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

2015 Third Quarter Project Progress and Financial Update

Released: November 2015

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The Former San Francisco-Oakland Bay Bridge Pier E3 Implosion
November 14, 2015

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

November 16, 2015

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

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

Dear Messrs. Schmidt and Wilson:

The Toll Bridge Program Oversight Committee (TBPOC) is pleased to submit the 2015 Third Quarter Project Progress and Financial Update, for the San Francisco Bay Area Toll Bridge Seismic Retrofit and Regional Measure 1 Programs (TBSRP and RM1), prepared pursuant to California Streets and Highways Code Section 30952.

The TBPOC was established by Assembly Bill144 in 2005 to oversee the delivery of the TBSRP and consists of the Executive Director of the Bay Area Toll Authority (BATA), the Director of the California Department of Transportation (Caltrans), and the Executive Director of the California Transportation Commission. With the opening of the new east span of the San Francisco-Oakland Bay Bridge to traffic on September 2, 2013, all seven State-owned toll bridges in the Bay Area have now achieved seismic safety, either via retrofit or replacement of existing structures.

On September 24, 2015, the TBPOC authorized Caltrans to close out the Self-Anchored Suspension (SAS) span contract with the joint venture of American Bridge/Fluor (ABF), under the following terms and conditions consistent with the findings of the July 2013 TBPOC meeting investigative report - that three parties were responsible for the failure of the high-strength rods on the east pier (E2) of the SAS, and the cost of the "saddle retrofit" repair was $24 million.

From the joint venture of ABF:

A. Caltrans shall seek a credit from ABF of $8 million to close out the SAS contract; and
B. Caltrans shall retain $1.5 million in payments due ABF to cover the capital outlay support (COS) costs associated with delays in completing the SAS contract; and
C. Caltrans shall retain $3.0 million in payments due ABF to cover repairs of the incorrectly installed anchor rod grout; and
D. Caltrans shall assess $2.7 million in liquidated damages against ABF due to delays in completing the SAS contract; and
E. Caltrans shall pay an amount not to exceed $4.2 million to ABF as compensation for additional overhead costs generated by change in character work due to the early seismic safety opening of the bridge; and
F. Caltrans shall process the Proposed Final Estimate within 40 days of Contract Acceptance.

Further, the TBPOC authorized Caltrans to take the following actions:

A. Caltrans shall file a claim for $8.0 million against the SAS designer, T.Y.Lin/Moffatt & Nichol Joint Venture (TYLMN); and
B. Caltrans shall seek to credit BATA for its expense related to the investigation and retrofit of the E2 saddle; and
C. Also consistent with the fact that the SAS tower foundation and the high-strength rods located therein were provided under a separate contract: The TBPOC expressly reserves the right to pursue claims against either, or both of the joint ventures of Kiewit/Flatiron/Manson (KFM) and TYLMN, pending the results of the tower foundation rod investigation currently underway.

The TBPOC directed Caltrans to proceed with the tower foundation rod investigations per approved plan and protocol established in cooperation with the independent bolt review team, the Seismic Safety Peer Review Panel, and steel fastener and marine foundation experts from the Federal Highway Administration. The TBPOC will provide reports on this investigation at its regular public meetings and will provide a detailed update in the quarterly reports.

Caltrans is proceeding on a number of contracts to remove the old east span of the SFOBB. Caltrans received environmental approvals to remove the Pier E3 footing by implosion, versus conventional means (i.e. jack hammers). The implosion process has the least amount of impact on the environment and is less costly. The implosion process on Pier E3, which took place on November 14, 2015, was successful, and results of this test will be documented in future reports.

The program contingency is currently $135 million in accordance with the TBPOC approved budget. As of the end of the third quarter of 2015, the 50 percent probable draw on program contingency is $278 million. The potential draw ranges from about $220 million to $330 million. The potential threat to the contingency is in the range of $85 million to $195 million.

We are mindful this is the largest gap between the risk forecast, and the program contingency balance that we have reported in the 10 years the TBPOC has existed. We are actively exploring various strategies to reduce both the COS, and capital outlay (CO) costs, for the remaining work on both the new and old east spans, in order to bring the risk forecast and contingency balance back into better alignment. Recently, we reevaluated our COS staffing levels and dramatically reduced staffing for the upcoming fiscal years. This reduction will put downward pressure on future COS costs, however, there continues to be construction risks identified in the risk management plan.

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

MALCOLM DOUGHERTY
Director
California Department of Transportation

WILL KEMPTON
Executive Director
California Transportation Commission

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November 16, 2015

Ms. Lucetta Dunn, Chair
California Transportation Commission
1120 N Street, Room 2221
Sacramento, CA 95814

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

Dear Ms. Dunn and Mr. Alvarado:

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STEVE HEMINGER
TBPOC Chair
Executive Director
Bay Area Toll Authority

MALCOLM DOUGHERTY
Director
California Department of Transportation

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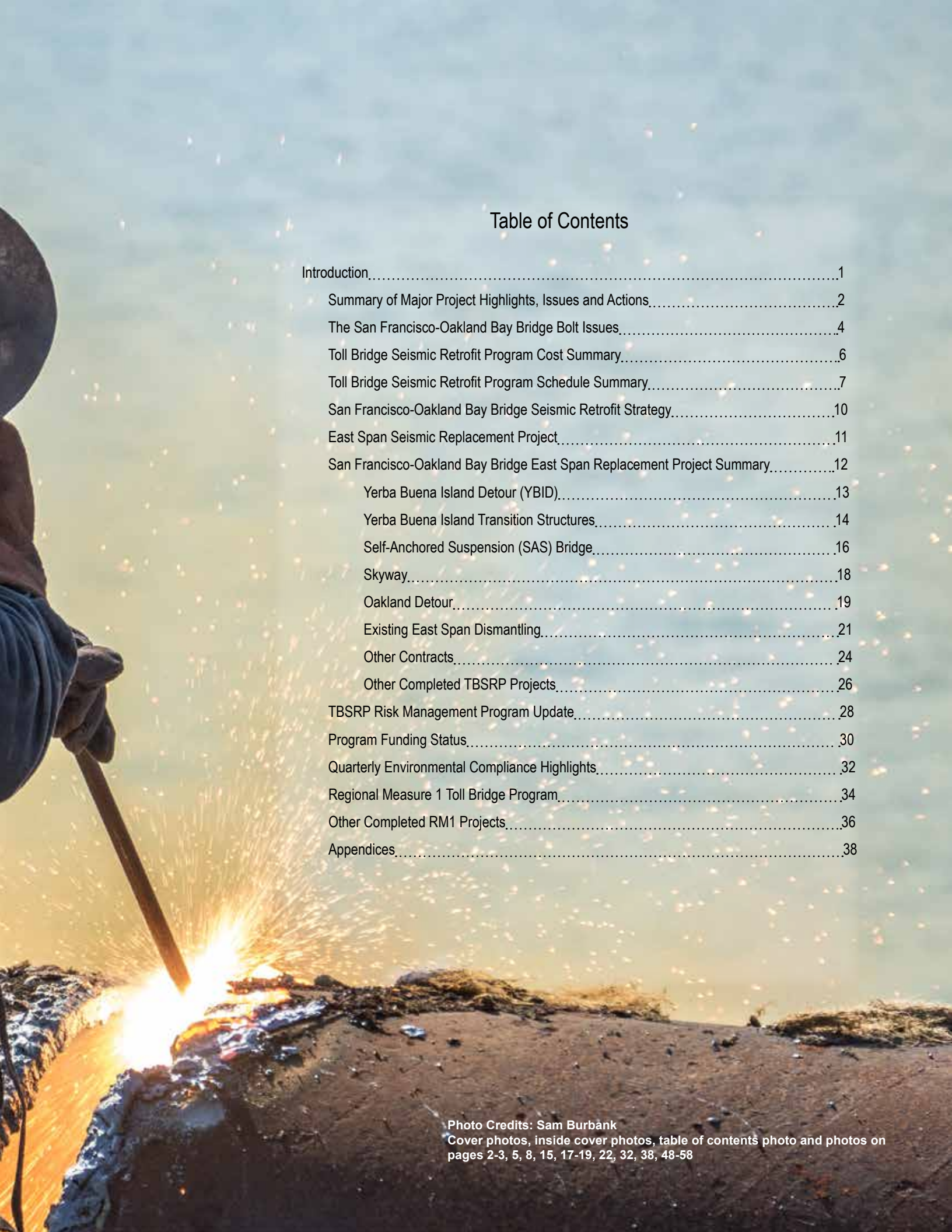

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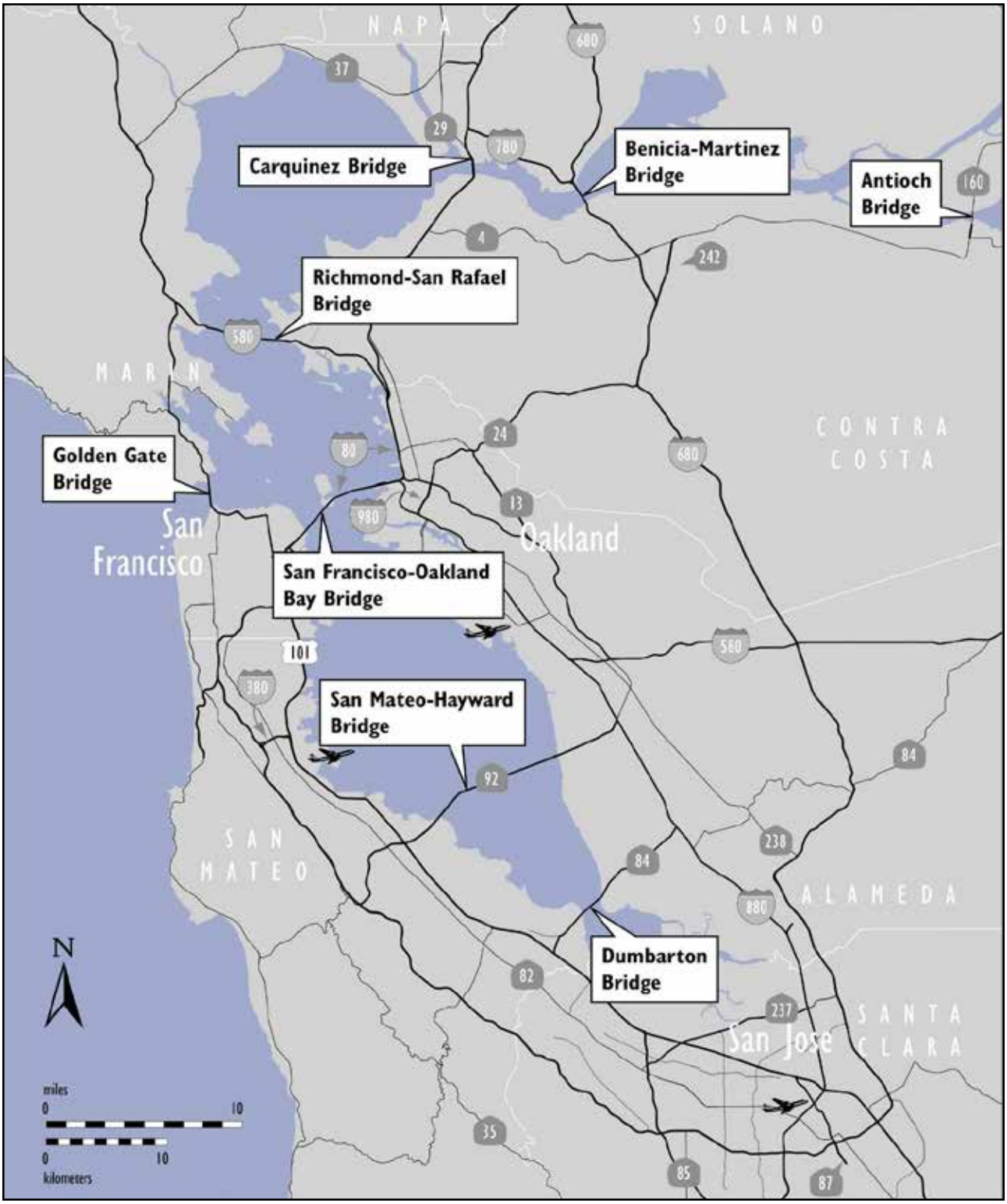
Map of Bay Area Toll Bridges



* 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 (TBSRP) projects. The TBPOC consists of the Director of the California Department of Transportation (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 TBPOC), 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 TBSRP is as follows:

Toll Bridge Seismic Retrofit Projects	Seismic Safety Status
Dumbarton Bridge Seismic Retrofit	Complete
Antioch Bridge Seismic Retrofit	Complete
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 seismic safety opening of the bridge occurred in September 2013. The project will be fully opened when the permanent Yerba Buena Island on ramp and bicycle/pedestrian path are completed.*

The New Benicia-Martinez Bridge was 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. The RM1 program included:

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

E3 Foundations of Former San Francisco-Oakland Bay Bridge

Dismantling Progress on the Former San Francisco-Oakland Bay Bridge

Bike/Pedestrian Pathway Construction Progress

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 increase or decrease as risks are identified, resolved or retired. The program contingency is currently $135.2 million in accordance with the TBPOC approved budget. As of the end of the third quarter of 2015, the 50 percent probable draw on program contingency is $278.4 million. The potential draw ranges from about $220 million to $330 million. The potential threat to the contingency is in the range of $85 million to $195 million(refer to Figure 1 on page 29).

Although the current program contingency forecast balance is lower than the cost of currently identified forecast risks, it is important to understand that the risks identified in each of the contracts are not yet mitigated. Various teams will be working to further define these risks and potential mitigations to reduce the probability of these risks occurring and preparing responses to minimize their impact should they occur. In accordance with the approved TBSRP Risk Management Plan, risk mitigation actions are to be developed and implemented to reduce the potential draw on the program contingency (see further details on page 28).

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

Self-Anchored Suspension (SAS) Bridge Superstructures Contract

The seismically safe replacement eastern span of the San Francisco-Oakland Bay Bridge opened to traffic on the morning of September 2, 2013. On the Self-Anchored Suspension Span, contract acceptance is pending resolution of serveral issues.

To date, Caltrans has been performing tests on the tower anchor rods, both in-situ and in the laboratory. Of the 424 tower anchor rods, 408 rods that were readily accessible were recently put through a seismic load proof test. The vast majority of the rods held at the seismic proof load. Only two of the rods tested did not hold their seismic proof loads. Both of these rods were later extracted and determined that both had threads stripped at the bottom of the rods and one of these two rods also had a bottom end fracture. Two other rods had been extracted prior to the seismic proof test for laboratory testing. One rod that had not held the initial jacking load (stripped threads at bottom found) and one rod that had held the design load, but had been found with water in its rod duct sleeve instead of grout. The later rod had met all design load requirements and was pulled to test for any adverse impacts that might have been caused by the exposure of the rod to the water. Further, some micro-cracking was observed during inspection on one of the previously extracted rods by a scanning electron microscope. Testing has not yet been completed to determine the significance of these microscopic results. Finally, testing of water found in the tower anchor rod sleeves have shown elevated levels of chloride suggesting potential salt water intrusion at some rod locations.

To review, in early 2013, within days after tensioning was performed, the anchor bolts in the shear keys directly below the eastbound and westbound orthotropic box girder (OBG) structures (known as shear keys S1 and S2) began to fail. The function of the broken rods were replaced by the steel saddle retrofit that was completed in December 2013.

