	Cost to Date (12/2011)	Cost Forecast (12/2011)	At- Completion Variance
a	c	d	e = c + d	f	g	h = g - e
<b>US 101/University Avenue Interchange Modification</b>						
Capital Outlay Support	-	-	-	-	-	-
Capital Outlay Construction	3.8	-	3.8	3.7	3.8	-
<b>Total</b>	<b>3.8</b>	<b>-</b>	<b>3.8</b>	<b>3.7</b>	<b>3.8</b>	<b>-</b>
Subtotal BATA Capital Outlay Support	358.3	64.7	423.0	418.9	423.0	-
Subtotal BATA Capital Outlay Construction	1,569.8	217.5	1,787.3	1,752.6	1,787.3	-
<b>Subtotal Capital Outlay Right-of-Way</b>	<b>42.5</b>	<b>6.2</b>	<b>48.7</b>	<b>42.3</b>	<b>48.7</b>	<b>-</b>
Subtotal Non-BATA Capital Outlay Support	14.0	4.0	18.0	17.5	18.0	-
Subtotal Non-BATA Capital Outlay Construction	92.4	9.5	101.9	82.9	102.0	0.1
<b>Project Reserves</b>	<b>35.6</b>	<b>(8.1)</b>	<b>27.5</b>	<b>-</b>	<b>27.4</b>	<b>(0.1)</b>
<b>Total RM1 Program</b>	<b>2,112.6</b>	<b>293.8</b>	<b>2,406.4</b>	<b>2,314.2</b>	<b>2,406.4</b>	<b>-</b>
<b>Notes:</b>	<b>1 Richmond-San Rafael Bridge Trestle, Fender, and Deck Joint Rehabilitation Includes Non-TBSRP Expenses for EA 0438U_ and 04157_</b> <b>2 San Mateo-Hayward Bridge Widening includes EAs 00305_,04501_,04503_,04504_,04504_,04505_,04506_,04507_,04508_,04509_,27740_,27790_,04860_</b>					

