BAY AREA TOLL AUTHORITY

Toll Bridge Program Report

February 2023

Contents

Introduction

This is the second Toll Bridge Program report which presents updates on the conditions of the San Francisco Bay Area's seven state-owned toll bridges. The first report of this kind was presented in April 2022. The Bay Area Toll Authority (BATA) and the California Department of Transportation (Caltrans) work together to continually monitor the toll bridges to preserve their integrity and reliability.

BATA manages the toll revenues from the Bay Area's seven state-owned bridges. BATA also manages the region's FasTrak® electronic toll payment system. Caltrans owns and operates the seven state-owned toll bridges in the Bay Area. Caltrans is also responsible for designing, building, and maintaining the state's highway system.

Summary of Bridge Evaluation Ratings

The San Francisco Bay Area's seven state-owned toll bridges are monitored continually to determine the need for repair, rehabilitation, or replacement to preserve their integrity and reliability. The conditions of these toll bridges must be constantly evaluated for safety, performance, condition, and vulnerabilities to make good investment decisions in the face of limited funding. Caltrans' Structure Maintenance and Investigations (SM&I) unit is responsible for managing the Bay Area's toll bridges, and for inspecting and recording the conditions of these bridges according to state and federal regulations. A comprehensive, regenerated condition database is essential for efficiently managing the Bay Area's toll bridges.

Federal regulations set the requirements for inspection procedures, inspection frequency, personnel qualifications, inspection reports, and preparation and maintenance of the state bridge inventory. National Bridge Inspection Standards (NBIS) are applied to all structures defined as bridges located on public roads, and Caltrans' SM&I division is responsible for applying these standards and reporting them to the Federal Highway Administration (FHWA). A bridge condition rating is given for each bridge's deck, superstructure, and substructure; the lowest rating of these three determines the bridge's overall "Bridge Condition" rating. If the lowest rating is greater than or equal to 7, the bridge is classified as Good; if it is less than or equal to 4, the classification is Poor. Bridges rated 5 or 6 are classified as Fair.

The seven state-owned toll bridges in the Bay Area include 10 separate structures, with the San Francisco-Oakland Bay Bridge, the Benicia-Martinez Bridge, and the Carquinez Bridge each featuring a two-bridge configuration. Because these structures operate in a maritime environment with exposure to weather, salt water, and normal wear and tear, the bridges need proactive maintenance and rehabilitation. BATA, in collaboration with Caltrans, has developed and budgeted for a significant annual maintenance and a detailed rehabilitation program, which included over $137 million in budgeted rehabilitation expenditures in Fiscal Year (FY) 2022 alone. Nine of the 10 bridge structures have been deemed in fair or better condition, and BATA and Caltrans remain focused on maintaining and improving the quality of these assets. It is important to note that the FHWA bridge condition rating is not a safety rating, but a tool to help record and track deterioration and prioritize projects and funding. Safety determinations are made by Caltrans Maintenance Engineers who

continuously monitor the bridges. Any structural safety deficiency is addressed at time of discovery. The Bay Area's seven state-owned toll bridges are rated as follows:

Table 1 Overall condition ratings for Bay Area state-owned toll bridges

Bridge	Overall Rating	Bridge Condition
Antioch Bridge	7	Good Condition
Benicia-Martinez Northbound (NB) Bridge	7	Good Condition
Benicia-Martinez Southbound (SB) Bridge	5	Fair Condition
Carquinez Eastbound (EB) Bridge	5	Fair Condition
Carquinez Westbound (WB) Bridge	5	Fair Condition
Dumbarton Bridge	6	Fair Condition
Richmond-San Rafael Bridge	5	Fair Condition
San Francisco Oakland Bay Bridge – East Span	7	Good Condition
San Francisco Oakland Bay Bridge – West Span	5	Fair Condition
San Mateo-Hayward Bridge	4	Poor Condition - *Deterioration on substructure is consistent with the age of the structure and the marine environment. Repairs to concrete on trestle are underway and expected to raise the condition rating by 2024*

Background

The following subsections will provide a short background on the bridge inspection procedures, performance measures, condition ratings, asset management and potential risks.

Bridge Investigations

Caltrans' Structure Maintenance and Investigation (SM&I) unit is responsible for managing the Bay Area's seven state-owned toll bridges. This unit leads the effort for inspecting bridges, recording condition data, performing load rating analysis, and preserving these bridges. The SM&I unit performs routine and specialty inspections according to state and federal guidelines. Bridge inspections are conducted in compliance with:

- Code of Federal Regulations (CFR).
- National Bridge Inspection Standards (NBIS).
- FHWA National Bridge Inspection Program (NBIP) metrics.
- AASHTO Inspection, Evaluation and Load Rating procedures.
- Internal asset management requirements.

Bridge structures are regularly inspected by SM&I Area Bridge Maintenance Engineers at a maximum interval of 24 to 48 months, and whenever needed. Specialty inspections are performed when the bridge meets specialty criteria, such as fracture critical, underwater, or scour protection. During a routine inspection, a registered engineer will perform element-level inspections of all structural members of the deck, superstructure, and substructure of the bridge. The registered engineer will document the condition of each structural member according to the guidelines provided in the Caltrans Bridge Element Inspection Manual. During a specialty inspection, a registered engineer is responsible for performing inspections of those bridge elements identified with specialized requirements. The photographs in Figure 1 show the SM&I team performing inspection activities.

Additionally, hands-on inspections with appropriate Non-Destructive Testing (NDT) may be performed as part of a specialty inspection. Such inspections may prompt additional testing as required to determine the integrity of bridge structural elements. If an inspection activity identifies a significant deficiency with any of the bridge's structural elements, specialized analysis and Load Ratings may be performed to reestablish the safe load capacity of that bridge element. Bridge inspection staff are trained regularly on the best practices for addressing condition defects found during the inspection process. Further inspection activity may occur as needed to determine the condition of the bridge. This may include post-event inspections (i.e., collision damage, earthquake, fire, etc.) where SM&I emergency response plan and damage response protocols are established.