As far as the remaining A354 Grade BD high strength steel rods used on the bridge, the TBPOC completed a comprehensive testing program. On September 30, 2014, a bolt review committee of nine experts in the areas of fasteners, corrosion, and metallurgy presented the TBPOC with the findings of the test results. Those results found that the 2008 bolts broke from hydrogen embrittlement due to specific combination of susceptible material properties and challenges during fabrication and installation. The remaining A354 grade BD high strength steel bolts used on the bridge were fabricated and installed in a definitively different manner than the broken 2008 bolts. The bolt review committee has determined that the remaining bolts are safe, meet the design requirements of the bridge, and will not be a long term problem as long as the corrosion protection of the bolts is maintained in accordance with maintenance requirements. Their report and test results can be found at www.baybridgeinfo.org.

San Francisco-Oakland Bay Bridge Looking east toward Oakland

Peregrine Falcon Successfully Nesting on the New East Span

The New Skyway on left and Dismantling of Former Bridge on right

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

Former Superstructure Dismantling Progress

Oakland Touchdown #2 Contract

Flatiron West, Inc. is the prime contractor that is constructing the Oakland Touchdown #2 project, which completes the remaining portions of the Oakland Touchdown approach structures from the existing toll plaza to the new span. This work included the entire westbound structure and portions of the eastbound structure (not in conflict with the existing span) which were constructed under the Oakland Touchdown #1 contract. The OTD #2 construction contract started on June 25, 2012, and was substantially completed in September 2014. The OTD #2 project was accepted in September 2015.

Former Superstructure Dismantling Progress

Yerba Buena Island Transition Structure (YBITS) #2 and Cantilever Dismantling Contract

The YBITS #2 and Cantilever Dismantling contract is dismantling the main cantilever truss and detour viaduct and will construct the new eastbound on-ramp and bicycle/pedestrian pathway to the bridge in its place. The contract was awarded to California Engineering Contractors Inc/Silverado Contractors Inc. Joint Venture on November 28, 2012. Initial startup activities and submittals began in March 2013. The main cantilever truss was cut into two independent east and west structures on April 2, 2014 and has been removed. Work is now focused on completing work onto the island, including new east bound on-ramp and the bicycle/pedestrian path.

Former Superstructure Dismantling Progress

504/288 Superstructure Dismantling Contract

Caltrans has finalized plans for the dismantling of the 504 and 288 trusses and supports. The 504 and 288 trusses make up the approach structures from the toll plaza to the main cantilever. The contractor has sequenced the bridge removal operations into seven phases of dismantling. These phases begin with the upper deck and initial truss removal operations, through the removal of the 504' and 288' steel truss spans, to the removal of the supporting steel columns. The contractor is performing phase 1 work with ongoing engineering and submittal effort to allow the start of the following six phases of work. See page 20 for more details.

Dismantling of the Former San Francisco-Oakland Bay Bridge Progress

Toll Bridge Seismic Retrofit Program Cost Summary (Millions)

	Contract Status	AB 144/SB 66 Budget (Sept. 2005)	TBPOC Approved Changes	Current TBPOC Approved Budget (September 2015)	Cost to Date (September 2015)	Current Cost Forecast (September 2015)	Cost Variance	Cost Status
		a	b	c = a + b	d	e	f = e - c	
SFOBB East Span Seismic Replacement								
Capital Outlay Construction								
Skyway	Completed	1,293.0	(55.8)	1,237.2	1,235.6	1,237.2	-	●
SAS Marine Foundations	Completed	313.5	(38.7)	274.8	274.8	274.8	-	●
SAS Superstructure	Construction	1,753.7	293.1	2,046.8	1,980.7	2,048.2	1.4	●
YBI Detour	Completed	131.9	341.4	473.3	473.3	473.3	-	●
YBI Transition Structures (YBITS)		299.3	0.1	299.4	247.5	324.5	25.1	
YBITS 1	Completed			203.7	201.7	202.9	(0.8)	●
YBITS 2 Cantilever Dismantling	Construction			92.4	45.7	118.3	25.9	●
YBITS Landscaping	Design			3.3	-	3.3	-	●
Oakland Touchdown (OTD)[1]		283.8	46.8	330.6	317.6	329.0	(1.6)	●
OTD 1	Completed			205.3	202.8	205.3	-	●
OTD 2	Construction			72.6	62.3	71.1	(1.5)	●
Detour	Completed			47.0	46.7	46.9	(0.1)	●
OTD Electrical Systems	Construction			-	-	-	-	●
Submerged Electric Cable	Completed			5.7	5.7	5.7	-	●
Existing Bridge Dismantling		239.2	7.3	246.5	94.1	392.4	145.9	●
Cantilever Section [2]	Construction			69.0	62.9	64.9		●
504/288 Sections	Construction			-	22.4	109.6		●
Marine Foundations	Construction			-	8.9	217.8		
Pier E3 Demonstration Project					8.9	24.1		●
Remaining Marine Foundations					-	193.7		●
Stormwater Treatment Measures	Completed	15.0	3.3	18.3	16.9	17.3	(1.0)	●
Other Completed Contracts	Completed	90.4	(0.5)	89.9	90.0	90.5	0.6	●
Capital Outlay Support		959.3	346.2	1,305.5	1,281.2	1,373.6	68.1	●
Right-of-Way and Environmental Mitigation		72.4	-	72.4	60.0	69.0	(3.4)	●
Other Budgeted Capital		35.1	(32.8)	2.3	0.7	2.3	(0.0)	●
Total SFOBB East Span Replacement		5,486.6	910.4	6,397.0	6,072.2	6,632.1	235.1	
Antioch Bridge Seismic Retrofit								
Capital Outlay Construction and Mitigation	Completed		47.0	47.0	47.0	47.0	-	●
Capital Outlay Support			23.8	23.8	23.6	23.8	-	●
Total Antioch Bridge Seismic Retrofit		-	70.8	70.8	70.6	70.8	-	●
Dumbarton Bridge Seismic Retrofit								
Capital Outlay Construction and Mitigation	Completed		68.2	68.2	64.2	68.2	-	●
Capital Outlay Support			46.0	46.0	45.1	45.4	(0.6)	●
Total Dumbarton Bridge Seismic Retrofit		-	114.2	114.2	109.3	113.6	(0.6)	●
Other Program Projects		2,268.4	(63.6)	2,204.8	2,169.7	2,170.6	(34.2)	
Miscellaneous Program Costs		30.0	-	30.0	25.5	30.0	-	●
Net Programmatic Risks		-	-	-	-	78.2	78.2	●
Program Contingency		900.0	(764.8)	135.2	-	(143.2)	(278.4)	●
Total Toll Bridge Seismic Retrofit Program [3]		8,685.0	267.0	8,952.0	8,447.2	8,952.2	0.2	

(1) Construction administration of the OTD Detour was under the YBITS#1 contract.
(2) Construction administration of the cantilever segment is under the YBITS#2 contract.
(3) Figures may not sum up to totals due to rounding effects.
(4) Forecast for the removal of the remaining marine foundations with the conventional method is estimated to be $254.3 milllion. (Due to the rounding of numbers, the totals above are shown within $0.02).

Toll Bridge Seismic Retrofit Program Schedule Summary

	AB 144/SB 66 Project Completion Schedule Baseline (July 2005)	TBPOC Approved Changes (Months)	Current TBPOC Approved Completion Schedule (September 2015)	Current Completion Forecast (September 2015)	Schedule Variance (Months)	Schedule Status	Remarks/ Notes
	g	h	i=g+h	j	k=j-i	l	
SFOBB East Span Seismic Replacement							
Contract Completion							
Skyway	Apr 2007	8	Dec 2007	Dec 2007	-	●	See Page 18
SAS Marine Foundations	Jun 2008	(5)	Jan 2008	Jan 2008	-	●	See Page 16
SAS Superstructure	Mar 2012	33	Dec 2014	Sep 2015	(9)	●	See Page 17
YBI Detour	Jul 2007	39	Oct 2010	Oct 2010	-	●	See Page 13
YBI Transition Structures (YBITS)	Nov 2013	36	Nov 2016	Nov 2016	-		See Page 14
YBITS 1			Feb 2014	Feb 2014	-	●	See Page 14
YBITS 2			Jun 2017	Oct 2017	(4)	●	See Page 14
Oakland Touchdown	Nov 2013	10	Sep 2014	Sep 2014	-		See Page 19
OTD 1			Jun 2010	Jun 2010	-	●	
OTD 2			Sep 2014	Sep 2015	(12)	●	
Submerged Electric Cable			Jan 2008	Jan 2008	-	●	
Existing Bridge Dismantling	Sep 2014	42	Mar 2018	Dec 2019	(21)	●	
Cantilever Section [2]				Jul 2015		●	See Page 14
504/288 Sections			Mar 2018	Mar 2018		●	See Page 14
Marine Foundations							See Page 14
E3 Foundation Removal Demo Project			Jan 2016	Jan 2016		●	See Page 22
Stormwater Treatment Measures			Mar 2008	Mar 2008	-	●	
SFOBB East Span Bridge Opening and Other Milestones							
Westbound Seismic Safety Open	Sep 2011	24	Sep 2013	Sep 2013	-	●	
Eastbound Seismic Safety Open	Sep 2012	12	Sep 2013	Sep 2013	-	●	
Eastbound On Ramp / Bike/Ped Pathway Open to Traffic			Dec 2015	Feb 2016	(2)	●	See Page 14
Antioch Bridge Seismic Retrofit						●	See Page 25
Contract Completion			Jul 2012	Jul 2012	-	●	
Seismic Safety Completion			Apr 2012	Apr 2012	-		
Dumbarton Bridge Seismic Retrofit							
Contract Completion			Mar 2013	Mar 2013	-	●	
Seismic Safety Completion			Mar 2013	Jan 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

View from the Bay of the San Francisco-Oakland Bay Bridge Self-Anchored Suspension Bridge

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

San Francisco-Oakland Bay Bridge Seismic Retrofit Strategy

When a 250-ton section of the upper deck of the East Span collapsed during the 7.1-magnitude Loma Prieta Earthquake in 1989, it was a wake-up call for the entire Bay Area. While the East Span quickly reopened within a month, 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.

The San Francisco-Oakland Bay Bridge West Approach Overview

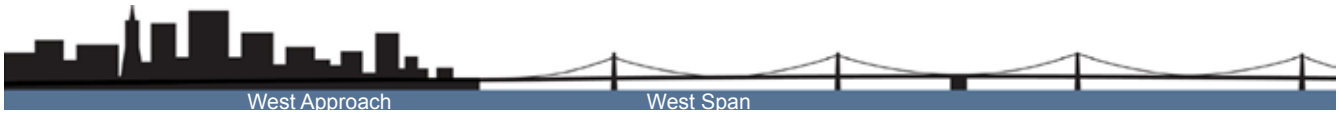
West Approach Seismic Replacement Project Project Status: Completed 2009

Seismic safety retrofit work on the West Approach in San Francisco, bounded on the west by Fifth 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.

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

Rather than a seismic retrofit, the two-mile long East Span has been completely rebuilt. The new East Span consists of several different sections, yet appears as a single streamlined span. The eastbound and westbound lanes of the East Span no longer include upper and lower decks. The lanes are side-by-side, providing motorists with expansive views of the bay. These views are also enjoyed by bicyclists and pedestrians, thanks to a new bicycle/pedestrian path on the south side of the bridge that will extend all the way to Yerba Buena Island. The new span features the world's longest Self-Anchored Suspension (SAS) bridge that connects to an elegant roadway supported by piers (Skyway), which gradually slopes down toward the Oakland shoreline (Oakland Touchdown).

Eastern Span of the San Francisco-Oakland Bay Bridge Bicycle/Pedestrian Path and Ramp Construction in Progress

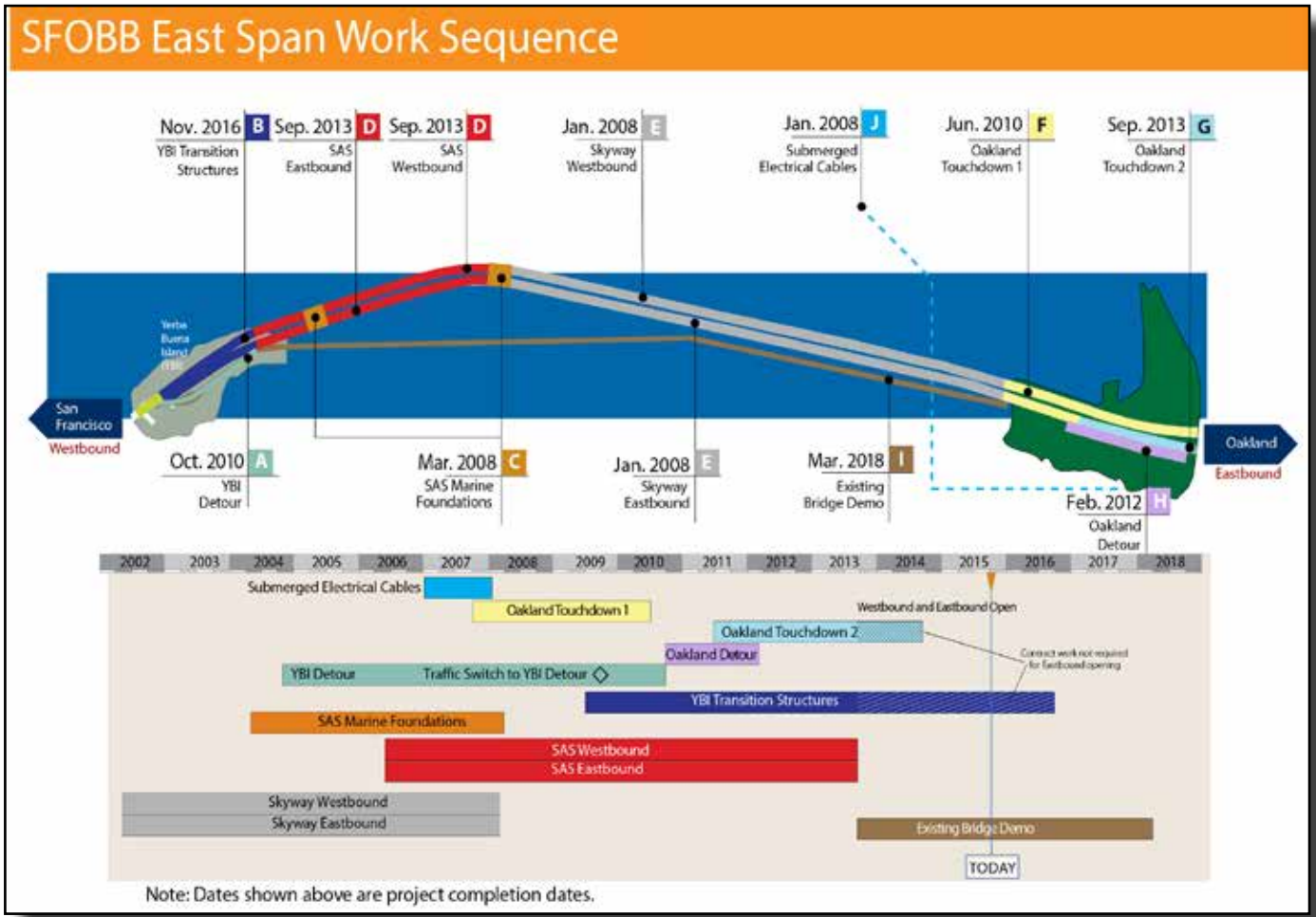
TOLL BRIDGE SEISMIC RETROFIT PROGRAM

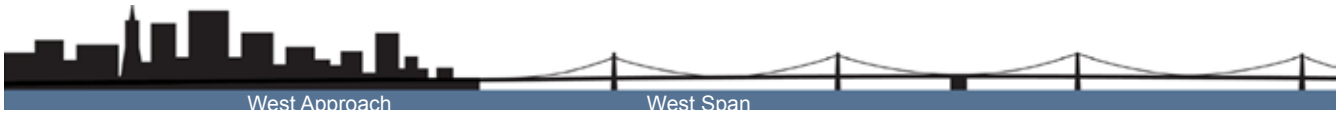
San Francisco-Oakland Bay Bridge East Span Replacement Project Summary

The new East Span bridge is split into four major components - the Skyway, the Self-Anchored Suspension bridge in the middle, the Yerba Buena Island Transition Structures and Oakland Touchdown approaches. Each component has been constructed by one to three separate contracts that were 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.