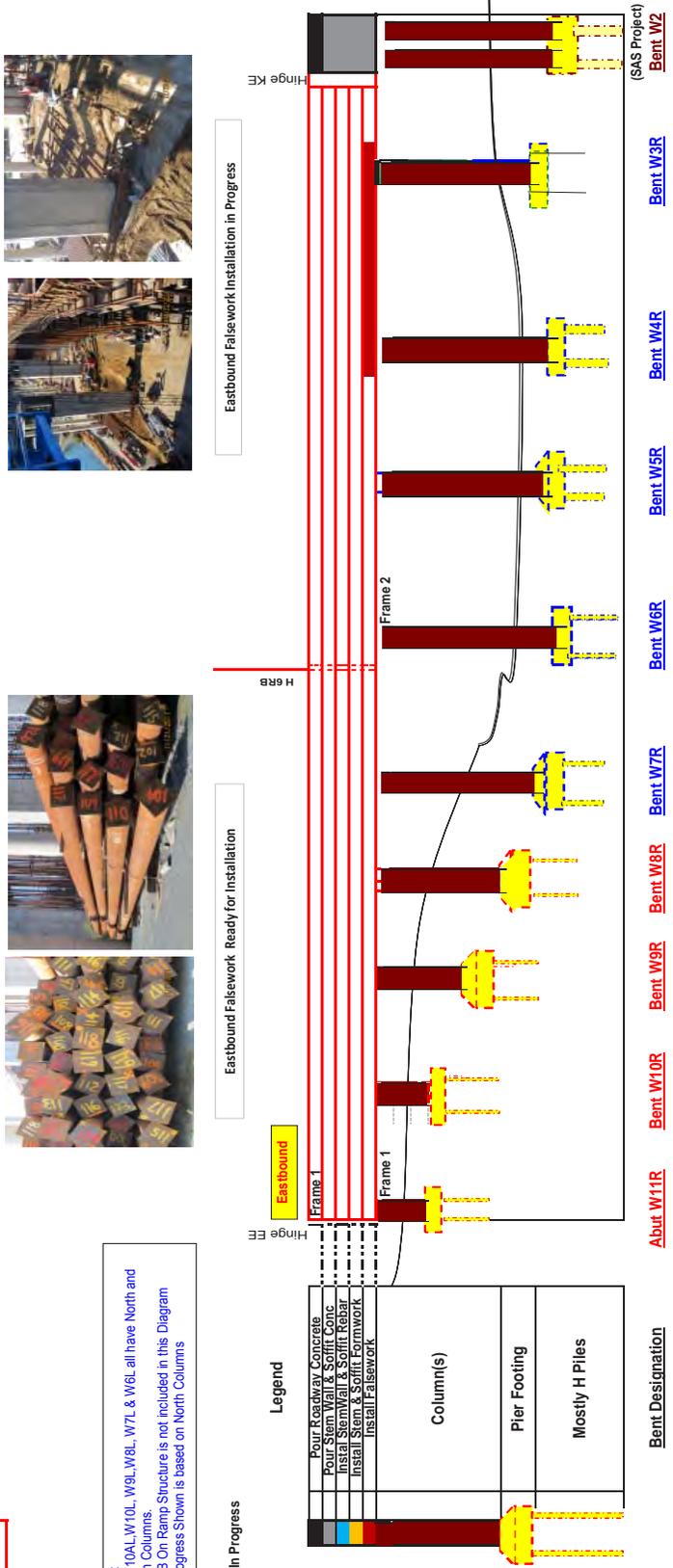
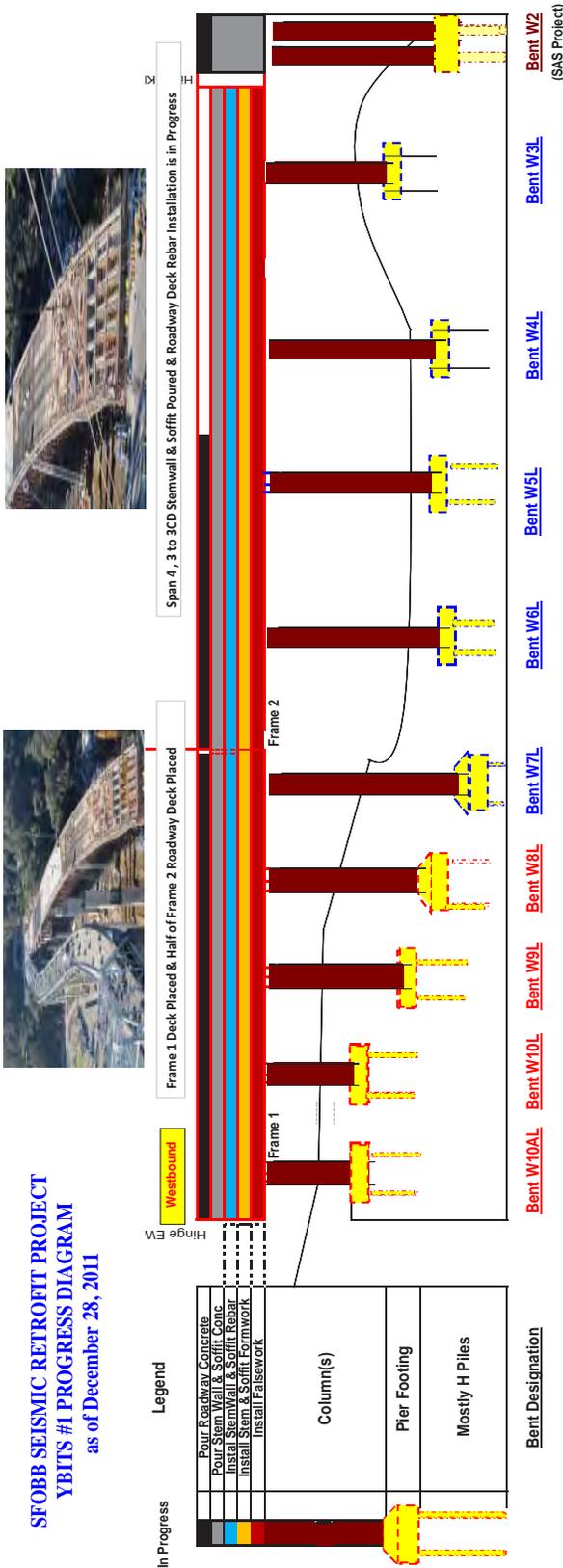