Figure 1 The SM&I team performing Inspection Activities

Figure 1-A: Rope access technique to assess details of paint

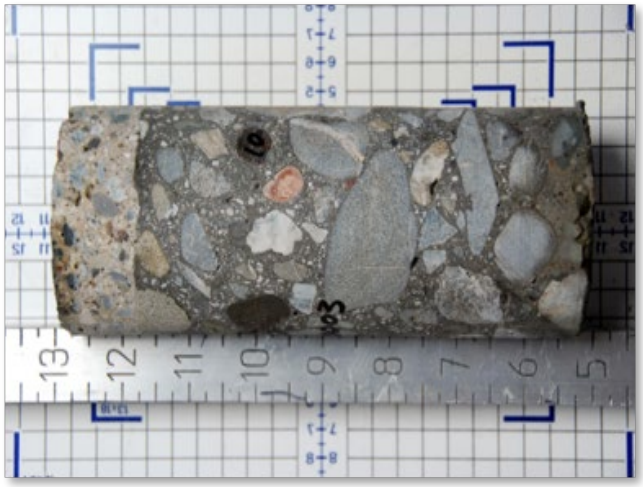


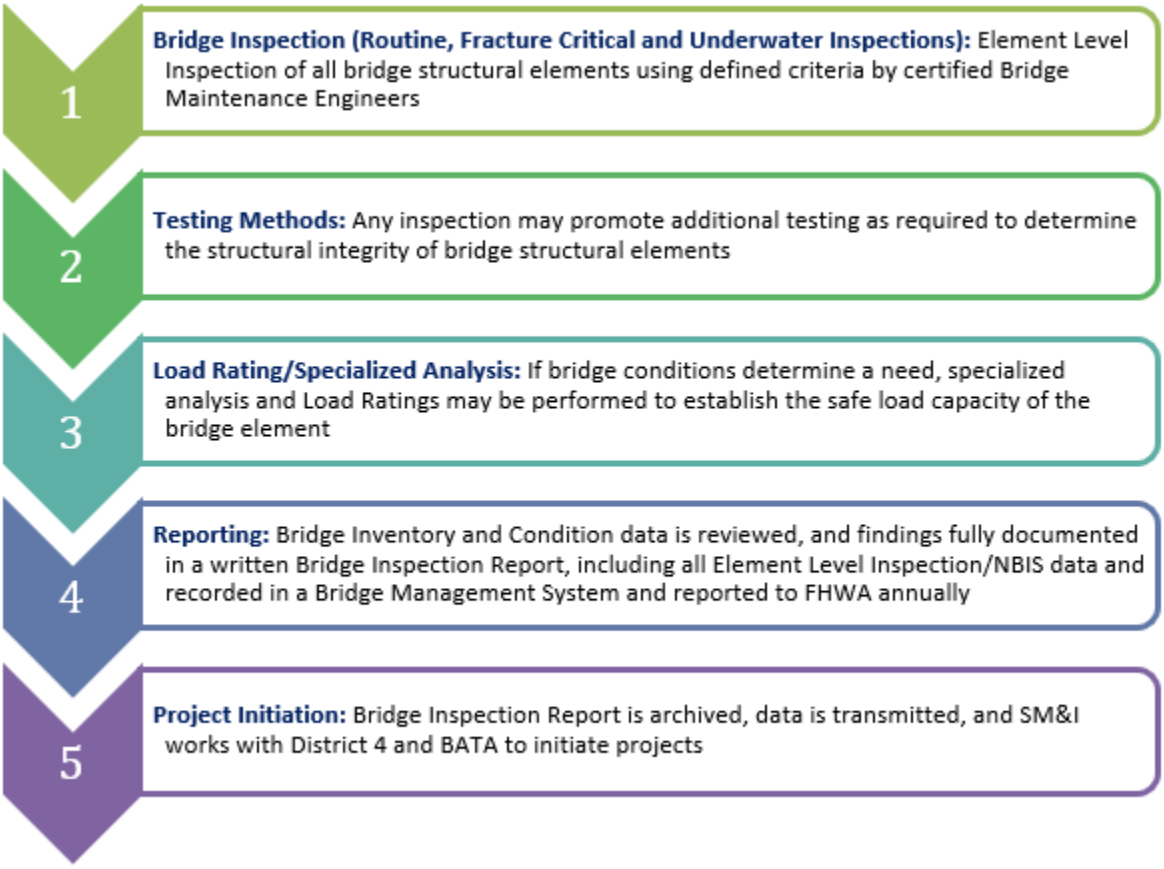
Figure 1-B: Core samples to evaluate concrete reinforcing steel

Figure 1-C: Bridge underwater inspection

Figure 1-D: Physically measuring flatness

The result of every bridge inspection (whether routine or specialty) is documented in a formal Bridge Inspection Report that is signed and sealed (with an engineer's stamp) and archived in the state-managed Bridge Inspection Report Information System (BIRIS) for historical purposes. Bridge inspection data is reported to the Federal Highway Administration annually in compliance with mandated inspection and reporting requirements. All data collected during the inspection process is documented and maintained in the Structural Maintenance Automated Report Transmittal (SMART) bridge management system. Maintaining quality data is considered the cornerstone to assuring the safety and integrity of these bridges. Based on the inspection data, the SM&I unit makes structure work repair recommendations, which in turn drive maintenance and rehabilitation projects. The SM&I unit also is responsible for delivering plans, specifications and estimates for bridge maintenance projects, and for determining the safe load capacity of all bridges. Figure 2 shows a schematic diagram that summarizes the bridge management process.

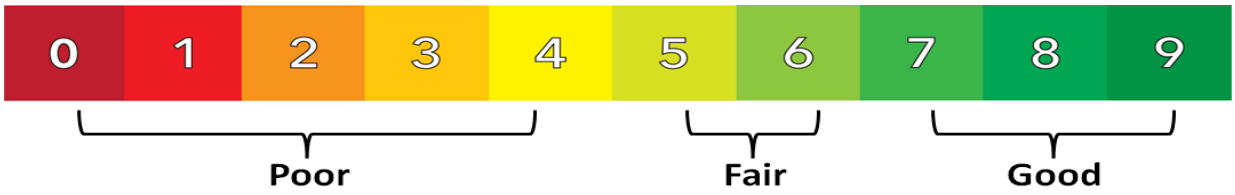
Figure 2 Bridge Management at Work: Inspection, Reporting, and Project Initiation



Bridge Performance Measures

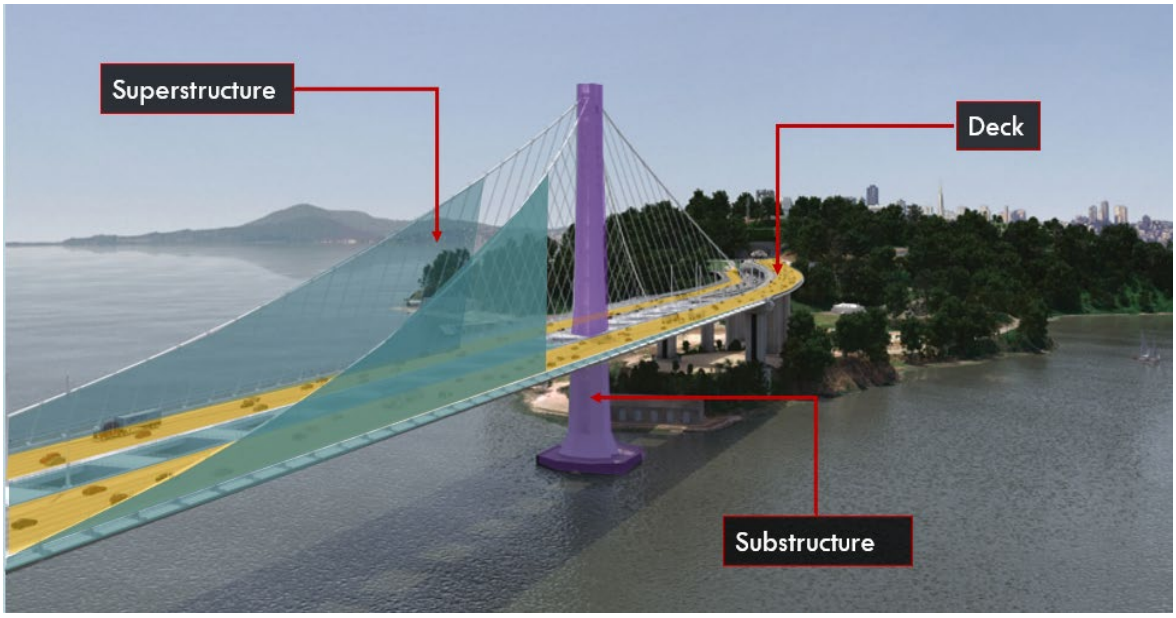
Caltrans and local agencies follow FHWA NBI standards for inspecting all California bridges. Caltrans' Area Bridge Maintenance Engineers, who are part of the agency's SM&I unit, perform inspections for all Caltrans bridges and many of California's local agencies owned bridges. Inspectors record overall ratings for a bridge's deck, superstructure, and substructure on a scale from zero (worst condition) to nine (best condition). Bridge condition ratings are used to classify a bridge as being in good, fair, or poor condition. The lowest of the three ratings for deck, superstructure, and substructure determines the overall rating of the bridge. If this value is seven or greater, the bridge has minimal wear to minor problems and is classified as being in good condition. If it is five or six, the bridge is classified as being in fair condition and the bridge may show signs of minor deterioration. If the rating is four or less, the bridge is classified as being in poor condition, which indicates that the bridge has advanced deficiencies and may require an accelerated repair or potential immediate action to fix the issue. It is important to note that the FHWA bridge condition rating is not a safety rating, but a tool to help record and track deterioration and prioritize projects and funding. Safety determinations are made by Caltrans Maintenance Engineers who continuously monitor the bridges. Any structural safety deficiency is addressed at time of discovery. The NBI rating scale and the associated condition states are shown in Figure 3.