The New San Francisco-Oakland Bay Bridge East Span Bicycle/Pedestrian Path Construction in 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 (YBID) structure without disrupting traffic. To accomplish this task, YBID eastbound and westbound traffic was shifted off the existing roadway and onto a temporary detour over Labor Day weekend 2009. Drivers used this detour, just south of the original roadway, until traffic was moved onto the new East Span.

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

A YBID Contract

Contractor: C.C. Myers, Inc.

Approved Capital Outlay Budget: $473.3 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 the Labor Day 2007 weekend 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 to reduce project risks.

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) connects 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 are cast-in-place reinforced concrete structures that look very similar to the already constructed Skyway structures. While some YBITS foundations and columns were advanced by the YBID contract, the remaining work was completed under three separate YBITS contracts.

B YBITS #1 Contract

Contractor: MCM Construction, Inc.

Approved Capital Outlay Budget: $203.7

Status: 100% Complete as of December 2014

MCM Construction, Inc. is the prime contractor that constructed the Yerba Buena Island Transition Structure #1 (YBITS #1) contract. Their work included completing the remaining foundations and the bridge deck structure from the existing double deck Yerba Buena Island Tunnel to the SAS bridge.

Status: Completed.

YBITS Landscaping Contract

Contractor: TBD

Approved Capital Outlay Budget $3.3 M

Status: In Design

Upon completion of the YBITS #2 work, a follow-on landscaping contract will be executed to replant and landscape the area.

YBITS #2 YBI Eastbound On-Ramp Cantilever Dismantling Contract

Contractor: CEC & Silverado (JV)

Approved Capital Outlay Budget: $92.4 M

Status: 65% Complete as of September 2015

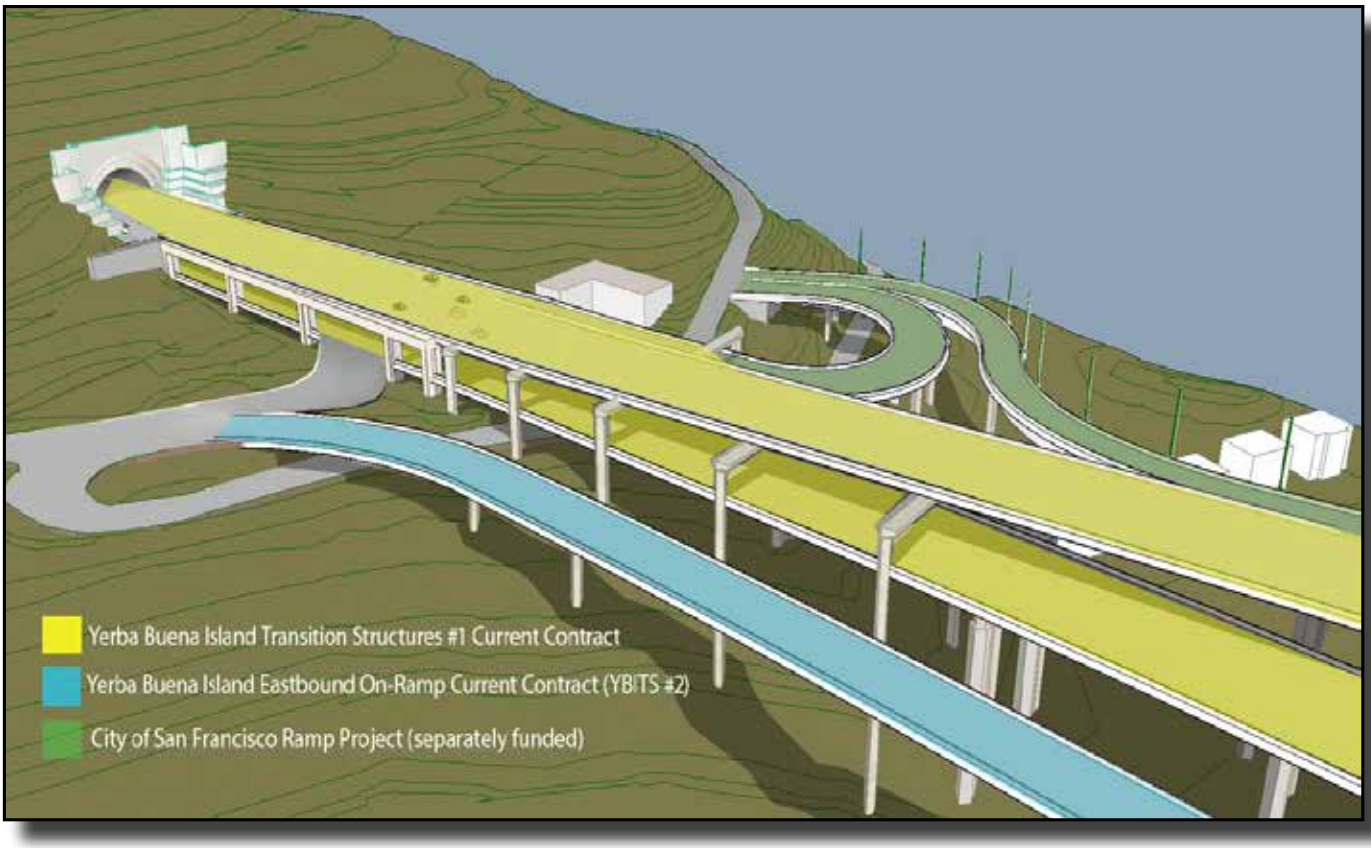
Now that the traffic has been switched to the new bridge, The YBITS #2 contract involves dismantling the detour viaduct, constructing a new eastbound on-ramp to the bridge, completing the bicycle/pedestrian path to Yerba Buena Island, and dismantling of the cantilever.

The contract was awarded to California Engineering Contractors Inc/Silverado Contractors Inc. Joint Venture on November 28, 2012. Initial startup activities and submittals began in March 2013, with actual dismantling starting after the seismic safety opening on Labor Day weekend 2013.

Status: Cantilever removal was completed in July 2015. The bicycle/pedestrian path to the landing, has a six month delay due to the fabrication of the path's cantilever outrigger beam. YBITS 2 has a potential five month delay due to the City of San Francisco's water line tie-in work.

Birds-Eye View Simulation of the Yerba Buena Island Transition Structures and the New San Francisco-Oakland Bay Bridge Eastbound On Ramp and Bicycle Path after Dismantling of the Existing Structure

Aerial View of the Old Bridge and Demolition and the Transition Structure



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) section of the bridge. This engineering marvel is the world's largest SAS span at 2,047 feet in length, as well as the first bridge of its kind built with a single tower.

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

SAS Land Foundation Contract

Contractor: West Bay Builders, Inc.
Approved Capital Outlay Budget: $26.5 M
Status: Completed October 2004

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

SAS Marine E2 and the Skyway Westbound Foundation and Columns

C SAS Marine Foundations Contract

Contractor: Kiewit/FCI/Manson, Joint Venture
Approved Capital Outlay Budget: $274.8 M
Status: Completed January 2008

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

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: 100% Complete as of September 2015

The self-anchored suspension span of the 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 appears to be two main cables on the SAS, it is actually a single continuous cable. This single cable is 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.

Status: To date, Caltrans has been performing tests on the tower anchor rods, both in-situ and in the laboratory. Of the 424 tower anchor rods, 408 rods that were readily accessible were recently put through a seismic load proof test. The vast majority of the rods held at the seismic proof load. Only two of the rods tested did not hold their seismic proof loads. Both of these rods were later extracted and determined that both had threads stripped at the bottom of the rods and one of these two rods also had a bottom end fracture. Two other rods had been extracted prior to the seismic proof test for laboratory testing. One rod that had not held the initial jacking load (stripped threads at bottom found) and one rod that had held the design load, but had been found with water in its rod duct sleeve instead of grout. The later rod had met all design load requirements and was pulled to test for any adverse impacts that might have been caused by the exposure of the rod to the water. Further, some micro-cracking was observed during inspection on one of the previously extracted rods by a scanning electron microscope. Testing has not yet been completed to determine the significance of these microscopic results. Finally, testing of water found in the tower anchor rod sleeves have shown elevated levels of chloride suggesting salt water intrusion at some rod locations.

The Self-Anchored Suspension Bridge Span Looking east toward Oakland

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, drastically changes the appearance of the Bay Bridge. Replacing the gray steel that used to cage the drivers on the old bridge, a graceful, elevated roadway supported by piers is now providing sweeping views of the bay.

E Skyway Contract

Contractor: Kiewit/FCI/Manson, Joint Venture
Approved Capital Outlay Budget: $1.24 B
Status: Completed April 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 (OTD). 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 allow deck segments on the Skyway to move, enabling the deck to withstand greater motion and to absorb more earthquake energy.

Status: Opened to traffic on September 2, 2013.

The New San Francisco-Oakland Bridge Skyway and Self-Anchored Suspension Bridge Looking West toward Yerba Buena Island

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

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

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

The OTD approach structures to the Skyway was 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, the OTD #1 contract was only able to construct a portion of the eastbound approach. To facilitate opening the bridge in both directions at the same time, the second phase of work, performed by the Oakland Detour contractor, included 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. This phase was completed in April 2012. The third phase, constructed by an OTD #2 contract, completed the eastbound lanes and provided the traffic switch to the new structure in both directions and allowed for the bridge to open simultaneously in both directions.

F Oakland Touchdown #1 Contract

Contractor: MCM Construction, Inc.
Approved Capital Outlay Budget: $205.3 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. The westbound approach structure provides 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.

G Oakland Touchdown #2 Contract

Contractor: Flatiron West, Inc.
Approved Capital Outlay Budget: $72.6 M
Status: Completed September 2015

Flatiron West, Inc. is the prime contractor constructing the Oakland Touchdown #2 contract that completed the remaining portions of the Oakland Touchdown approach structures from the existing toll plaza to the new span. The contractor is also responsible for the construction of the bicycle/pedestrian path and final landscaping of the area.

Status: Landscaping and installation of the irrigation system continues with plant establishment beginning in October 2014 and will be completed in September 2015.

Aerial View of Oakland Touchdown

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

San Francisco-Oakland Bay Bridge East Span Replacement Project
Former East Span Bridge Dismantling

I Cantilever Removal

Approved Capital Outlay Budget: $69 M
Contractor: CEC and Silverado JV

To expedite the opening of a new eastbound on ramp and the bike/pedestrian pathway from Yerba Buena Island to the SAS and to maximize contractor efficiencies, the TBPOC split the dismantling of the existing bridge into multiple contracts. The dismantling of the superstructure of the main cantilever section of the existing bridge has been incorporated into the YBITS #2 contract.

Status: Cantilever and YBI detour dismantling is complete.

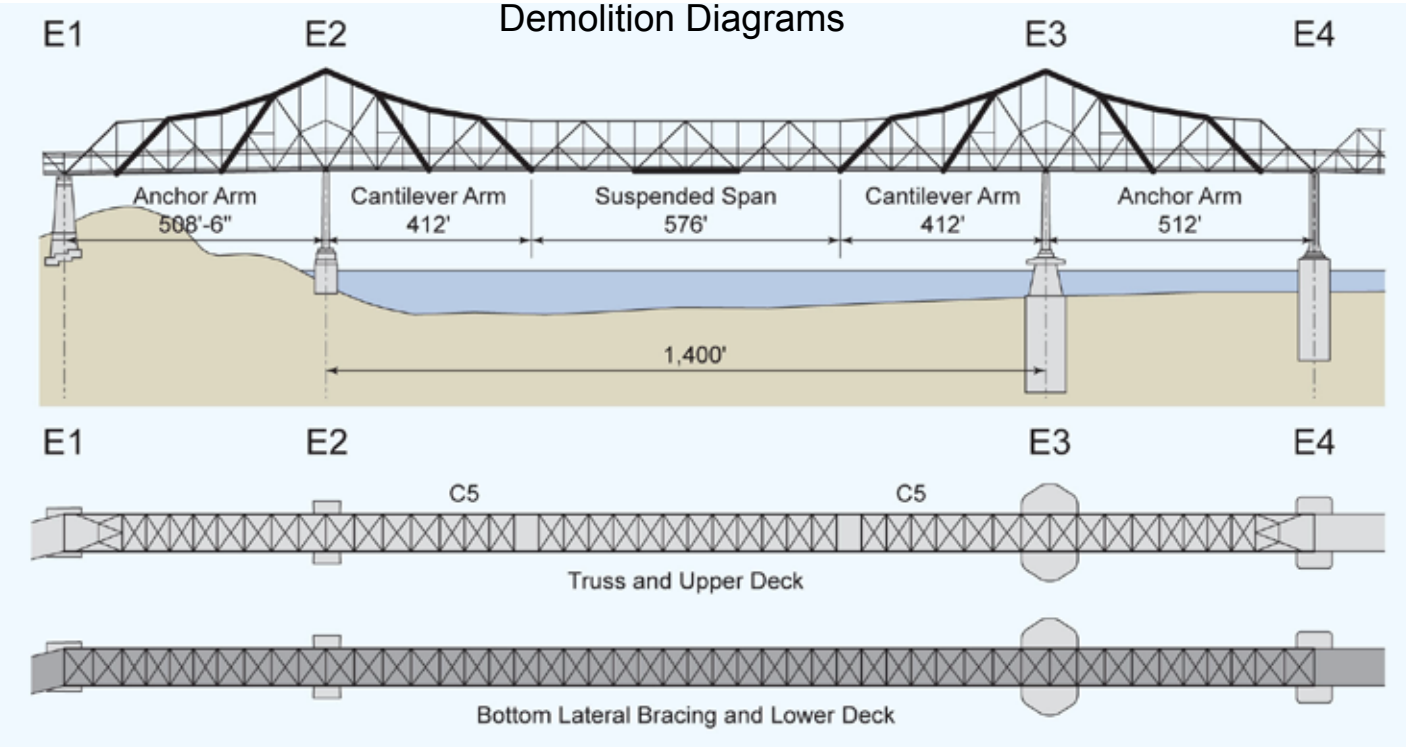
504/288 Superstructure Dismantling

The Contractor has sequenced the bridge removal operations into seven phases of dismantling. These phases begin with the upper deck and initial truss removal operations, through the removal of the 504' and 288' steel truss spans, to the removal of the supporting steel columns. The contractor is performing phase 1 work with ongoing engineering and submittal efforts to allow the start of the following six phases of work.