First Parallel Wire Strand (PWS) Installation on West Bound Mainspan Catwalk

# Appendix D: Progress Diagrams

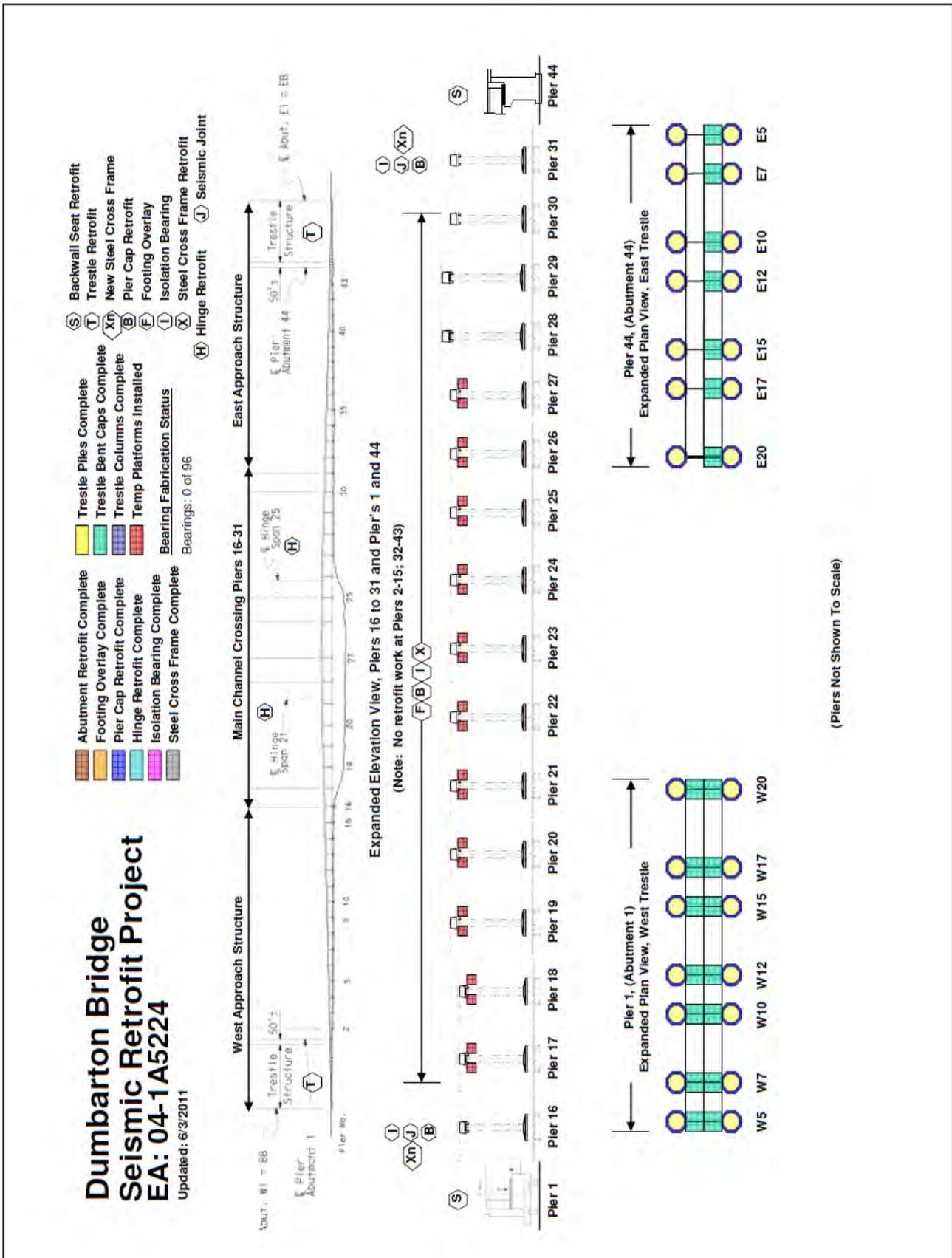
## Yerba Buena Island Transition Structures