Figure 3 NBI Ratings for Bridge Conditions



A graphical depiction of the three bridge components is shown in Figure 4. The bridge deck is the portion of the bridge that directly carries the traffic (i.e., road surface). The substructure is the portion of the bridge that supports the superstructure and transmits all the bridge loads to the ground. The superstructure is the portion of the bridge that supports the deck and connects the substructure parts together as it carries loads from the deck to the substructure. Caltrans performs element-level inspections on all three main bridge components, which provide additional detail on what portions of a bridge may be deteriorated. The results of the element-level inspections are used to derive the NBI deck, superstructure, and substructure ratings.

Figure 4 The Three Bridge Main Components



Asset Management

The United States Code (23 U.S. Code § 101) defines transportation asset management as "a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost."

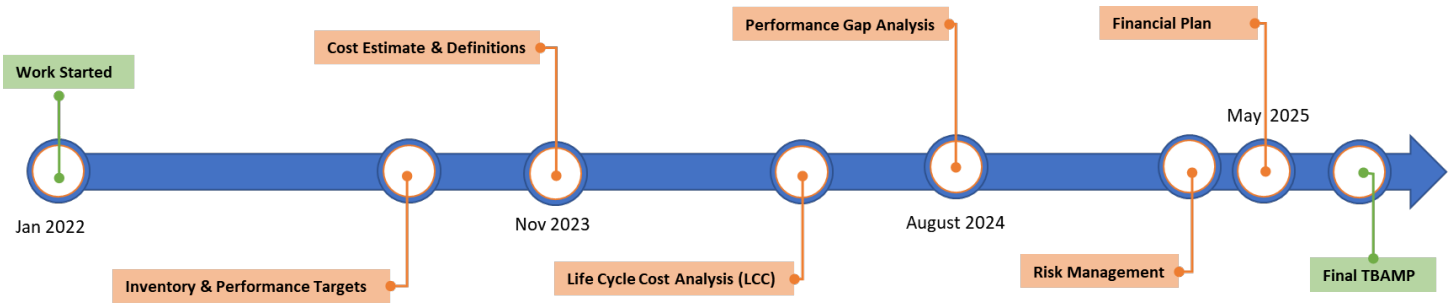
Asset management best practices emphasize the use of performance management for transportation programs, shifting the decision-making framework towards data-driven, proactive, goal-oriented investment choices. BATA and Caltrans have long recognized the importance of asset management in maintaining and preserving

the integrity of toll bridges in the Bay Area to drive investment decisions. In the spring of 2021, BATA and Caltrans joined efforts to develop an exclusive Toll Bridge Asset Management Plan (TBAMP) that is catered to the needs of these kinds of complex structures. This initiative is a continuation of previous efforts between Caltrans and its transportation partners to establish the California Transportation Asset Management Plan (TAMP)[1].

The new TBAMP, which is currently in the development process, will utilize asset performance measures and targets to guide BATA and Caltrans towards short and long-term objectives and to define future investments. With the allocation of $ 12 million over 3 fiscal years, it is anticipated that the final TBAMP will be ready by May 2025.

Figure 5 shows the working timeframe and the various milestones to develop the asset management plan. The asset inventory and performance targets will describe the condition of toll bridges based on the performance measures described earlier. It will also include a description of the potential performance targets or objectives that Caltrans and BATA are willing to achieve in the short and the long term. The cost estimates and definition milestone will define the required costs and other aspects related to toll bridges that may influence the planning process such as importance to regional travel and agencies' roles and responsibilities. The Life Cycle Cost Analysis (LCCA) will describe the required maintenance and rehabilitation methods that define the roadmap to achieve the assigned performance targets. The performance gap analysis will identify the disparities between the actual and the targeted scenarios, regardless of whether they are financial or performance in nature. The risk management milestone will identify the various risks that may affect the bridges' performance and the potential remedies to alleviate the effects of these risks. Finally, the financial plan will identify the available revenue and financial projections that are required to achieve the asset management objectives.

Figure 5 Asset Management Timeline



[1] California Transportation Asset Management Plan (TAMP) (2022). https://dot.ca.gov/programs/asset-management/california-transportation-asset-management-plan

Risks to the System

Managing transportation assets entails managing risk. Potential risks can range from day-to-day concerns, such as assets that deteriorate faster than expected or projects that cost more than budgeted, to the potentially catastrophic risks of asset failure caused by factors such as natural disasters. Detailed risk analysis is part of the long-term asset management work Caltrans and BATA are undertaking to better characterize and help reduce or avoid risk to the transportation system.

The following sections of the report present each of the Bay Area's seven state-owned toll bridges, and include a description, a status, NBIS Structural Health Summary and a list of programmed key projects.

Antioch Bridge

Overview

Location	State Route 160 between Contra Costa and Sacramento counties
Structure	Deck on Steel Plate Girder
Length	1.8 miles
Year Opened	Original structure: 1926 New structure: 1978
Last Seismic Retrofit	2013

Description

The Antioch Bridge spans the San Joaquin River, connecting northeastern Contra Costa County with Sacramento County. The 1.8-mile bridge features a concrete deck atop a steel plate girder system and opened to traffic in 1978. After Caltrans and the Bay Area Toll Authority evaluated the seismic safety of the Antioch Bridge, a 2013 seismic retrofit project was competed to make the bridge safer during a major earthquake.