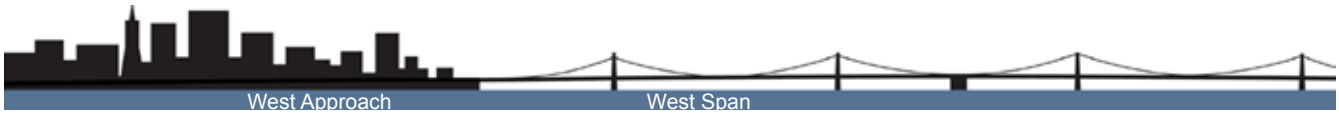
Marine Foundations Removal

The fist phase of the foundation removal contract is the E3 removal demonstration project. Construction began in June, 2015. Work is underway with above water concrete pier removal. Pier E3 implosion is scheduled in mid November, 2015 and all permits to do so were completed in September, 2015.
The marine foundation removal is a CMGC (Construction Manager / General Contractor)contract and the selected CMGC contractor is a Kiewit Manson team. Work is currently under design.

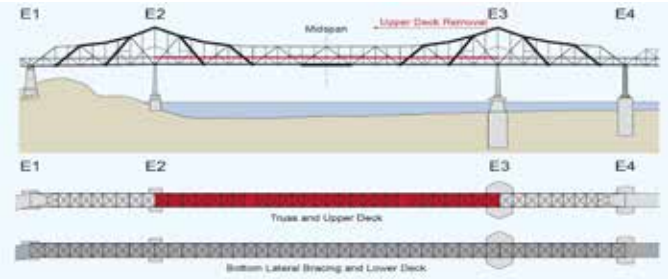
Demolition Diagrams



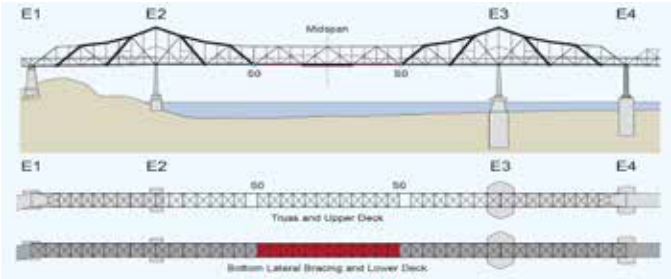
GENERAL LAYOUT



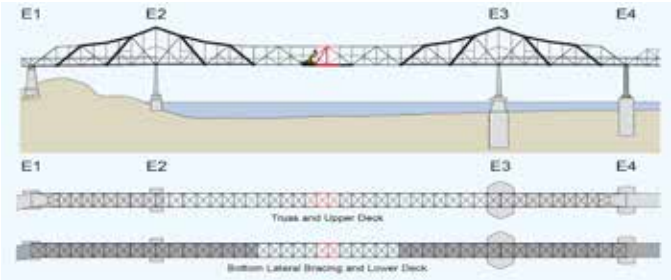
1. Remove Upper Deck from Pier E3 to Pier E2



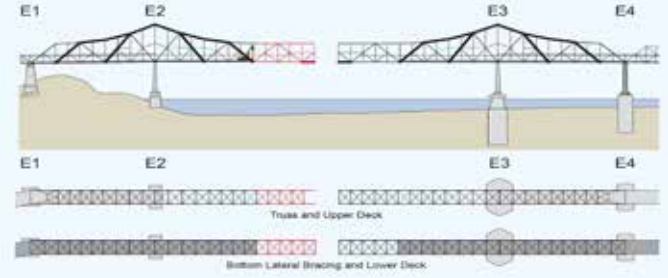
2. Remove Lower Deck from Suspended Span Replace with Timber Mat



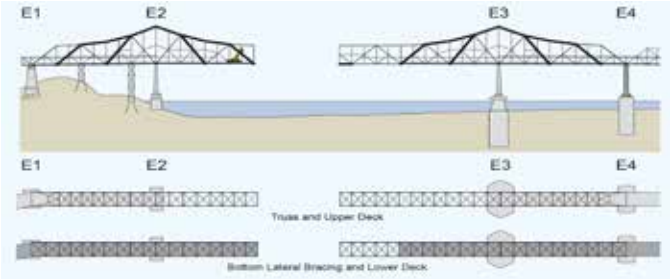
3. Disconnect Bridge at Midspan



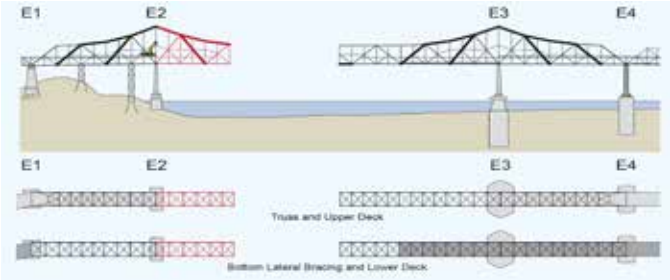
4. Remove West Suspended Span



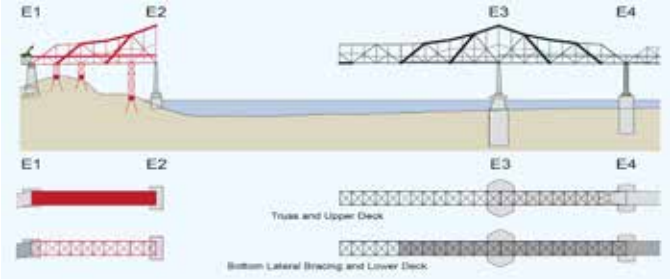
5. Install West Falsework Supports



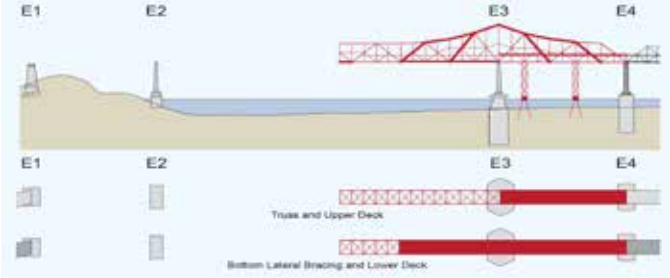
6. Remove Remaining West Cantilever Arm



7. Remove West Anchor Arm - Remove Falsework Supports



8. Remove East Spans Similarly



TOLL BRIDGE SEISMIC RETROFIT PROGRAM

San Francisco-Oakland Bay Bridge East Span Replacement Project
Former East Span Bridge Dismantling

Marine Foundations

E3 Foundation Removal Demonstration Project

Approved Capital Outlay Budget: $18.5M
Contractor:

The original east span of the San Francisco-Oakland Bay Bridge was supported by 21 in-water bridge piers, Piers E2 through E22, along with land based piers at Yerba Buena Island and Oakland. Part of this project is the demolition of Pier E3, which is located 1,535 feet east of Yerba Buena Island and on the east side of a 50-foot deep navigation channel.

As shown in the illustration on the facing page, Pier E3 is a cellular concrete caisson approximately 268 feet tall containing 28 total chambers. Fourteen of the chambers occur only below an elevation of approximately -51 feet and occur in two separate rows of seven chambers on each length side. Exterior walls of the caisson are four feet wide, while the interior walls comprising the chamber are three feet wide.

The structure has 12 angled buttress walls, six on each side, that are approximately 51 feet tall that begin at -51 feet and run up the caisson to 0 feet. Weep holes in the foundation located at an approximate elevation of -5 feet have allowed the caisson chambers to fill with water. Nearly 175 feet of the pier is buried in bay mud.

Pier E3 also contains a pier cap, which is 80 feet by 167 feet, excluding the fender apron. The pier cap, fender apron, and upper most portion of the caisson extend above the water line and support the steel superstructure of the bridge and are visible from the Bay.

Pier E3 is a pilot/demonstration project for the effective use of controlled charges to remove the marine foundations of the original SFOBB. The original authorization covered the dismantling of the piers via mechanical means such as saw cutting, flame cutting, mechanical splitting or pulverizing, and hydro-cutting, but did not cover the use of controlled implosion.

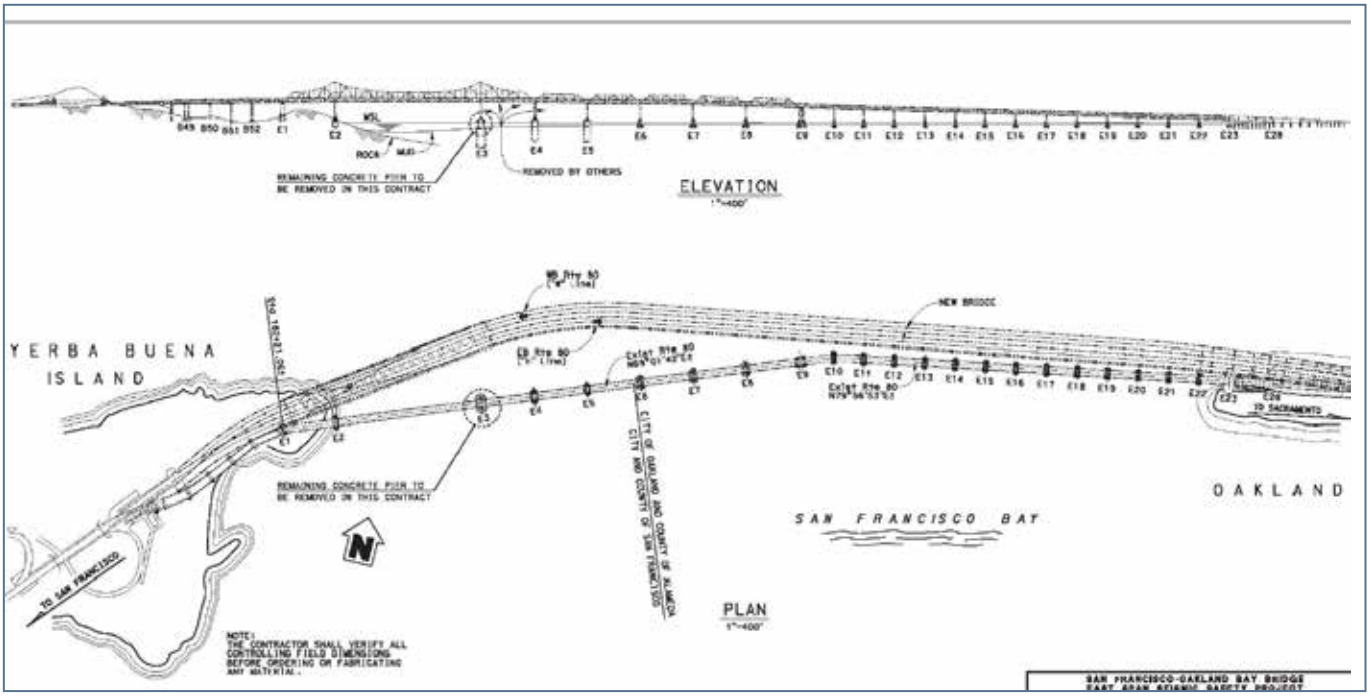
Dismantling of Pier E3 using controlled charges would be completed in four phases: 1) mechanical dismantling of pier cap and fender system, 2) drilling of bore holes into caisson and buttress walls and installing a blast attenuation system (BAS), 3) installing charges, activating the BAS and imploding the pier, and 4) management and removal of remaining dismantling pier debris. When completed, the pier would be removed to -51 feet.

Mechanical dismantling would have required the installation of a cofferdam around Pier E3, which would have required 394 piles of various types. Pile driving alone would take approximately four years, while the four phases of the demonstration project would occur within six months.

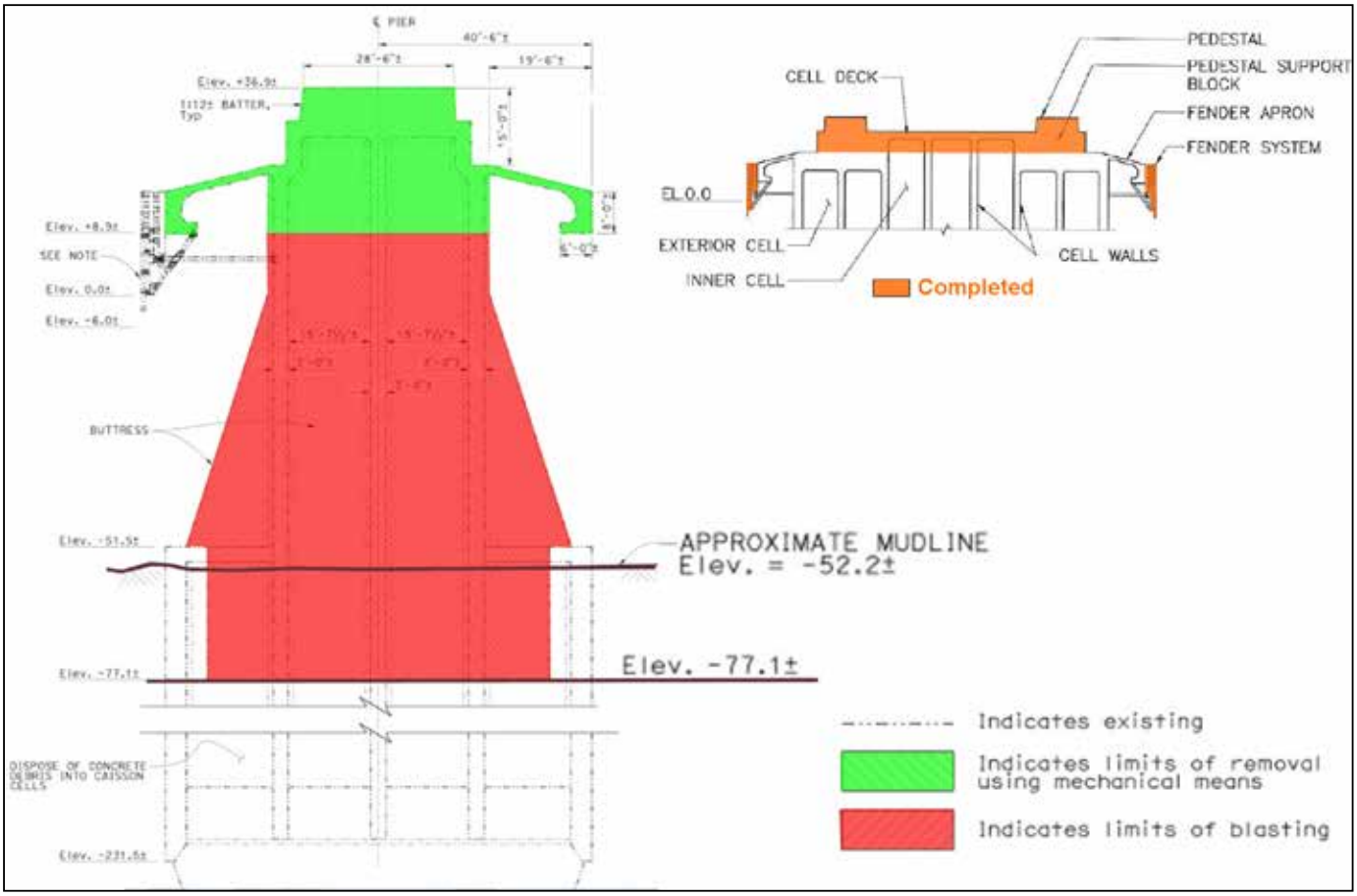
For more detailed information on the phases of the project, and compliance with state, local and federal laws, please see the US Army Corps of Engineers San Francisco District Public Notice: PUBLIC NOTICE NUMBER: SPN-1997-230130

Status: The fender removal & above water concrete pier removal is completed and ready for Pier E3 implosion that is scheduled in mid November 2015. Successfully competed the first test of the bubble curtain mock-up on July 25th, 2015.