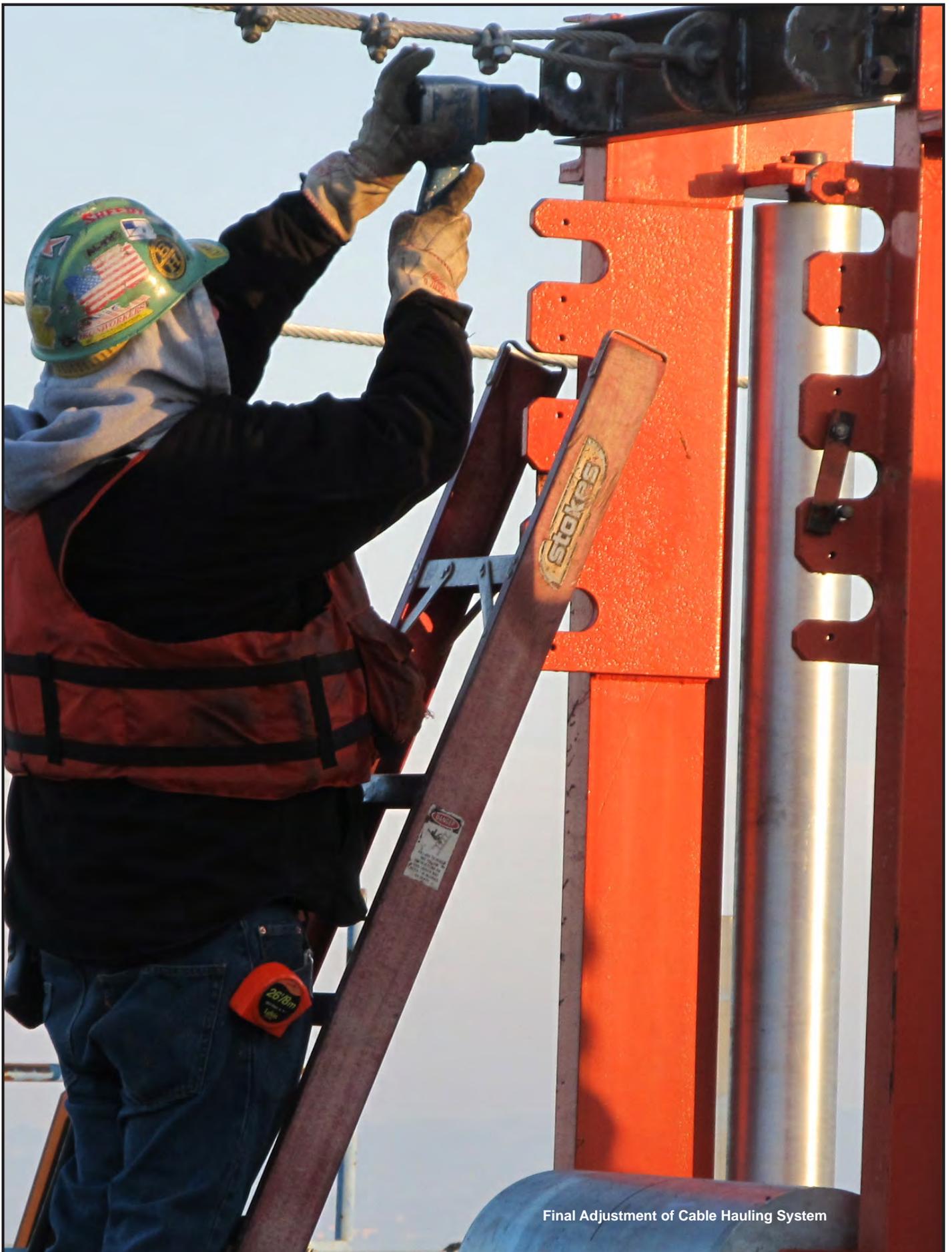
### SFOBB SEISMIC RETROFIT PROJECT YBITS #1 PROGRESS DIAGRAM as of December 28, 2011