NBIS Structural Health Summary

Status

The structural components of the Antioch bridge are in good overall condition. The bridge deck is in fair to good condition with signs of wear to the concrete surface. The bridge substructure is in good condition, with deterioration limited to surface cracks. The bridge's superstructure, constructed of weathering steel, is in similarly good condition. Several elements of the bridge superstructure were replaced, and an additional

substructure bracing was added as part of the 2013 seismic retrofitting contract. The following table summarizes the planned projects according to the FY24 BATA Capital Improvement Plan (CIP):

Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Replace Fender System	FY25/26	$3 Million
Navigational Lights- Upgrade to LED	FY32/33	$1 Million
Substations Upgrade (2 Locations)	FY31/32	$5 Million
Replace Power Cable (480V)	FY31/32	$3 Million
TOS Elements	FY32/33	$1 Million

Benicia-Martinez Bridge

Overview

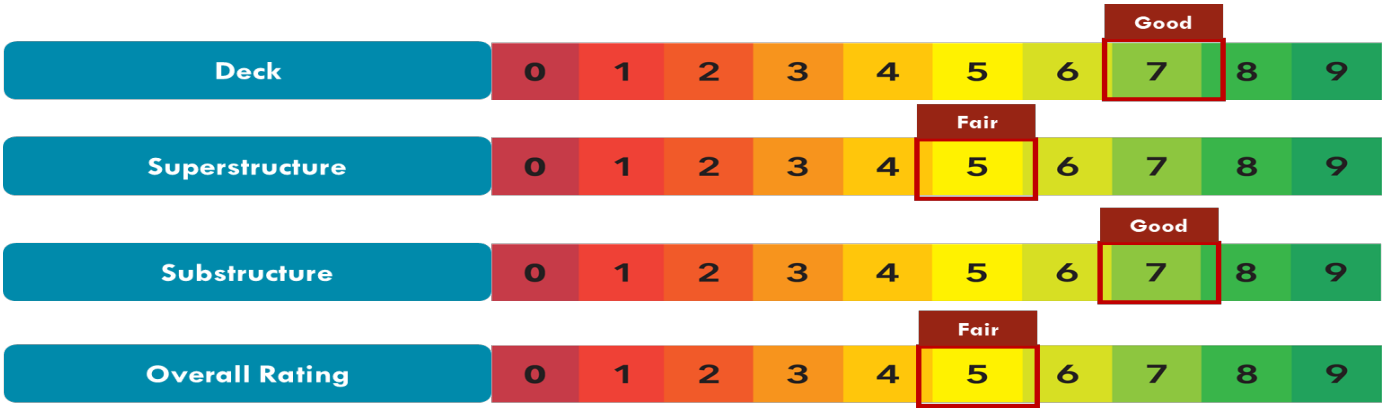
Location	Interstate 680 between Solano and Contra Costa counties
Structure	Southbound - Deck on Steel Truss Northbound - Concrete Cast-in-Place Segmental
Length	1.2 miles
Year Opened	Southbound - 1962 Northbound - 2007
Last Seismic Retrofit	Southbound - 2009

Description

The Benicia-Martinez Bridge traverses the Carquinez Strait, carrying Interstate 680 between Solano and Contra Costa Counties. The 1.2-mile-long deck on steel truss structure was built in 1962, widened in 1991 and converted to southbound only traffic in 2009. In 2007, a second span was constructed adjacent to the original bridge to carry northbound only traffic.

NBIS Structural Health Summary

Southbound



Northbound

Status

The structural components of both the northbound and southbound Benicia-Martinez Bridge structures generally are in fair to good condition. The bridge deck is in good condition with signs of spalling and delamination which are being monitored and repaired as part of the ongoing routine maintenance work. The bridge's substructure is in overall good condition with some shrinkage cracks in the bridge towers.

While the superstructure of the northbound bridge is in good condition, the southbound superstructure is in fair condition, with the deck truss along the floor beams showing signs of deterioration which is being monitored. The following tables summarizes the planned projects according to the FY24 BATA Capital Improvement Plan (CIP):

Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Replace Joint Seals (1962) and Expansion Joints Repair, Reconstruct Seismic Joints (New Bridge), Bearing Repair, Approach Bent Cap Repair	FY25/26	$8 Million
Modify Existing Garage Fence and Repair Fire Proofing Material	FY24/25	$1 Million
Upgrade toll plaza, parking and roadway lighting to LED	FY31/32	$2 Million
Replace 480V power cable, utility transformers and utility panels (Southbound)	FY31/32	$9 Million
TOS Elements	FY31/32	$5 Million

Carquinez Bridge

Overview

Location	Interstate 80 between Solano and Contra Costa counties
Structure	Eastbound - Steel cantilever through truss Westbound - Suspension span with concrete towers
Length	Eastbound - 0.8 miles Westbound - 0.7 miles
Year Opened	Original: 1927 (replaced) Eastbound: 1958 Westbound: 2003
Last Seismic Retrofit	Eastbound - 2001

Description

The Carquinez Bridge is a two-bridge system, measuring 0.7 and 0.8 miles long, respectively that carries Interstate 80 between Contra Costa and Solano counties, the original crossing opened in 1927. Due to the increase in traffic flow, Caltrans opened a parallel steel cantilever truss bridge for eastbound traffic. The 1927 original westbound span was seismic replaced in 2003 with a cable suspension span for westbound traffic.

NBIS Structural Health Summary

Eastbound

Westbound

Status

The structural components of the Carquinez Bridge generally are in fair to good condition. The eastbound bridge deck is in fair condition. A deck rehabilitation project to the eastbound approach structure (Contract 04-3G4034) was completed in 2016. The westbound bridge deck is in good condition, with signs of wear and rutting. The following tables summarizes the planned projects according to the FY24 BATA Capital Improvement Plan (CIP):

Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Overlay (Westbound)	FY24/25	$5 Million
Seismic Transmission Unit Replacement	FY25/26	$1 Million
Structural Steel Painting	FY28/29	$137 Million
Replace and Upgrade Navigational Lights to LED and connect it with SCADA for more remote monitoring	FY29/30	$3 Million
Upgrade radar beacons and connect it with SCADA for remote control	FY30/31	$2 Million
Retention Cable Band Bolts Investigation	FY29/30	$3 Million
Upgrade cable-lighting to LED (both bridges)	FY30/31	$6 Million
Upgrade toll plaza, parking, and roadway lighting to LED (Westbound)	FY31/32	$2 Million
Replace SCADA communication cable with fiber, upgrade SCADA	FY31/32	$5 Million
TOS Elements	FY31/32	$4 Million

Dumbarton Bridge

Overview

Location	State Route 84 between San Mateo and Alameda counties
Structure	Steel box girder main span and pre-stressed concrete approach spans
Length	1.6 miles
Year Opened	Original: 1927 (replaced) New structure: 1982
Last Seismic Retrofit	2013

Description

The Dumbarton Bridge carries State Route 84 for 1.6 miles between San Mateo and Alameda counties, with an eastern touchdown near Newark in Alameda County and a western landing near East Palo Alto in San Mateo County. The steel box girder main span and pre-stressed concrete approach spans were seismically retrofitted in 2013 to make the bridge safer during a major earthquake.