E3 Foundation Blast Hole Drilling In Progress



Schematic of the East Span of the SFOBB Showing the Cantilever Truss Span and the Location of Pier E3 (circled) Relative to Other Piers on the Former Bridge



E3 Foundation Removal

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 is in progress, which is the dismantling and removal of the existing bridge, which has served the Bay Area for nearly 80 years. Following is a status of some the other East Span contracts.

Archeological Investigations

J Electrical Cable Relocation

Contractor: Manson Construction
Approved Capital Outlay Budget: $5.7 M
Status: Completed January 2008

A submerged cable from Oakland that is close to where the new bridge touches 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: $11.3 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.

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.

The existing East Span Cantilever Section of the San Francisco-Oakland Bay Bridge Being Dismantled

Pile Installation Demonstration

Contractor: Manson and Dutra, Joint Venture
Approved Capital Outlay Budget: $9.2 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

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.

High-Rise Section of San Mateo-Hayward Bridge

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

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

1958 Carquinez Bridge Seismic Retrofit Project
Project Status: Completed 2002

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

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

1962 Benicia-Martinez Bridge Seismic Retrofit Project
Project Status: Completed 2003

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

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.

Antioch Bridge Seismic Retrofit Project
Project Status: Completed 2012

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.

Antioch Bridge

Dumbarton Bridge Seismic Retrofit Project
Project Status: Completed 2013

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-wide bike/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 included superstructure and deck modifications and installation of isolation bearings.

Dumbarton Bridge

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Risk Management Program Update

Potential Draw On Program Reserve (Program Contingency)

The program contingency is currently $135.2 million in accordance with the TBPOC approved budget. As of the end of the third quarter of 2015, the 50 percent probable draw on program contingency is $278.4 million. The potential draw ranges from about $220 million to $330 million (refer to Figure 1). The potential threat to the contingency is in the range of $85 million to $195 million (Refer to Figure 1).

The potential draw curve includes all currently identified risks in the risk registers. It does not include costs that may result from possible future decisions to alter the projects from their current scope and construction methods. Possible material changes to a project are not placed in a risk register according to best practices. A materially changed project differs substantially from its predecessor and requires a new risk register. The removal of marine foundations is a project that may undergo material changes later this year. The project assumes that the implosion method of removal will be used. However, depending on the results of the Pier E3 Demonstration Project later this year, the project may have to revert to conventional methods of removal, which could increase the project cost by up to $94 million. This possibility is not in the risk register for the reasons given above, and its cost is not reflected in the draw curve. This potential increase in cost may be considered as an amount reserved from the program contingency or an amount that may need to be added to the program contingency if sufficient reserves are not available.

About one-third of the $278.4 million 50% probable draw is on account of two 100% probable risks; Capital Outlay Support cost and the cost of dehumidification and rod removal at the SAS tower foundation. Among the other risks, 19 are 100% probable to have a cost impact having a most likely total of $140 million. These risks include known issues, future contract change orders (CCOs), cost uncertainty in pending CCOs, and uncertainty in the capital cost estimates of unawarded contracts.

In view of the above, the $135.2 million current program contingency balance is insufficient to cover the cost of currently identified risks. Risk mitigation actions are continuously developed and implemented to reduce the potential draw on the program contingency.

RISK MANAGEMENT DEVELOPMENTS

Self-Anchored Suspension Span Contract

The SAS contract was accepted on September 24, 2015. This happened after estimates were run so the numbers for this project are based on the estimate run on September 20, 2015, and not the estimate after contract acceptance. As such, the probable cost of SAS risks are essentially the same. The investigation of the tower base rods continues. This work is paid primarily through Capital Outlay Support dollars. Risks are carried in the program register to address corrective action on the rods.

Oakland Touchdown #2 Contract

The project was accepted very early in the forth quarter. Project closeout continues. The team will issue the proposed final estimate early next quarter and will address any exceptions to it should they occur. Capital Outlay Support dollars will be needed to address these exceptions.

Yerba Buena Island Transition Structure #2 Contract

cost of risks on the YBITS #2 contract reduced approximately 13 percent this quarter due primarily to executed change orders. The cantilever dismantling was completed last quarter. Temporary supports will be removed by the end of the year. Work on the island began in earnest in the first quarter of 2015 and will continue through the next year or two. Construction of the new eastbound on-ramp continues and the concrete decks have been poured.

The project team has addressed delays to the overall project through contract change order. However the impact of these delays as they relate to internal milestones has yet to be resolved. These include erection of pedestrian/bike path elements prior to opening and the re-sequencing of work to comply with agreements made with the Coast Guard Base.

504/288 (Superstructure Removal)

Bids for the 504' and 288' Steel Structures Dismantling Contract were opened in the first quarter. The contract was executed and work has begun in the field. Lowering of the 504 spans are not expected until the first quarter of 2016.

Pier E3 Demonstration (Superstructure Removal)

Conventional removal activities to remove the concrete cap occurred over the summer and are now complete. Caltrans recently obtained permits to perform the remaining work using engineered changes. The implosion is planned for early November 2015. The project team is working with outside agencies to prosecute this work. The removal of all the foundations is procured using the Contract Manager/General Contractor

(CM/GC) delivery method. This scope of work will be the first delivered to the construction phase.

Foundation Removal

The Marine Structures Dismantling Contract is in design. Project risks were increased this quarter as a result of the new understanding of mitigation required by some of the permitting agencies. The Engineer's Estimate for this work has increased this quarter. In the second quarter of 2015, the project team updated the estimate for this work. This was needed to address schedule increases necessary to accommodate shorter environmental work windows. For the last several quarters, the team has been moving forward with the understanding that work windows could or would be extended if data from the Pier E3 implosion confirmed the lowest impact. This no longer appears to be possible. In the first quarter of 2015, two versions of the estimates were developed; one using conventional means and methods to dismantle piers, and the other using implosion to dismantle all piers. The cost difference between conventional removal and implosion is about $94 million. This quarter, it became apparent that the permitting agencies were, at this time, unwilling to allow removal operations to occur in any expanded window regardless of the outcome of test results from the Pier E3 implosion. The end result is an increase in the engineer's estimate by $30M from last quarter. The engineer's estimate is based on the project using implosion for dismantling all piers. Depending on the outcome of the Pier E3 Demonstration project, the implosion method may not be allowed by the permitting agencies. Or, project management may determine that the implosion method is impractical due to imposed restrictions on work windows and the rate of implosion. If the implosion method does not proceed for any reason, the project will have to revert to conventional dismantling methods at up to $94 million in additional costs. The revision to the engineer's estimate eats into these additional costs if not mitigated.

RISK MANAGEMENT LOOK AHEAD

Self-Anchored Suspension Span Contract

Project closeout and determining contract procurement methods for work not to be performed on this contract needs to be addressed. The anticipated cost of this work is carried as risk to the overall program budget as the work will not be performed under this contract. The team will work with the contractor and the Transportation Agency to address the expected objections to the proposed final estimate.

Oakland Touchdown #2 Contract

The project team will continue closing out the contract.

Yerba Buena Island Transition Structure #2 Contract

The resolution of time issues related to on-ramp and bike path opening is underway. This could delay the opening until April 2016, although December 2015 remains a possibility.

Dismantling Contracts

Implosion is scheduled for early November 2015. Permitting for the remaining marine foundation removal will be addressed over the next several quarters. Threats to project objects are expected to continue to come to light as means and methods get clarified.

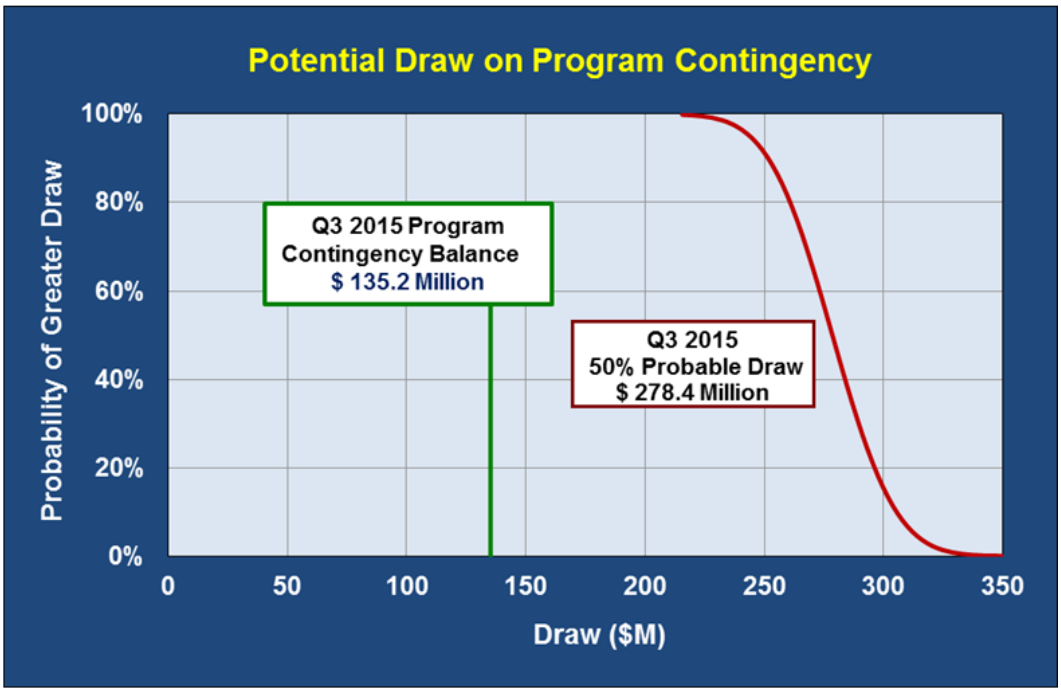


Figure 1 – Potential Draw on Program Contingency*

*Figure 1 Notes:

1. Proposed architectural enhancements and project improvements are excluded unless approved by the TBPOC.

TOLL BRIDGE SEISMIC RETROFIT PROGRAM

Program Funding Status

AB 144 established a funding level of $8.685 billion for the TBSRP. As of December 31, 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 September 30, 2015 ($ Millions)

	Budgeted	Funding Available & Contribution
Financing		
Seismic Surcharge Revenue AB 1171	2282.0	2282.0
Seismic Surcharge Revenue AB 144	2150.0	2150.0
Seismic Surcharge Revenue AB 1175 (2)	750.0	750.0
BATA Consolidation	820.0	820.0
Subtotal - Financing	6002.0	6002.0
Contributions		
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(1)	745.0	745.0
Public Transportation Account (1)	130.0	130.0
ITIP/SHOPP/Federal Contingency (3)	448.0	448.0
Federal Highway Bridge Replacement and Rehabilitation (HBRR) (3)	642.0	642.0
SHA - East Span Dismantling	300.0	300.0
SHA - "Efficiency Savings"	130.0	130.0
Redirect Spillover	125.0	125.0
Motor Vehicle Account	75.0	75.0
Subtotal - Contribution	3433.0	3423.9
Total Funding	9435.0	9425.9
Encumbered to Date		8636.3
Remaining Unallocated		789.6
Expenditures :		
Capital Outlay		6606.5
State Operations		1828.5
Antioch and Dumbarton Expenditures by BATA		12.2
Total Expenditures		8447.2
Encumbrances :		
Capital Outlay		183.9
State Operations		5.2
Total Encumbrances		189.1
Total Expenditures and Encumbrances		8636.3

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

(2) 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.

(3) The Skyway contract is the only contract in the San Francisco-Oakland Bay Bridge East Span Seismic Safety Project with federal funds. The Federal Aid Project No. is 0801(090) for the amount of $321,645,209.22.

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 September 30, 2015, shows expenses through September 30, 2015, 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 (Actual)	2013-14 (Actual)	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
	Total	547	273	100	43	99	153	150	165	300	1830

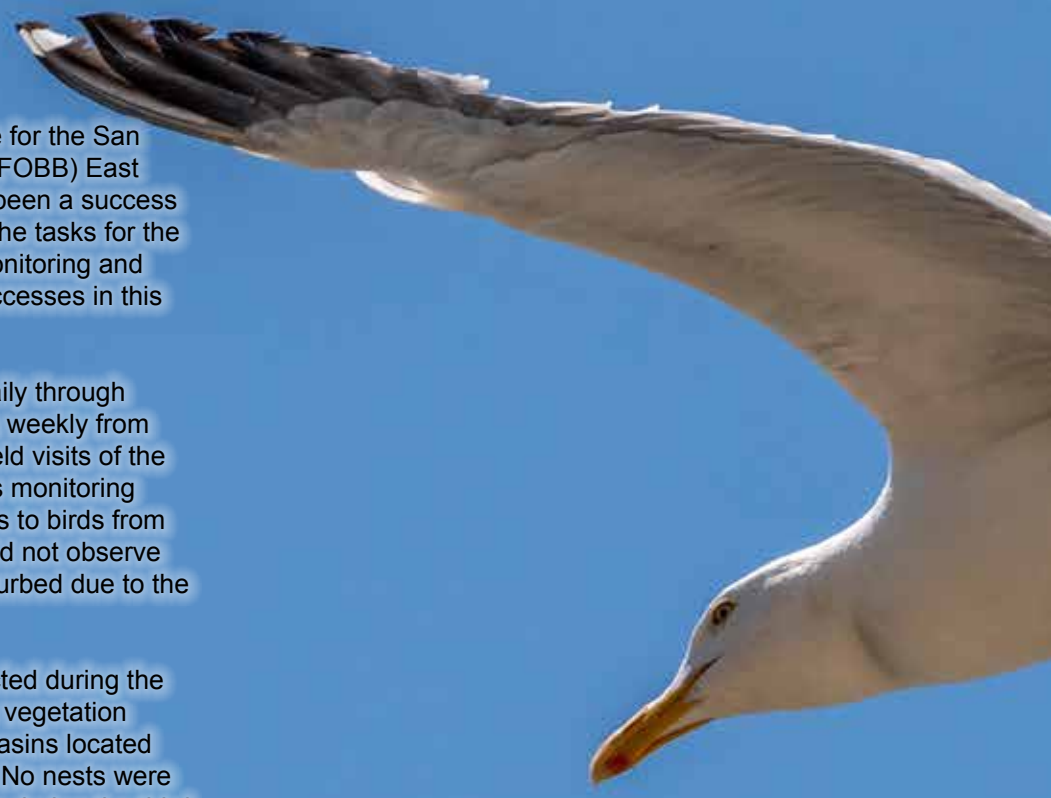
* Caltrans Efficiency Savings

** SFOBB East Span Dismantling Cost. The last contribution of $300 million from SHA was made in October 2013 as scheduled.

Table 3—Toll Bridge Program Oversight Committee Estimated Expenses: July 1, 2005 through September 30, 2015 ($ Millions)

Agency/Program Activity	Expenses
BATA	**3.0**
Caltrans	**3.3**
CTC	**3.3**
Reporting	**5.9**
Total Program	**15.5**

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 has been a success during the third quarter of 2015. The tasks for the current quarter are focused on monitoring and environmental permitting. Key successes in this quarter are as follows:

Bird monitoring was conducted daily through August (nesting season) and then weekly from the bike/pedestrian path and/or field visits of the construction sites. The goal of this monitoring was to document potential impacts to birds from construction activities. Monitors did not observe any indication that birds were disturbed due to the east span construction activities.