# Appendix D: Progress Diagrams (cont.) Dumbarton Bridge





Final Adjustment of Cable Hauling System



# Project Photos

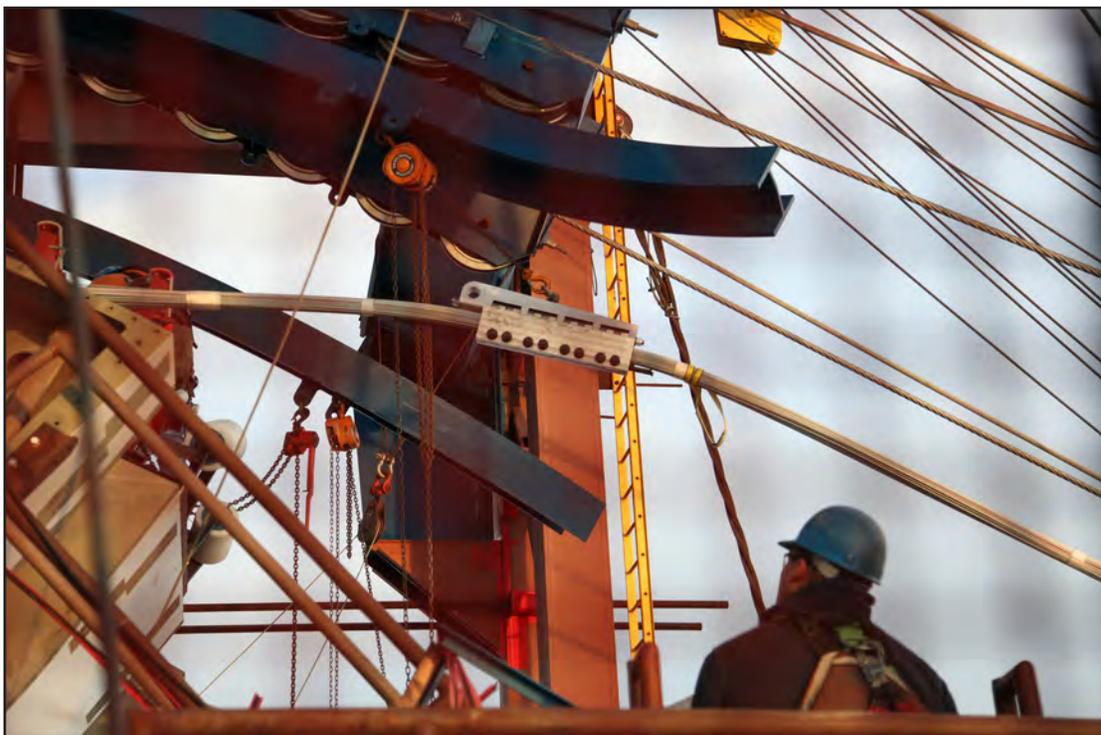


## Appendix E: Project Progress Photographs

### Self-Anchored Suspension Bridge Field Work



Lifting Lug Deck Repair on East End Roadway Box



Parallel Wire Strand (PWS) at Tower Saddle



Second PWS Spool Connected to Cable Hauling System



Checking Connection of Haul Rope and Haul Frame Prior to Hauling PWS





YBITS #1 Eastbound Falsework Installation in Progress

## Appendix E: Project Progress Photographs

### Antioch Bridge



Completed Isolation Bearing between Plate Girder and Bent Cap



Column Casings Installed at Sherman Island Approach Structure

## Appendix E: Project Progress Photographs

### Dumbarton Bridge



Dumbarton Bridge - Pier 31 Pier Cap



Dumbarton Bridge - Pier 23 Fender Rehabilitation

## Appendix E: Project Progress Photographs

### Westbound Oakland Detour



Oakland Detour - Structural Support Members



Oakland Detour - Westbound Widening structural Support Wall



Oakland Detour - Westbound Approach Widening Deck Formwork



Oakland Detour - Westbound Exterior Structural Support Wall



Westbound  
Oakland  
Detour under  
Construction