NBIS Structural Health Summary

Status

The structural components of the Dumbarton Bridge generally are in fair to good condition. The bridge deck is in good condition, with small cracks. The bridge's substructure is in good condition, with minor shrinkage cracks in the concrete surface. The superstructure elements are in fair condition, with signs of deterioration. The following tables summarizes the planned projects according to the FY24 BATA Capital Improvement Plan (CIP):

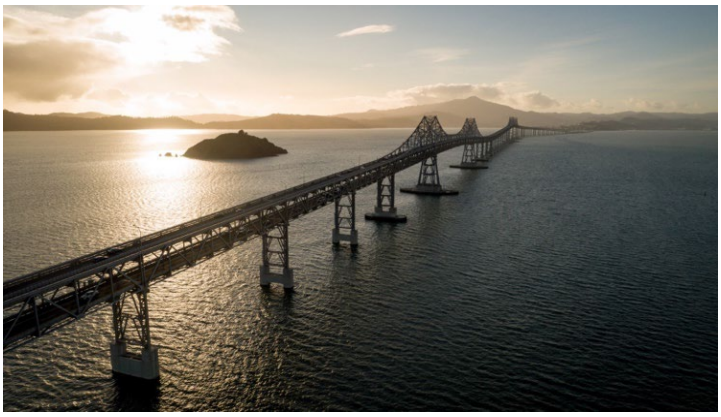
Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Substations Upgrade	FY26/27	$5 Million
Updating Existing Radio Links from District Office to San Leandro Hill and from San Leandro Hill to Dumbarton	FY32/33	$1 Million
Replace Power Cable (480V)	FY31/32	$4 Million
TOS Elements	FY31/32	$4 Million
Replace SCADA communication cable with fiber, upgrade SCADA	FY30/31	$5 Million

Richmond-San Rafael Bridge

Overview

Location	Interstate 580 between Contra Costa and Marin counties
Structure	Steel cantilever main spans with connecting girder and truss spans and a concrete approach trestle
Length	5.5 miles (including approaches)
Year Opened	1956
Last Seismic Retrofit	2005



Description

The Richmond-San Rafael Bridge has served the needs of North Bay travelers for more than 65 years. The span, which is a double deck structure with two cantilever spans access to the bridge, was significantly improved with the completion of the Richmond Parkway in 2001. This 7.5-mile, four- to six-lane roadway provides bridge users with a direct connection to Interstate 80 near Pinole.

NBIS Structural Health Summary

Status

The structural components of the Richmond-San Rafael Bridge are in overall fair to good condition. The bridge deck is in good condition with signs of delamination and spalls on the surface. The bridge's substructure is in fair condition, with signs of deterioration. The superstructure is in fair condition, with the steel truss spans and the steel girder spans showing signs of deterioration. A number of bridge deck joints were replaced as part of the structural steel paint project. Currently, around $55 million is being invested as part of BATA resolution 154 to repair the structural steel paint and strengthen gusset plates as shown below.

Projects in Construction

Project Description	Budget (Includes Support Cost)	2022	2023	2024	2025	2026	2027
Structural steel paint repair, removal of travelers and misc.	$54 Million				Project Duration		

The following tables summarizes the planned projects on Richmond San Rafael Bridge according to the FY2024 BATA Capital Improvement Plan (CIP):

Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Structural Steel Painting - TBD	FY23/24	$69 Million
Structural Steel Painting (Tower) 3rd Phase	FY28/29	$65 Million
Structural Steel Paint Phase 4&5, Superstructure and Upper Towers	FY26/27	$91 Million
Replace existing Damper	FY25/26	$7 Million
Substations Upgrade (4 Locations), Upgrade from 4,160V to 15Kv	FY23/24	$3 Million
Upgrade radar beacons and connect it with SCADA for remote control	FY29/30	$13 Million
Replace and Upgrade Navigational Lights to LED and connect it with SCADA for remote monitoring	FY29/30	$11 Million
Replace Aircraft Beacon and upgrade to LED, and connect o SCADA for monitoring	FY29/30	$1 Million
Upgrade fog horns and connect with SCADA for remote control	FY29/30	$2 Million
Concrete Column Repair	FY29/30	$12 Million
Replace SCADA communication cable with fiber, upgrade SCADA	FY31/32	$7 Million
TOS Elements	FY31/32	$4 Million
Upgrade lower deck, Toll plaza and building lighting to LED	FY31/32	$3 Million

San Francisco-Oakland Bay Bridge

Overview

Location	Interstate 80, between San Francisco and Alameda counties
Structure	West spans – Adjoined Steel Double Deck Suspension Spans East Span – Parallel Steel Self Anchored Span and Concrete Pre-cast Segmental Approach
Length	8.4 miles (including approaches & toll plaza)
Year Opened	West Span: 1936 East Span: 2013
Last Seismic Retrofit	West Span: 2004

Description

The San Francisco-Oakland Bay Bridge is the region's workhorse bridge, carrying more than a third of the total traffic on the Bay Area's seven state-owned toll bridges. The Bay Bridge's 85-year-old West Span is a jewel along the San Francisco waterfront. The new East Span, which opened in 2013, has become another Bay Area icon. The 2.2-mile East Span between Oakland and Yerba Buena Island includes a concrete skyway structure; a single-tower, self-anchored suspension bridge; and a transition structure that connects the side-by-side roadway decks with the double-deck tunnel through Yerba Buena Island. The 2.2-mile West Spans are adjoining double-deck steel suspension bridges with a center anchorage connecting Yerba Buena Island with downtown San Francisco. A seismic retrofit of the West Spans was completed in 2004.

NBIS Structural Health Summary

East Span

West Span

Status

The East Span of the Bay Bridge is in good overall condition with slight signs of deterioration to its deck, structural components, and paint. No major rehabilitation projects are planned in the next 10 years. The older West Span, which is in fair condition, is the focal point for rehabilitation work. Current projects are dedicated to preventative maintenance. These include a major effort to paint the structural steel of the floor system and towers. In 2023, around $60 million was invested as part of BATA resolution 154 as shown below:

Projects in Construction

Project Description	Budget (includes support cost)	2022	2023	2024	2025	2026	2027
Replace Seismic Dampers- West Span (WS)	$32 Million						
Rehabilitate Fire Protection System at Yerba Buena Island (YBI) Tunnel	$21 Million						
Interim Repair of The SFOBB West Span Fender System	$9 Million						

Project Duration

The following tables summarizes the planned projects on the San Fransico Oakland Bay Bridge according to the FY2024 BATA Capital Improvement Plan (CIP):

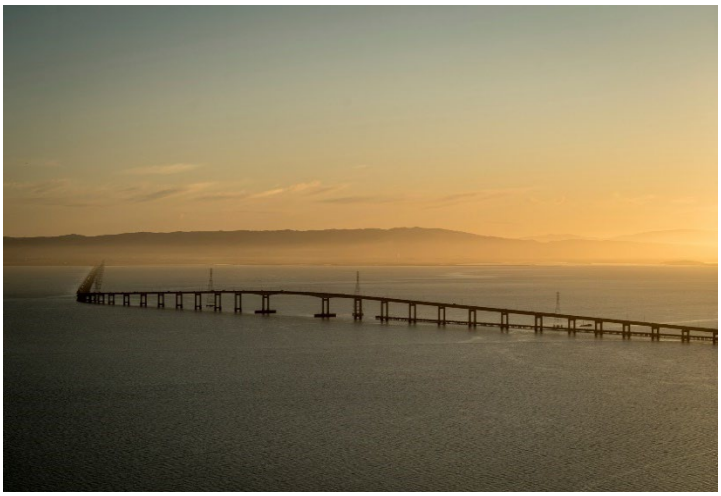
Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Structural Steel Painting - Superstructure (Floor Systems)	FY23/24	$86 Million
Main Cable Wrap (Phase 1) Investigate condition of main cable	FY23/24	$14 Million
Armor Joint Reconstruction	FY25/26	$19 Million
Main Cable Wrap West Span (Phase 2)	FY29/30	$57 Million
Structural Steel Paint (Towers)	FY26/27	$107 Million
Replace Fender System and Skirt Modifications	FY25/26	$116 Million
Install traveler at SAS Main Cable	FY29/30	$58 Million
SAS Elevator Rail Replacement	FY26/27	$1 Million
SFOBB - Replace Joint Seals (Upper & Lower Deck)	FY29/30	$11 Million
Replace Cable Lighting and Upgrade to LED (North and South)	FY30/31	$5 Million
Replace Utility Stations and Armored Cable on West Span	FY30/31	$6 Million
Replace West Span (Upper Deck) LED Lighting	FY30/31	$4 Million
Replace West Span (Lower Deck) LED Lighting	FY30/31	$4 Million
Replace Comm. Cable (SCADA 50 Pair Cable) West Span	FY30/31	$2 Million
Replace Generators	FY29/30	$4 Million
TOS Elements	FY30/31	$4 Million
Air Compressors and Air Line at YBI and Sterling - Replace	FY32/33	$24 Million