Nesting bird surveys were conducted during the months of July and August for the vegetation removal activities at stormwater basins located around the Bay Bridge toll plaza. No nests were impacted by construction activities during the third quarter.

Peregrine falcon monitoring occurred throughout the third quarter of 2015 in conjunction with the regularly scheduled monitoring. The resident peregrine falcon pair nested again this summer at the Pier E8 nest site. Eggs were laid at the Pier E8 nest site on April 17, 19, 21, and 23, 2015 for a total of 4 eggs. Three of the eggs hatched the week of May 25, 2015. One egg was not viable. All three nestlings fledged by the end of July.

Turbidity monitoring was conducted daily during the removal of the pier cap and fender system at Pier E3. Turbidity monitoring was also conducted on the YBITS 2 contract during the cutting of the steel pile cap for the temporary pile foundations between Piers E3 and E4 (at A2, A6, and A8) and cutting and removal of the piles themselves. No exceedances occurred that would require action to the exclusion zone. On July 17, 2015, the project Incidental Harassment Authorization (IHA) for mechanical dismantling was issued and monitoring was reduced to 20 percent of the time and the frequency was decreased to once-a-week monitoring. Drilling activities of the caisson walls began in the second week of September. On September 22, 2015, hydroacoustic monitoring was carried out to document sounds levels during drilling work at Pier E3. The hydroacoustic monitoring results allowed the marine mammal exclusion zone to be reduced from 100 meters to less than 50 meters.

SFOBB environmental compliance and stormwater pollution prevention plan (SWPPP) inspections were conducted weekly at all active project sites. The project team worked closely with the construction staff to ensure compliance with

environmental permits and regulations and to improve best management practices.

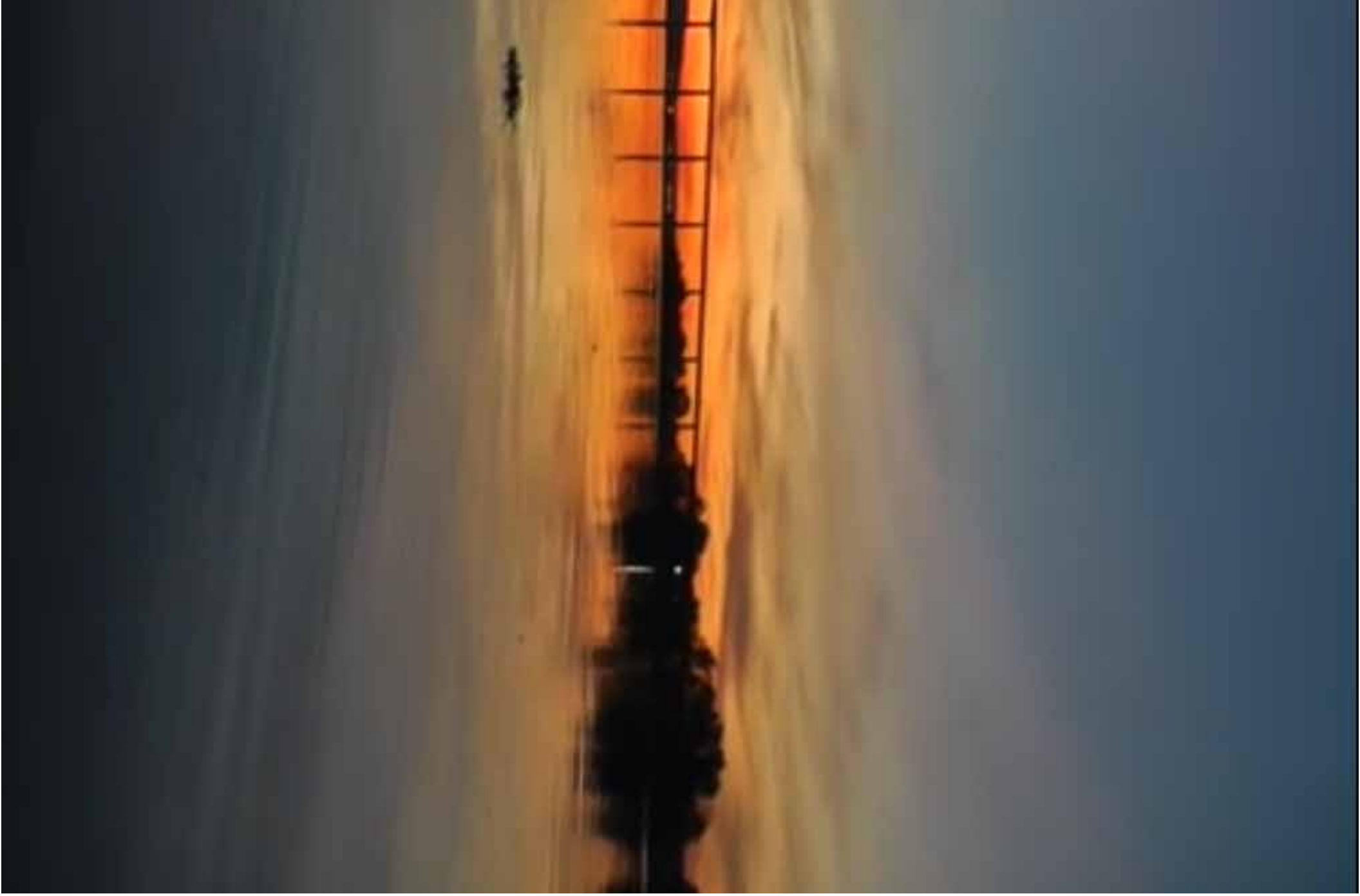
During dismantling activities of the original east span, the contractor used debris containment structures to capture and collect debris. Structures installed on the traveler system under the lower deck of the original east span can be used to collect demolition debris.

Monthly compliance reports were submitted to the California Department of Fish and Wildlife in August, September and October 2015.

The environmental team worked with the National Marine Fisheries Service throughout the third quarter of 2015 to renew the IHA for 2015 conventional bridge dismantling activities. The renewed IHA was issued July 17, 2015.

During the third quarter, work with regulatory agencies continued to gain approval for the Pier E3 Controlled Blasting Demonstration Project. The resources agencies issued environmental permits for the Pier E3 implosion during the third quarter.

Antioch 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 to be used to reduce congestion in the bridge corridor.

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.

Widening of the San Mateo-Hayward Bridge Trestle on left

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.

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

Three major rehabilitation projects for the Richmond-San Rafael Bridge were completed. In 2001, the final connections to the Richmond Parkway were completed. In 2005, seismic retrofit, trestle and fender system replacement work was completed. In 2006, the bridge was resurfaced along with deck joint repairs.

New Richmond-San Rafael Bridge West Approach Trestle under Construction

Benicia-Martinez Bridge Project
Project Status: Completed 2007

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

The New Congressman George Miller Bridge (New Benicia-Martinez Bridge

Benicia-Martinez Bridge Rehabilitation Project
Project Status: Completed 2009

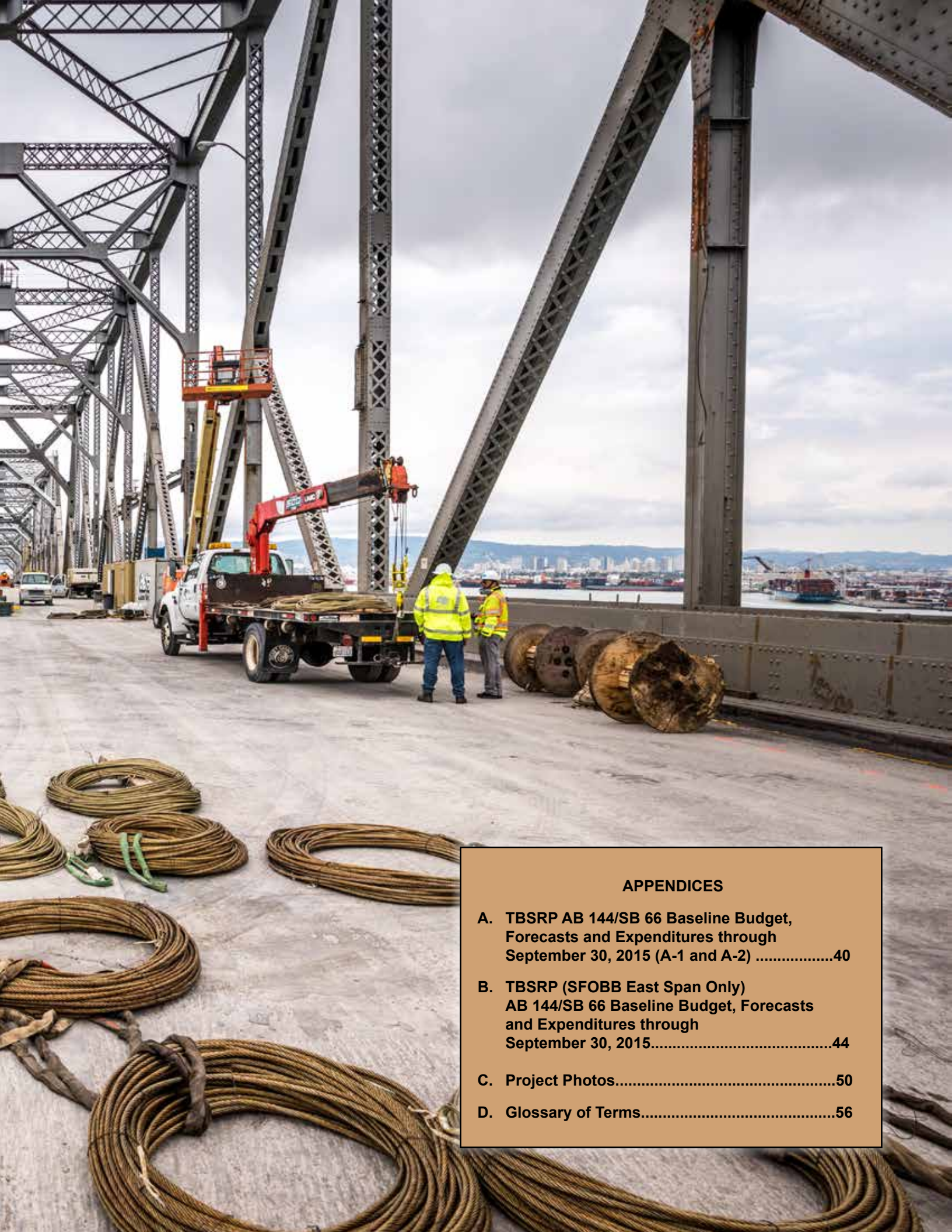
A two-year project to rehabilitate and reconfigure the original Benicia-Martinez Bridge began shortly after the opening of the new Congressman George Miller Bridge. The existing 1.2-mile roadway surface on the steel deck truss bridge was modified to carry four lanes of southbound traffic (one more than 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 Path

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.

Aerial View of Completed 880/92 Interchange Project



APPENDICES

A. TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 (A-1 and A-2) 40

B. TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015.....44

C. Project Photos.....50

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Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions)

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
SFOBB East Span Replacement Project						
Capital Outlay Support	959.3	346.2	1,305.5	1,281.0	1,373.6	68.1
Capital Outlay Construction	4,492.2	597.0	5,089.2	4,790.5	5,256.2	167.0
Other Budgeted Capital	35.1	(32.8)	2.3	0.7	2.3	-
Total	5,486.6	910.4	6,397.0	6,072.2	6,632.1	235.1
SFOBB West Approach Replacement						
Capital Outlay Support	120.0	(1.0)	119.0	119.4	119.4	0.4
Capital Outlay Construction	309.0	41.7	350.7	333.0	338.1	(12.6)
Total	429.0	40.7	469.7	452.4	457.5	(12.2)
SFOBB West Span Retrofit						-
Capital Outlay Support	75.0	(0.2)	74.8	74.9	74.8	-
Capital Outlay Construction	232.9	(5.5)	227.4	230.5	227.4	-
Total	307.9	(5.7)	302.2	305.4	302.2	-
Richmond-San Rafael Bridge Retrofit						
Capital Outlay Support	134.0	(7.0)	127.0	126.7	127.0	-
Capital Outlay Construction	780.0	(90.5)	689.5	668.2	667.5	(22.0)
Total	914.0	(97.5)	816.5	794.9	794.5	-
Benicia-Martinez Bridge Retrofit						-
Capital Outlay Support	38.1	-	38.1	38.1	38.1	-
Capital Outlay Construction	139.7	-	139.7	139.7	139.7	-
Total	177.8	-	177.8	177.8	177.8	-
Carquinez Bridge Retrofit						
Capital Outlay Support	28.7	0.1	28.8	28.8	28.8	-
Capital Outlay Construction	85.5	(0.1)	85.4	85.4	85.4	-
Total	114.2	-	114.2	114.2	114.2	-
San Mateo-Hayward Retrofit						-
Capital Outlay Support	28.1	-	28.1	28.1	28.1	-
Capital Outlay Construction	135.4	(0.1)	135.3	135.3	135.3	-
Total	163.5	(0.1)	163.4	163.4	163.4	-
Vincent Thomas Bridge Retrofit (Los Angeles)						
Capital Outlay Support	16.4	-	16.4	16.4	16.4	-
Capital Outlay Construction	42.1	(0.1)	42.0	42.0	42.0	-
Total	58.5	(0.1)	58.4	58.4	58.4	-
San Diego-Coronado Bridge Retrofit						
Capital Outlay Support	33.5	(0.3)	33.2	33.2	33.2	-
Capital Outlay Construction	70.0	(0.6)	69.4	70.0	69.4	-
Total	103.5	(0.9)	102.6	103.2	102.6	-

Appendix A-1: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
Antioch Bridge						
Capital Outlay Support	-	23.8	23.8	17.4	23.8	-
Capital Outlay Support by BATA				6.2		
Capital Outlay Construction	-	47.0	47.0	47.0	47.0	-
Total	-	70.8	70.8	70.6	70.8	-
Dumbarton Bridge						
Capital Outlay Support	-	46.0	46.0	39.1	45.4	(0.6)
Capital Outlay Support by BATA				6.0		
Capital Outlay Construction	-	68.2	68.2	64.2	68.2	-
Total	-	114.2	114.2	109.3	113.6	(0.6)
Subtotal Capital Outlay Support	1,433.1	407.6	1,840.7	1,815.2	1,908.6	67.9
Subtotal Capital Outlay	6,286.8	657.0	6,943.8	6,605.8	7,076.1	132.3
Subtotal Other Budgeted Capital	35.1	(32.8)	2.3	0.7	2.3	-
Miscellaneous Program Costs	30.0	-	30.0	25.5	30.0	-
Subtotal Toll Bridge Seismic Retrofit Program	7,785.0	1,031.8	8,816.8	8,447.2	9,017.0	200.2
Net Programmatic Risks*	-	-	-	-	78.2	78.2
Program Contingency	900.0	(764.8)	135.2	-	(143.2)	(278.5)
Total Toll Bridge Seismic Retrofit Program [1]	8,685.0	267.0	8,952.0	8,447.2	8,952.0	-

[1] Figures may not sum up to totals due to rounding effects.