Pier Walls under  
Construction

Newly  
Opened  
Eastbound  
Oakland  
Detour

Westbound Oakland Touchdown Detour Construction Progress

## Appendix E: Project Progress Photographs

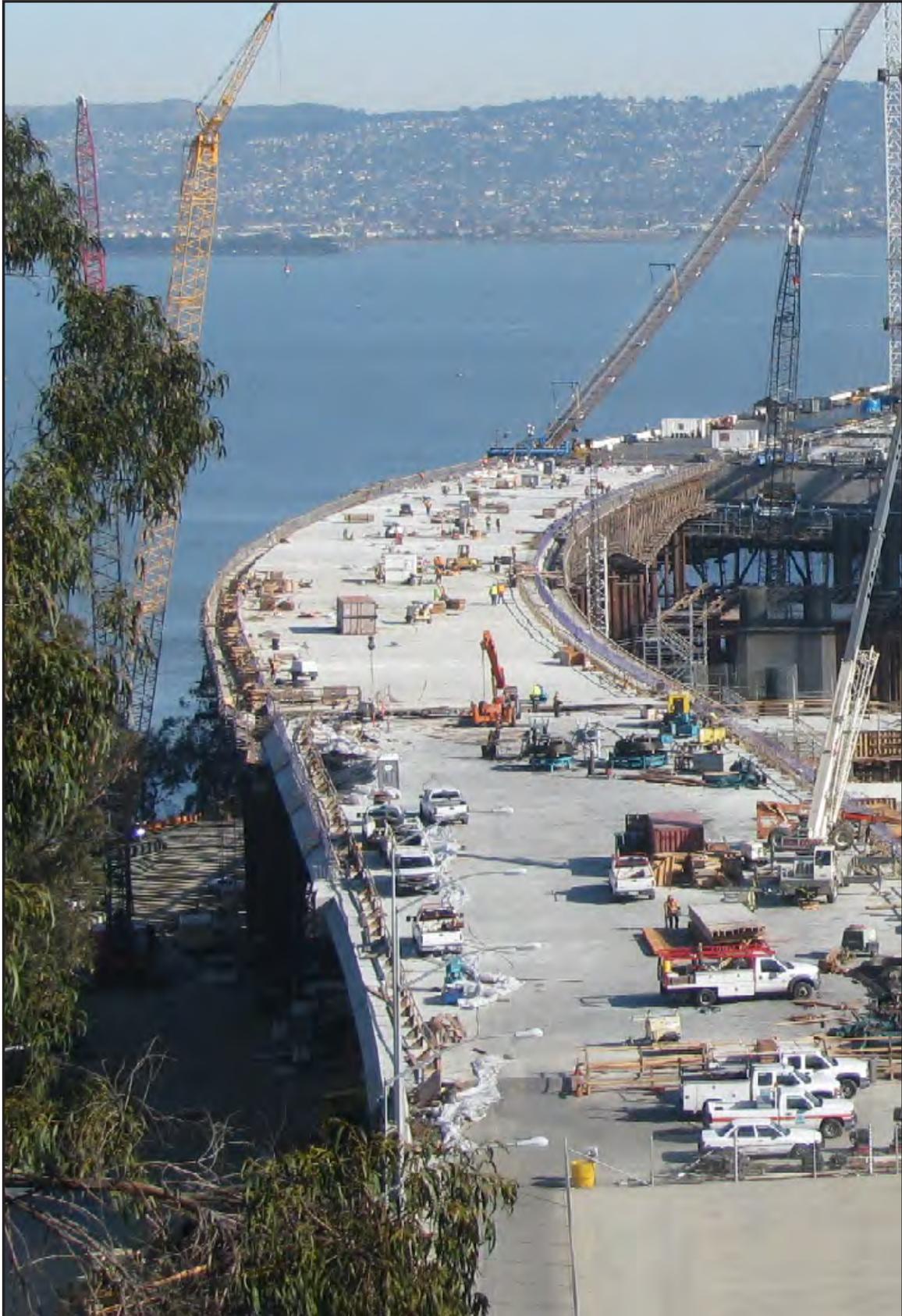
### Yerba Buena Island Transition Structure #1 Westbound



YBITS #1 Westbound Barrier Wall Reinforcing Steel Installation



YBITS #1 Westbound First Section of Roadway Deck Post Tensioning Work Ongoing



YBITS #1 Westbound Roadway Deck Progress

## Appendix F: Glossary of Terms

# Glossary of Terms

**AB 144/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 AB 144/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 AB 144/SB 66 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.

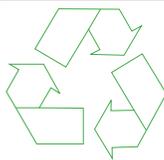
**BATA PROJECT COMPLETE BASELINE:** The planned completion date for the Regional Measure 1 Program or subordinate projects or contracts.

**PROJECT COMPLETE CURRENT APPROVED SCHEDULE:** The sum of the AB 144/SB 66 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.*



Bay Area Management Consultants

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View with Existing East Span on Left and New Bridge and Tower on right Looking West from Oakland toward Yerba Buena Island