San Mateo-Hayward Bridge

Overview

Location	State Route 92 between San Mateo and Alameda counties
Structure	Steel box girder main span and concrete trestle approach spans
Length	High-rise steel girder spans 1.9 miles, low-rise trestle portion 5.1 miles
Year Opened	1967 Widened 2003
Last Seismic Retrofit	2000



Description

The San Mateo-Hayward Bridge carries State Route 92 between San Mateo and Alameda counties. The 1.9-mile high-rise section uses steel girder construction. The 5.1-mile low-rise portion of the bridge is made of parallel concrete trestle approach spans. Once one of the most congested evening commutes in the Bay Area, the San Mateo-Hayward Bridge saw enormous improvements in traffic flow with the completion of the 2003 concrete trestle for westbound traffic that allowed the conversion of the 1967 concrete trestle to eastbound-only traffic. The seismic safety of the bridge was improved by Caltrans' 2000 completion of a retrofit project.

NBIS Structural Health Summary

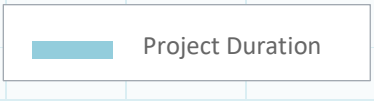
Status

While the superstructure and deck of the San Mateo-Hayward Bridge are rated as good on the NBIS scale, Caltrans identified in 2016 spalling concrete on the pile caps of the older 1967 low-rise trestle section that resulted in a poor substructure and overall bridge condition rating. The spalling is due to the age of the structure, exposure to the bay environment and normal wear and tear. The poor rating does not mean the bridge is unsafe for the traveling public. The design of the trestle provides redundancy in the structural system, and the identified conditions do not indicate a safety risk which necessitates a closure.

A $41 million (including support cost) Phase 1 rehabilitation of the bridge piers began in March 2020 and is on-going. The substructure component rating of the bridge is anticipated to rise to fair after completion of the work. In addition to the ongoing concrete repair work, additional toll bridge rehabilitation and paint projects are programmed in the Toll Bridge Capital Improvement Program (CIP).

Projects in Construction

Project Description	Budget (Includes Support Cost)	2022	2023	2024	2025	2026	2027
Spandrel Beam and Pier Cap Repair- Phase 1	$41 Million						
High-Rise Tower Painting	$10 Million						



The following tables summarizes the planned projects on the San Mateo Hayward Bridge according to the FY24 BATA Capital Improvement Plan (CIP):

Planned Projects (Per CIP)

Project Description	Capital Spending Begin	Budget (Includes Support Cost)
Trestle Repairs Ph 2	FY24/25	$29 Million
Replace Booster Pump & Fire Pump Controllers	FY28/29	$3 Million
Replace Power Cable (480V)	FY31/32	$7 Million
TOS Elements	FY31/32	$5 Million
Replace Utility Stations	FY31/32	$3 Million
Replace Generators	FY31/32	$4 Million
Upgrade SCADA	FY31/32	$5 Million
Water Service Pump at Pier- Upgrade	FY32/33	$1 Million
Foster City Paint - Pavement Rehab	FY32/33	$1 Million

Appendices

i. Appendix A: Abbreviations and Definitions
ii. Appendix B: Routine Inspections by Bridge and Date
iii. Appendix C: Projects in Construction
iv. Appendix D: BATA Resolution 166, BATA Toll Bridge 10-Year Capital Improvement Plan for FY2024-33

Appendix A: Abbreviations and Definitions

Bay Area Toll Authority – The Bay Area Toll Authority manages the toll revenues from the Bay Area's seven state-owned bridges. BATA also manages the Bay Area's FasTrak® electronic toll payment system.

Bridge Condition Rating – Bridge Condition is determined by the lowest rating of National Bridge Inventory (NBI) condition ratings for Item 58 (Deck), Item 59 (Superstructure), Item 60 (Substructure), or Item 62 (Culvert). If the lowest rating is greater than or equal to 7, the bridge is classified as Good; if it is less than or equal to 4, the classification is Poor. Bridges rated 5 or 6 are classified as Fair.

California Department of Transportation (Caltrans) – The California Department of Transportation owns and operates the seven state-owned toll bridges in the Bay Area. Caltrans is also responsible for designing, building, and maintaining the state's highway system.

Metropolitan Transportation Commission (MTC) – The Metropolitan Transportation Commission is the transportation planning, financing, and coordinating agency for the nine-county San Francisco Bay Area.

National Bridge Inventory (NBI) – The aggregation of structure inventory and appraisal data collected to fulfill the requirements of the federal National Bridge Inspection Standards (NBIS).

National Bridge Inspection Standards (NBIS) – Federal regulations establishing requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and preparation and maintenance of a state bridge inventory. The NBIS applies to all structures defined as bridges located on all public roads.

Structurally Deficient (SD) – A bridge condition rating used by the Federal Highway Administration to indicate deteriorated physical conditions of a bridge's structural elements (primarily deck, superstructure, and substructure) and reduced load capacity.

A classification of "structurally deficient" does not imply that bridges are unsafe. When an inspection reveals a safety problem, the bridge is posted for reduced loads, scheduled for repairs, or in unusual situations, closed until repairs can be completed. Structural deficiency is one of the many factors that are used for project ranking or selection.

Desired State of Good Repair (DSGR)- the condition in which a capital asset can operate at a full level of performance.

Appendix B: Routine Inspection by Bridge and Date

Bridge	Bridge Component(s)	Last Inspection (Date)	Inspection Cycle (years)	Next Target Inspection (Date)
Antioch Bridge	All	Mar-21	2	Mar-23
Benicia-Martinez Bridge (SB)	All	Sep-21	2	Sep-23
Benicia-Martinez Bridge (NB)	All	Aug-21	2	Aug-23
Carquinez Bridge (EB)	All	Sep-21	2	Sep-23
Carquinez Bridge (WB)	All	Sep-21	2	Sep-23
Dumbarton Bridge	All	Jun-21	2	Jun-23
Richmond-San Rafael Bridge	All	Dec-22	2	Dec-24
San Francisco-Oakland Bay East Span Bridge	All	Sep-21	2	Sep-23
San Francisco-Oakland Bay West Span Bridge	All	Nov-22	2	Nov-24
San Mateo-Hayward Bridge	All	Dec-22	2	May-24

Appendix C: Projects in Construction

This appendix provides more details about the current construction projects on the Bay Area's toll bridges. These projects present work that is ongoing or has been completed recently.