[2] Total program cost forecast assumes mitigation of risks.

Appendix A-2: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions)

Bridge	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and encumbrances as of (09/2015) see Note (1)	Estimated costs not yet spent or encumbered as of (09/2015)	Total Forecast as of (09/2015)
a	b	c	d	e	f = d + e
Other Completed Projects					
Capital Outlay Support	144.9	144.6	144.6	-	144.6
Capital Outlay	472.6	471.8	471.9	(0.2)	471.7
Total	617.5	616.4	616.5	(0.2)	616.3
Richmond-San Rafael					
Capital Outlay Support	134.0	127.0	126.8	0.2	127.0
Capital Outlay	698.0	689.5	667.5	-	667.5
Project Reserves	82.0	-	-	-	-
Total	914.0	816.5	794.3	0.2	794.5
West Span Retrofit					
Capital Outlay Support	75.0	74.8	74.8	-	74.8
Capital Outlay	232.9	227.4	227.4	-	227.4
Total	307.9	302.2	302.2	-	302.2
West Approach					
Capital Outlay Support	120.0	119.0	119.4	-	119.4
Capital Outlay	309.0	350.7	332.2	5.9	338.1
Total	429.0	469.7	451.6	5.9	457.5
SFOBB East Span - Skyway					
Capital Outlay Support	197.0	181.2	181.2	-	181.2
Capital Outlay	1,293.0	1,237.2	1,237.3	(0.1)	1,237.2
Total	1,490.0	1,418.4	1,418.5	(0.1)	1,418.4
SFOBB East Span - SAS - Superstructure					
Capital Outlay Support	214.6	483.0	508.8	(0.7)	508.1
Capital Outlay	1,753.7	2,046.8	2,046.1	2.1	2,048.2
Total	1,968.3	2,529.8	2,554.9	1.4	2,556.3
SFOBB East Span - SAS - Foundations					
Capital Outlay Support	62.5	37.6	37.6	-	37.6
Capital Outlay	339.9	301.3	301.3	-	301.3
Total	402.4	338.9	338.9	-	338.9
Small YBI Projects					
Capital Outlay Support	10.6	10.2	10.2	0.4	10.6
Capital Outlay	15.6	15.2	15.2	0.5	15.7
Total	26.2	25.4	25.4	0.9	26.3
YBI Detour					
Capital Outlay Support	29.5	87.7	87.9	(0.2)	87.7
Capital Outlay	131.9	473.3	473.3	-	473.3
Total	161.4	561.0	561.2	(0.2)	561.0
YBI- Transition Structures					
Capital Outlay Support	78.7	127.5	127.5	28.8	156.3
Capital Outlay	299.4	299.4	292.6	31.9	324.5
Total	378.1	426.9	420.1	60.7	480.8

Appendix A-2: TBSRP AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions) Cont.

Contract	AB 144 Baseline Budget	TBPOC Current Approved Budget	Expenditures to date and encumbrances as of (09/2015) see Note (1)	Estimated costs not yet spent or encumbered as of (09/2015)	Total Forecast as of (09/2015)
a	b	c	d	e	f = d + e
Oakland Touchdown					
Capital Outlay Support	74.4	118.5	118.0	2.7	120.7
Capital Outlay	283.8	330.6	329.7	(0.7)	329.0
Total	358.2	449.1	447.7	2.0	449.7
East Span Other Small Projects					
Capital Outlay Support	212.3	197.9	197.9	(0.1)	197.8
Capital Outlay	170.8	141.3	125.6	11.3	136.9
Total	383.1	339.2	323.5	11.2	334.7
Existing Bridge Dismantling					
Capital Outlay Support	79.7	61.9	16.6	57.0	73.6
Capital Outlay	239.2	246.5	158.6	233.8	392.4
Total	318.9	308.4	175.2	290.8	466.0
Antioch Bridge					
Capital Outlay Support	-	23.8	17.4	0.2	17.6
Capital Outlay Support by BATA			6.2	-	6.2
Capital Outlay	-	47.0	47.0	-	47.0
Total	-	70.8	70.6	0.2	70.8
Dumbarton Bridge					
Capital Outlay Support	-	46.0	39.5	(0.1)	39.4
Capital Outlay Support by BATA			6.0	-	6.0
Capital Outlay	-	68.2	64.7	3.5	68.2
Total	-	114.2	110.2	3.4	113.6
Miscellaneous Program Costs	30.0	30.0	25.5	4.5	30.0
Total Capital Outlay Support	1,463.2	1,870.7	1,845.9	92.7	1,938.6
Total Capital Outlay	6,321.8	6,946.1	6,790.4	288.0	7,078.4
Program Total [1]	7,785.0	8,816.8	8,636.3	380.7	9,017.0

(1) Total Capital Outlay Support includes program indirect costs.
(2) BSA provided a distribution of program contingency in December 2004 based on Bechtel Infrastructure Corporation input. This column is subject to revision upon completion of Caltran's risk assessment update.
(3) Construction administration of the OTD Detour is under the YBITS1 contract. Encumbrance is included in YBITS1 contract.
(4) Construction administration of the cantilever segment is under the YBITS2 contract. Encumbrance is included in YBITS2 contract.

(Due to the rounding of numbers, the totals above are shown within $0.02)

[1] 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 September 30, 2015 ($ Millions)

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
San Francisco-Oakland Bay Bridge East Span Replacement Project						
East Span - SAS Superstructure						
Capital Outlay Support	214.6	268.4	483.0	504.9	508.1	25.1
Capital Outlay Construction	1,753.7	293.1	2,046.8	1,980.7	2,048.2	1.4
Total	1,968.3	561.5	2,529.8	2,485.6	2,556.3	26.5
SAS W2 Foundations						
Capital Outlay Support	10.0	(0.8)	9.2	9.2	9.2	-
Capital Outlay Construction	26.4	0.1	26.5	26.5	26.5	-
Total	36.4	(0.7)	35.7	35.7	35.7	-
YBI South/South Detour						
Capital Outlay Support	29.4	58.3	87.7	87.9	87.7	-
Capital Outlay Construction	131.9	341.4	473.3	473.3	473.3	-
Total	161.3	399.7	561.0	561.2	561.0	-
East Span - Skyway						
Capital Outlay Support	197.0	(15.8)	181.2	181.2	181.2	-
Capital Outlay Construction	1,293.0	(55.8)	1,237.2	1,235.6	1,237.2	-
Total	1,490.0	(71.6)	1,418.4	1,416.8	1,418.4	-
East Span - SAS E2/T1 Foundations						-
Capital Outlay Support	52.5	(24.1)	28.4	28.4	28.4	-
Capital Outlay Construction	313.5	(38.7)	274.8	274.8	274.8	-
Total	366.0	(62.8)	303.2	303.2	303.2	-
YBI Transition Structures (see notes below)						
Capital Outlay Support	78.7	48.8	127.5	127.0	156.3	28.8
Capital Outlay Construction	299.3	0.1	299.4	247.5	324.5	25.1
Total	378.0	48.9	426.9	374.5	480.8	53.9
* YBI- Transition Structures						
Capital Outlay Support			16.4	16.4	16.4	-
Capital Outlay Construction			-	-	-	-
Total			16.4	16.4	16.4	-
* YBI- Transition Structures Contract No. 1						
Capital Outlay Support			72.1	69.7	70.7	(1.4)
Capital Outlay Construction			203.7	201.7	202.9	(0.8)
Total			275.8	271.4	273.6	(2.2)
* YBI- Transition Structures Contract No. 2						
Capital Outlay Support			38.0	40.7	68.2	30.2
Capital Outlay Construction			92.4	45.7	118.3	25.9
Total			130.4	86.4	186.5	56.1
* YBI- Transition Structures Contract No. 3 Landscape						
Capital Outlay Support			1.0	0.1	1.0	-
Capital Outlay Construction			3.3	-	3.3	-
Total			4.3	-	4.3	-

Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
Oakland Touchdown (see notes below)						
Capital Outlay Support	74.4	44.1	118.5	118.7	120.7	2.2
Capital Outlay Construction	283.8	46.8	330.6	317.6	329.0	(1.6)
Total	358.2	90.9	449.1	436.3	449.7	0.6
* OTD Prior-to-Split Costs						
Capital Outlay Support			21.7	20.0	20.1	(1.6)
Capital Outlay Construction			-	-	-	-
Total			21.7	20.0	20.1	(1.6)
* OTD Submarine Cable(1)						
Capital Outlay Support			0.9	0.9	0.9	-
Capital Outlay Construction			5.7	5.7	5.7	-
Total			6.6	6.6	6.6	-
* OTD No. 1 (Westbound)						
Capital Outlay Support			51.3	51.2	51.2	(0.1)
Capital Outlay Construction			205.3	202.8	205.3	-
Total			256.6	254.0	256.5	(0.1)
* OTD No. 2 (Eastbound)						
Capital Outlay Support			35.0	37.9	38.5	3.5
Capital Outlay Construction			72.6	62.3	71.1	(1.5)
Total			107.6	100.2	109.6	2.0
* OTD Touchdown 2 Detour(2)						
Capital Outlay Support			8.1	8.0	8.5	0.4
Capital Outlay Construction			47.0	46.7	46.9	(0.1)
Total			55.1	54.7	55.4	0.3
* OTD Electrical Systems						
Capital Outlay Support			1.5	0.8	1.5	-
Capital Outlay Construction			-	-	-	-
Total			1.5	0.8	1.5	-
Existing Bridge Dismantling						
Capital Outlay Support	79.7	(17.8)	61.9	15.8	73.6	11.7
Capital Outlay Construction	239.2	7.3	246.5	94.1	392.4	145.9
Total	318.9	(10.5)	308.4	109.9	466.0	157.6
* Bridge Dismantling Prior-to-Split Cost						
Capital Outlay Support			3.9	3.9	3.9	
Capital Outlay Construction			-	-	-	
Total			3.9	3.9	3.9	
* Cantilever Section						
Capital Outlay Support			17.0	1.6	1.6	
Capital Outlay Construction			69.0	62.9	64.9	
Total			86.0	64.5	66.5	
* 504/288 Sections						
Capital Outlay Support			21.0	5.2	23.9	
Capital Outlay Construction			103.5	22.4	109.6	
Total			124.5	27.6	133.5	

Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
*Marine Foundations						
Capital Outlay Support			20.0	2.3	44.2	
Capital Outlay Construction			-	8.9	217.8	
Total			20.0	11.2	262.0	
Sunk Cost for Marine Foundation			-	2.8	2.8	
Pier-3 Demonstration Project						
Capital Outlay Support			-	1.0	6.3	
Capital Outlay Construction			18.5	8.9	24.1	
Total			18.5	9.9	30.4	
Remaining Marine Foundations[2]						
Capital Outlay Support			-	1.3	35.1	
Capital Outlay Construction			-	-	193.7	
Total			-	1.3	228.8	
YBI/SAS Archeology						
Capital Outlay Support	1.1	-	1.1	1.1	1.1	-
Capital Outlay Construction	1.1	-	1.1	1.1	1.1	-
Total	2.2	-	2.2	2.2	2.2	-
YBI - USCG Road Relocation						
Capital Outlay Support	3.0	(0.3)	2.7	2.7	3.0	0.3
Capital Outlay Construction	3.0	(0.2)	2.8	2.8	3.0	0.2
Total	6.0	(0.5)	5.5	5.5	6.0	0.5
YBI - Substation and Viaduct						
Capital Outlay Support	6.5	(0.1)	6.4	6.4	6.5	0.1
Capital Outlay Construction	11.6	(0.3)	11.3	11.3	11.6	0.3
Total	18.1	(0.4)	17.7	17.7	18.1	0.4
Oakland Geofill						-
Capital Outlay Support	2.5	-	2.5	2.5	2.5	-
Capital Outlay Construction	8.2	-	8.2	8.2	8.2	-
Total	10.7	-	10.7	10.7	10.7	-
Pile Installation Demonstration Project						
Capital Outlay Support	1.8	-	1.8	1.8	1.8	-
Capital Outlay Construction	9.3	(0.1)	9.2	9.3	9.3	-
Total	11.1	(0.1)	11.0	11.1	11.1	-
Stormwater Treatment Measures						
Capital Outlay Support	6.0	2.2	8.2	8.2	8.2	-
Capital Outlay Construction	15.0	3.3	18.3	16.9	17.3	(1.0)
Total	21.0	5.5	26.5	25.1	25.5	(1.0)
Right-of-Way and Environmental Mitigation						
Capital Outlay Support	-	-	-	-	-	-
Capital Outlay & Right-of-Way	72.4	-	72.4	60.0	69.0	(3.4)
Total	72.4	-	72.4	60.0	69.0	(3.4)

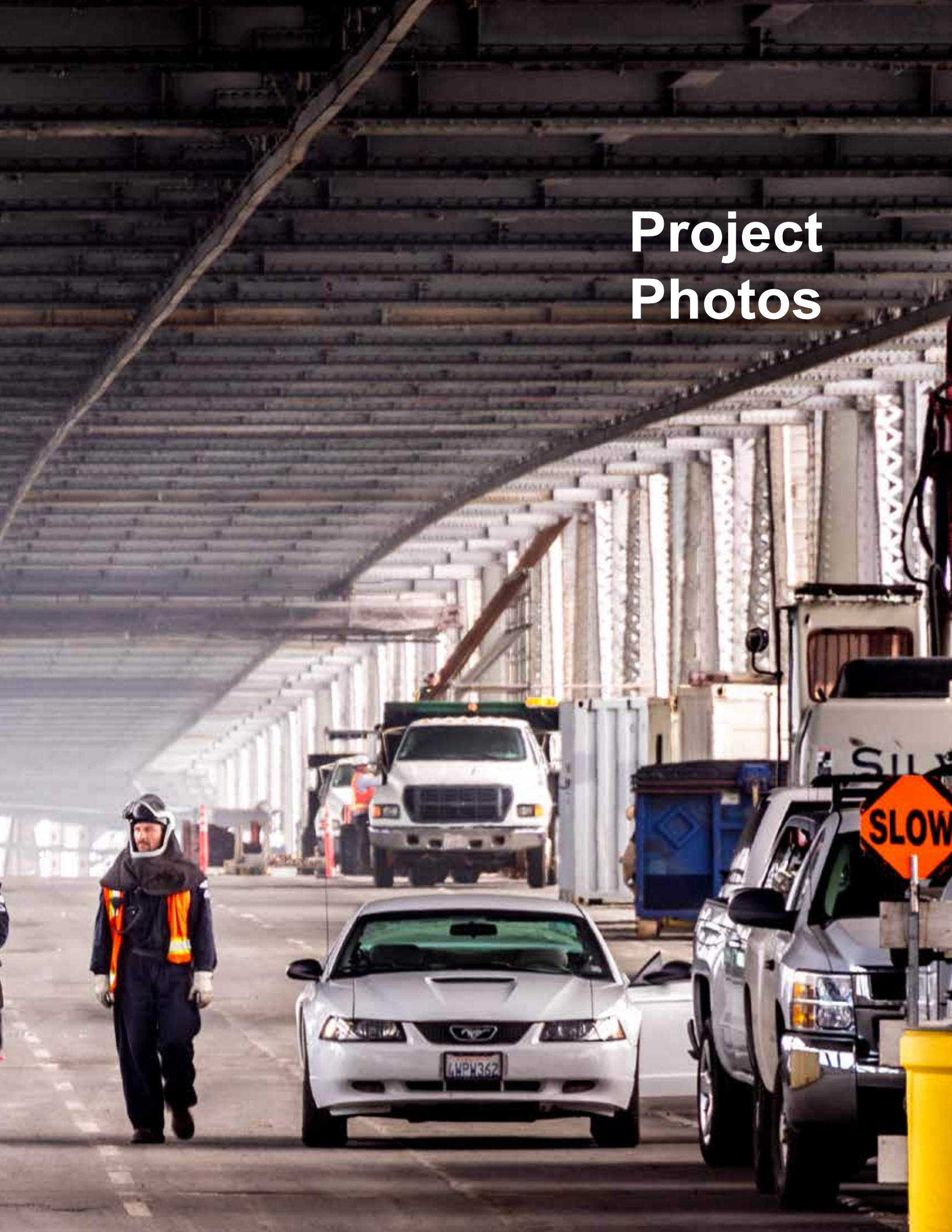
Appendix B: TBSRP (SFOBB East Span Only) AB 144/SB 66 Baseline Budget, Forecasts and Expenditures through September 30, 2015 ($ Millions) Cont.