Richmond-San Rafael Bridge:

Contract No. 04-2W1204: Gusset Plate Strengthening

This contract will install additional gusset plates at the two main cantilever spans on the Richmond-San Rafael Bridge to strengthen those locations. The work will take place at a total of 16 gusset plate locations. Other related strengthening work will also be performed at the main cantilever as directed by the Engineer.

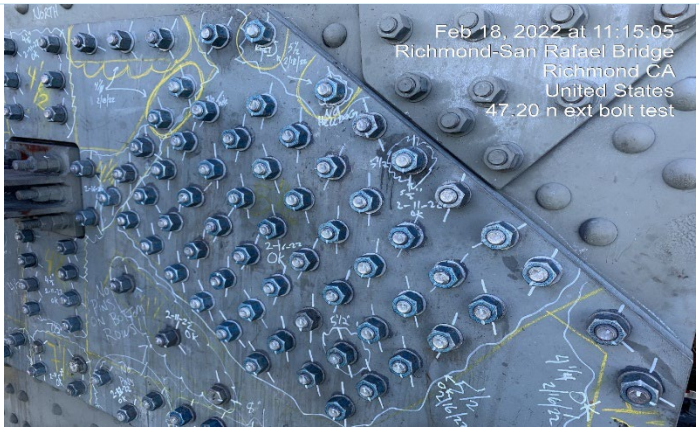
Approved Capital Outlay Budget: $10 Million

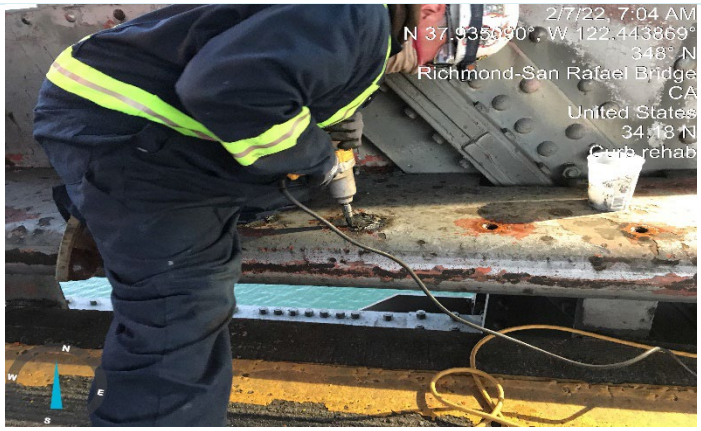
Contractor: Flatiron West, Inc.

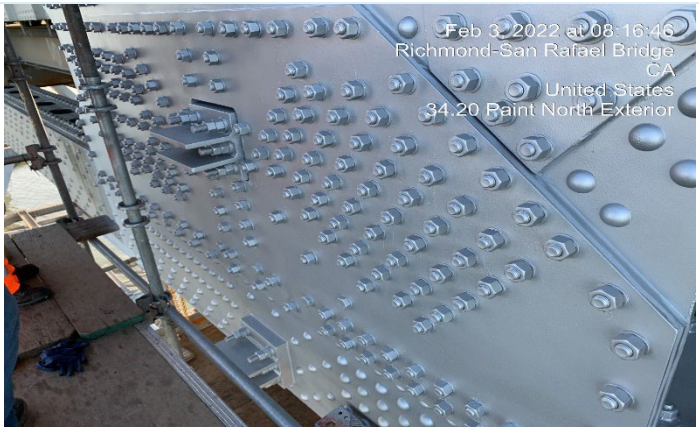
Construction Begins: January 2021

Construction Ends: April 2022

Percent of Work Completed: 100%







Contract No. 04-3G4744: Structural Steel Paint Repair

This project is part of a continuous effort to protect and preserve the steel components of the Richmond-San Rafael Bridge. When completed, this project will provide protective paint coatings to the steel girder spans floor system, which connects the east approach of the bridge to the concrete trestle portion of the bridge at the western approach. This work includes sandblasting to remove the old paint layers, then applying a primer coat with two finishing coats of protective paint. Other work on the project includes the reconstruction of deck joints on the lower deck, the removal of obsolete traveler rails and travelers, and other miscellaneous rehabilitation work.

Approved Capital Outlay Budget: $49 Million

Contractor: Allied Painting, Inc.

Construction Began: April 2021

Construction Ends: August 2023

Percent of Work Completed: 82%

San Francisco-Oakland Bay Bridge (SFOBB):

Contract No. 04-1W0604: SFOBB Rehabilitate Fire Protection System at YBI Tunnel

This project at the Yerba Buena Island (YBI) tunnel in the city and county of San Francisco to rehabilitate the old fire protection system, improve access for fire departments, and install portal hydrants.

Approved Capital Outlay Budget: $15 Million

Contractor: California Engineering Contractors, Inc.

Construction Begins: April 2021

Construction Ends: April 2023

Percent Completed: 18%

Contract No. 04-3G4424: Replace Seismic Dampers – West Span (WS)

This project will replace the seismic dampers on the West Span of the San Francisco-Oakland Bay Bridge with new dampers. Additional strengthening of the West Span steel structure is also being performed.

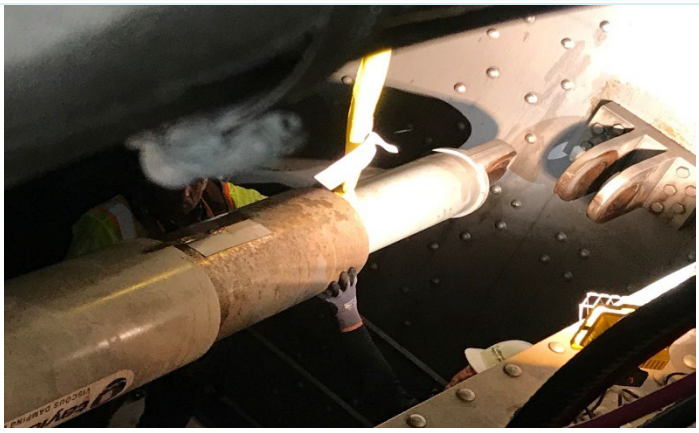
Approved Capital outlay budget: $23 Million

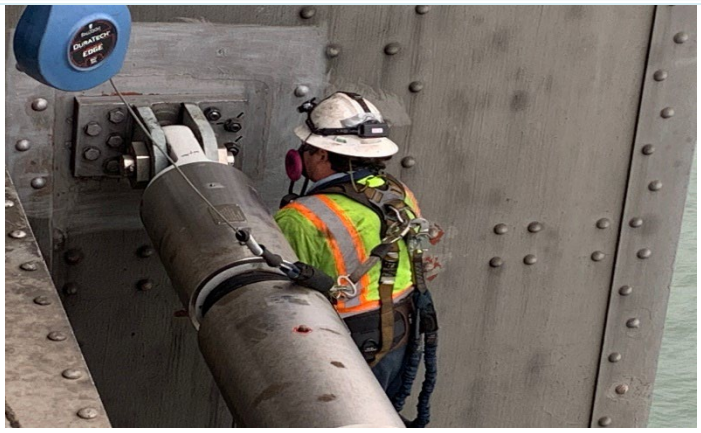
Contractor: California Engineering Contractors, Inc.

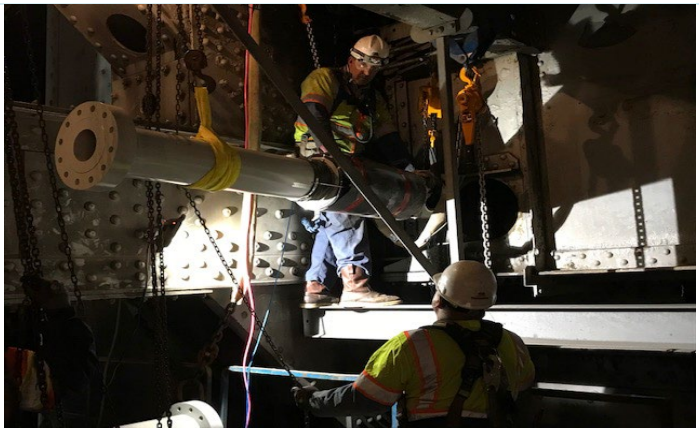
Construction Begins: March 2018

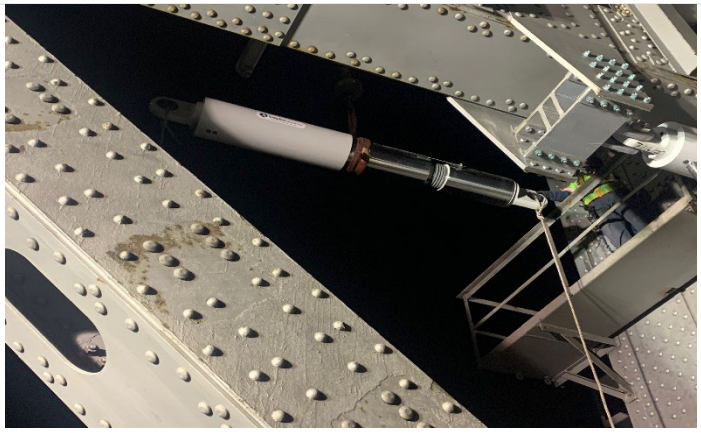
Construction Ends: June 2023

Percent Completed: 91%









Contract No. 04-4W0104: Interim repair of the SFOBB West Span fender system

This project will perform interim repairs to the fender system of the San Francisco-Oakland Bay Bridge's West Span; at Piers W3, W4, W5, and W6 from Yerba Buena Island to the touchdown in San Francisco. This work includes temporary reinforcement of the system's functionality by removing damaged portions of the existing fender system and sheathing and installing plastic lumber posts anchored to the innermost existing upper posts.

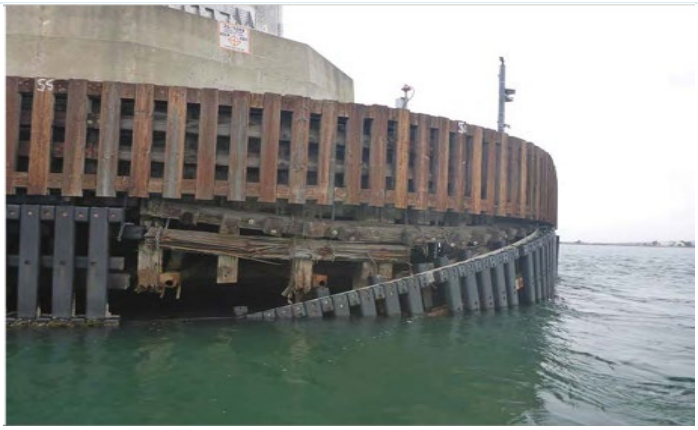
Approved Capital outlay budget: $7 Million

Contractor: The Dutra Group

Construction Began: January 2022

Construction Ends: March 2023

Percent Completed: 81%



San Mateo Hayward Bridge:

Contract No. 04-3G4544: Spandrel Beam Reconstruction and Pier Cap Repair-Phase 1

Spandrel beam and pier cap structural repairs on the high-rise section of the bridge from Piers 12 to 29 (excluding piers 19 and 20), and pier cap and girder repairs on Trestle Section from Piers 286 to the east abutment.

Approved Capital outlay budget: $34 Million

Contractor: Golden State Bridge, Inc.

Construction Begins: March 2020

Construction Ends: January 2024

Percent Completed: 77%

Contract No. 04-3G4884 – High-Rise Tower Painting

Painting of the steel towers at Piers 12-18 and 21-27 along with other miscellaneous structure rehabilitation work.

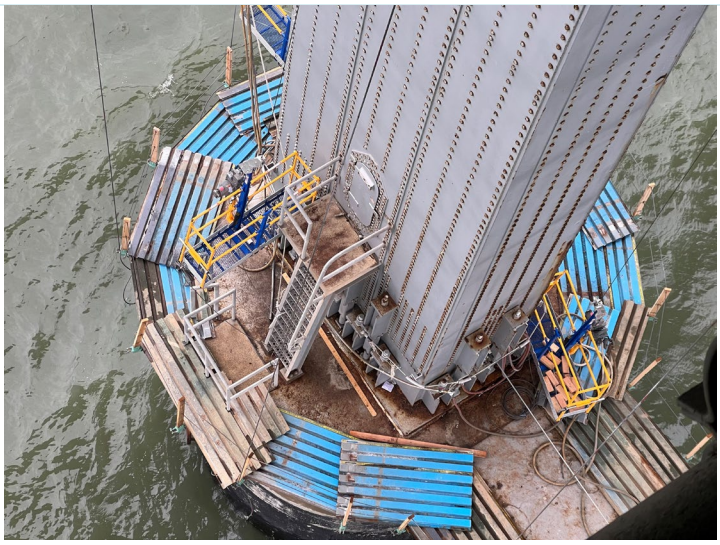
Approved Capital outlay budget: $9 Million

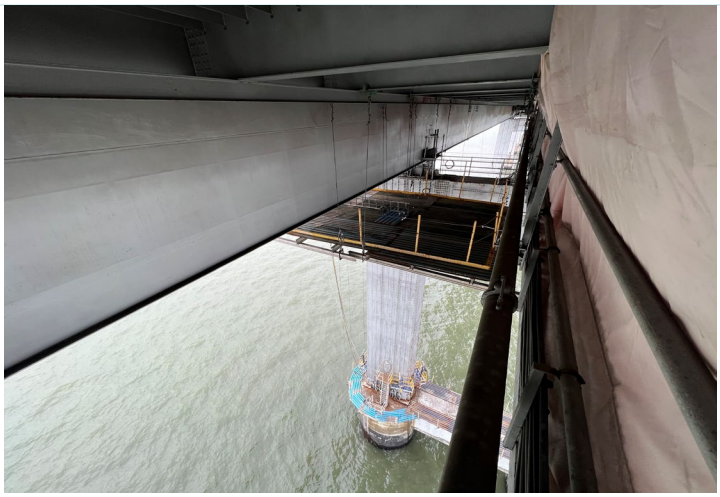
Contractor: CEKRA Inc.

Construction Begins: December 2022

Construction Ends: June 2024

Percent Completed: 2%





Appendix D: BATA Capital Improvement Plan (CIP)

A direct link to the most recent BATA CIP (as of February 8, 2023)

- BATA Resolution No. 166 - BATA 10-Year Toll Bridge Capital Improvement Plan for FY 2024-33
- Attachment A to BATA Resolution No. 166