Contract	AB 144 / SB 66 Budget (07/2005)	Approved Changes	Current Approved Budget (09/2015)	Cost to Date (09/2015)	Cost Forecast (09/2015)	At-Completion Variance
a	c	d	e = c + d	f	g	h = g - e
Sunk Cost - Existing East Span Retrofit						
Capital Outlay Support	39.5	-	39.5	39.5	39.5	-
Capital Outlay Construction	30.8	-	30.8	30.8	30.8	-
Total	70.3	-	70.3	70.3	70.3	-
Other Capital Outlay Support						
Environmental Phase	97.7	0.1	97.8	97.8	97.7	(0.1)
Pre-Split Project Expenditures	44.9	-	44.9	44.9	44.9	-
Non-Project Specific Costs	20.0	(16.8)	3.2	3.2	3.2	-
Total	162.6	(16.7)	145.9	145.9	145.8	(0.1)
Subtotal Capital Outlay Support	959.3	346.2	1,305.5	1,281.0	1,373.6	68.1
Subtotal Capital Outlay Construction	4,492.2	597.0	5,089.2	4,790.5	5,256.2	167.0
Other Budgeted Capital	35.1	(32.8)	2.3	0.7	2.3	-
Total SFOBB East Span Replacement Project	5,486.6	910.4	6,397.0	6,072.2	6,632.1	235.1

[1] Figures may not sum up to totals due to rounding effects.
[2] The forecast shown for the remaining marine foundation contract is the implosion alternative. For the conventional alternative, the forecast is $254.3 million.

Demolition Workers on a Section of the East Span of the Former Oakland-San Francisco Bay Bridge

Project Photos

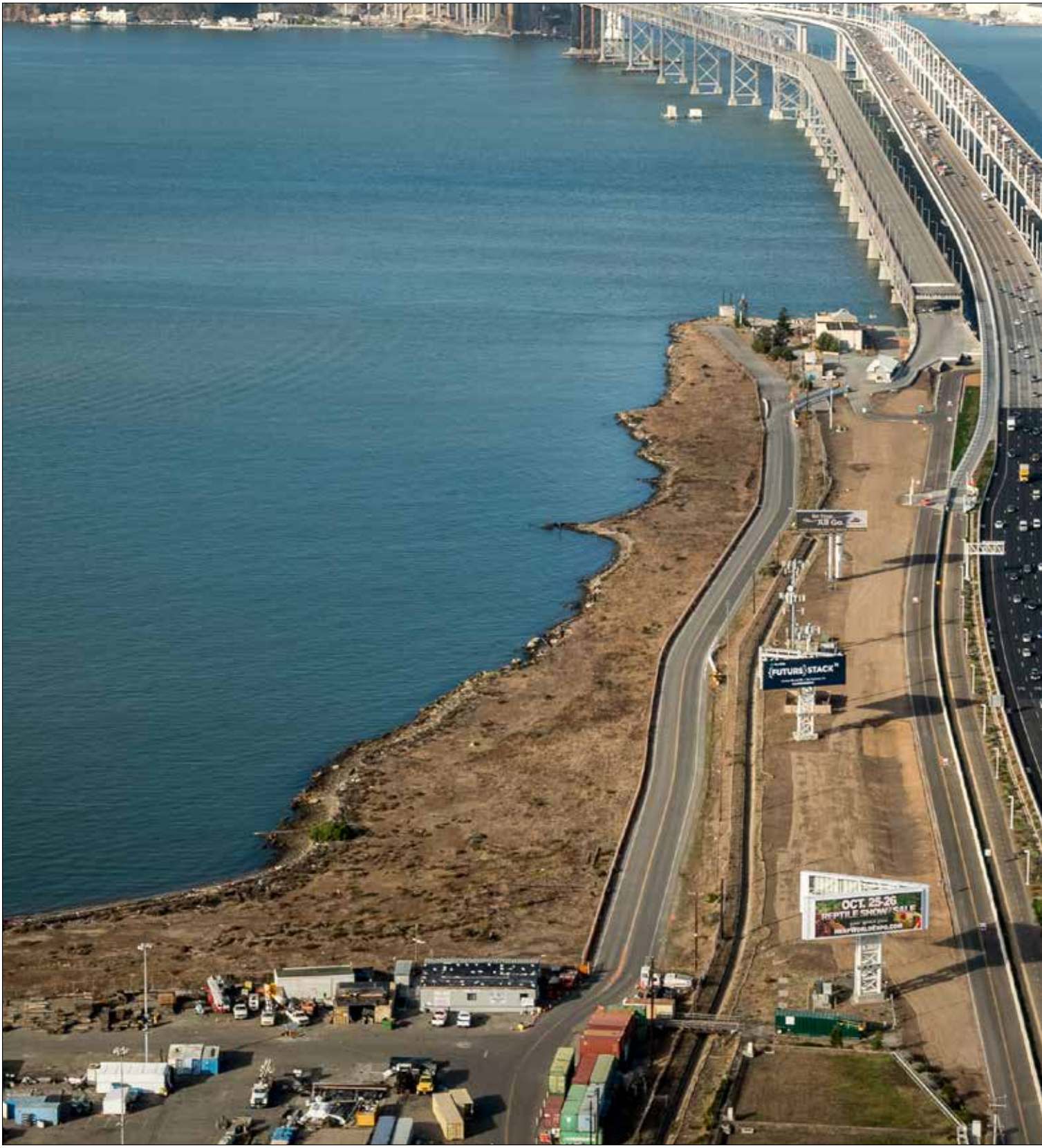


Appendix E: Project Progress Photographs

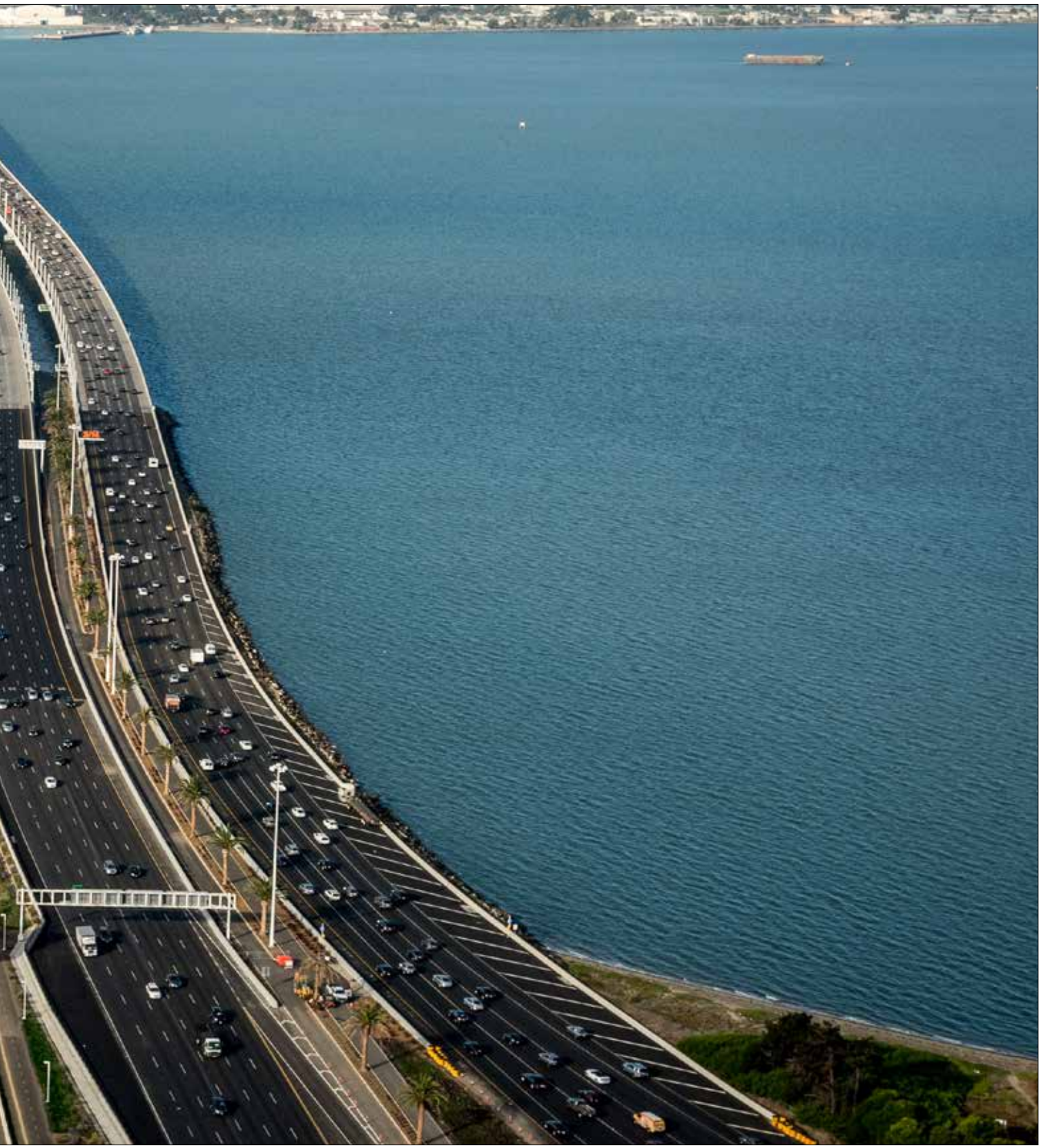
Self-Anchored Suspension Bridge (SAS)

Appendix E: Project Progress Photographs

Oakland Touchdown (OTD)



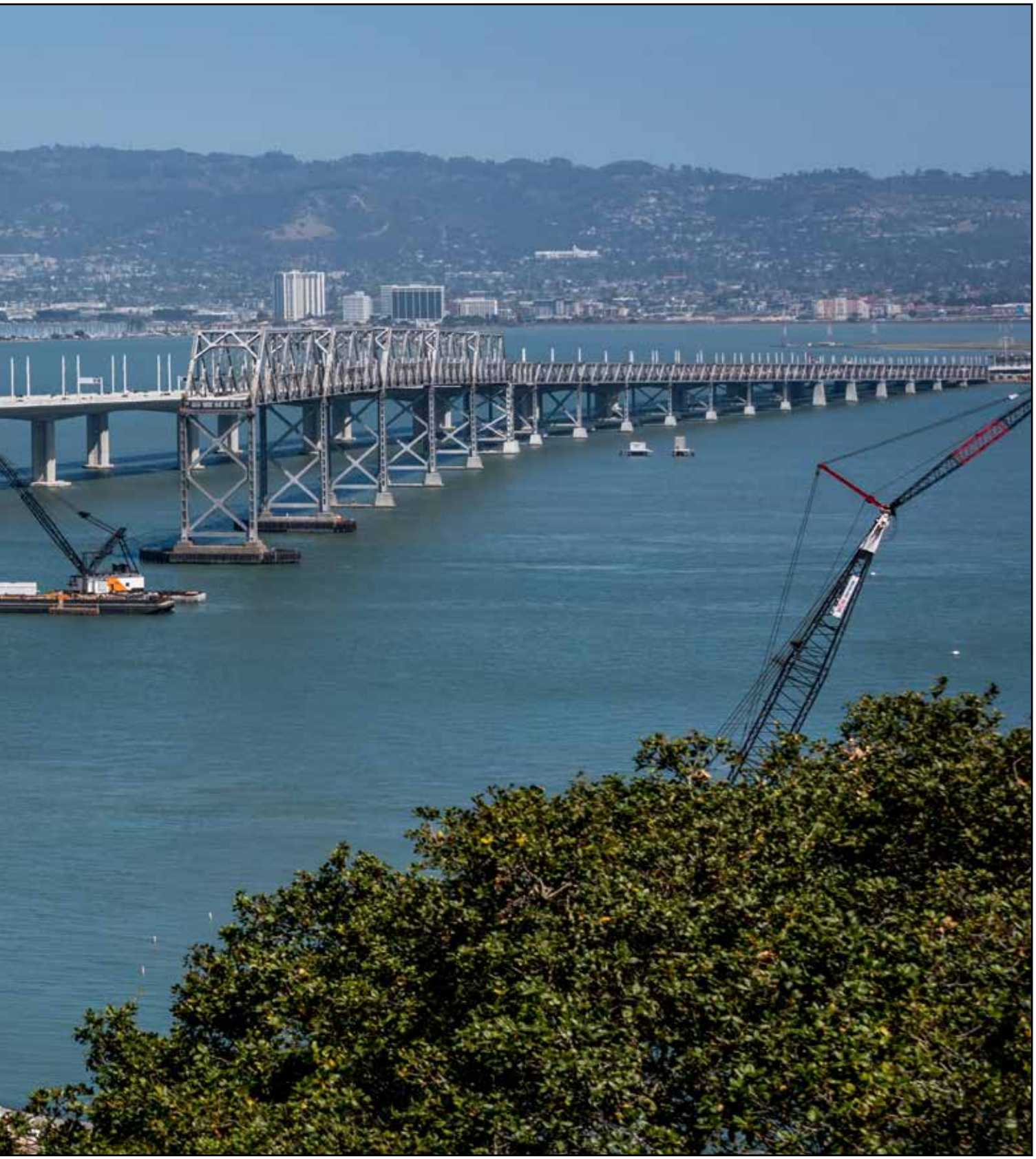
Aerial View of Oakland Touchdown Construction



Appendix E: Project Progress Photographs

Yerba Buena Island Transition Structure (YBITS)

Yerba Buena Island Transition Structures Demolition Progress on right with the New Self-Anchored Suspension Span of the San Francisco-Oakland Bay Bridge on left Looking east toward Oakland



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.

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

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.

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

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.

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

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.

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

CURRENT APPROVED BUDGET: The sum of the AB 144/SB 66 Budget or BATA Budget and Approved Changes.

HINGE PIPE BEAMS: Pipes between roadway sections designed to move within their sleeves during expansion or contraction of the decks during minor events, such as changes in temperature. The beams are designed to absorb the energy of an earthquake by deforming in their middle or “fuse” section. Hinge pipe beams are also found at the western piers where the SAS connects to the YBITS (Hinge “K” pipe beams).

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) on the Toll Bridge Seismic Retrofit and Regional Measure 1 Programs.

The Skyway of the New San Francisco-Oakland Bay Bridge from the Surface of the Bay with the Dismantling of the Former Bridge on the right