Francis Scott Key Bridge Reconstruction
(2025 JCR. P.121)

A Report to the Maryland General Assembly
Senate Budget and Taxation Committee
and
House Appropriations Committee

June 2025
Maryland Department of Transportation
Maryland Transportation Authority

The Maryland Transportation Authority (MDTA) prepared this report in Response to the committee narrative contained in the 2025 *Joint Chairman's Report* (JCR). The Language states:

"*Francis Scott Key Bridge Reconstruction: The committees are interested in the progress being made on the reconstruction of the Francis Scott Key Bridge and request that the Maryland Transportation Authority (MDTA) provide four quarterly updates on the status of the project. The reports shall provide:*

- *the current status of design, engineering, federal permitting, preconstruction, and construction activities including completion percentages for each project category;*
- *the running total amount expended for the project;*
- *the current availability and projected timeline for seeking federal reimbursement for the project, including the total amount of federal funds that have been received; and*
- *any material changes to the project schedule or cost."*

Introduction

The Francis Scott Key (FSK) Bridge is located in Baltimore County, City of Baltimore, and Anne Arundel County, Maryland, on MD 695 spanning the navigable Patapsco River. MD 695 was a fully access controlled highway, forming the southeastern section of the beltway loop around Baltimore City. The FSK Bridge was a divided four-lane typical section with two lanes in each direction and was on the National Highway System (NHS). In the early morning hours of March 26, 2024, the container ship M/V Dali struck Pier 17 of the FSK Bridge causing several spans to collapse into the Patapsco River.

The Key Bridge Rebuild Project will replace the collapsed bridge and restore a critical connection to the Port of Baltimore. The replacement bridge will be designed to meet current interstate standards, carrying four 12-foot travel lanes, 10-foot outside shoulders and 4-foot inside shoulders. The minimum vertical clearance for the replacement bridge will be 230 feet over the 800-foot federally authorized Fort McHenry Navigation Channel, as documented in the United States Coast Guard (USCG) Preliminary Navigation Clearance Determination (PNCD) and reflected in the USCG issued Bridge Permit.

Design, Engineering, Permitting, Preconstruction, and Construction

<u>Progressive Design-Build Procurement</u>**:**
On May 31, 2024, MDTA advertised a Request for Proposals for Contract KB-4903-0000 as a Progressive Design-Build Procurement. MDTA received proposals from three responsive Offerors. On August 30, 2024, MDTA issued Notice of Award to Kiewit Infrastructure Corporation whom they determined to have submitted the proposal that was most advantageous to the State. MDTA issued Notice to Proceed with Phase 1 Project Development Services to Kiewit on September 16, 2024.

Design and Engineering:
MDTA and the Design-Builder began work on the design and preliminary engineering for all elements of the project in September 2024. In December 2024, the Design-Builder submitted Proof-of-Concept plans to MDTA (approximately 15% level of design completion) to validate key design assumptions made during the Federal Highway Administration (FHWA) National Environmental Policy Act (NEPA) Categorical Exclusion determination. In March 2025, the Design-Builder conducted the first of two phases of wind tunnel testing on the proposed cable stayed bridge design to evaluate its aerodynamic behavior under high wind conditions. In late April 2025, the Design Builder submitted plans to MDTA for review at 50% level of design completion.

The main bridge span over the navigation channel will be a 1,665-foot cable-stayed span between the main bridge piers with 850-foot back spans. In compliance with the USCG PNCD, the horizontal clearance between the pier protection that will surround the new main span piers will be no less than 1,100 feet. The main H-shaped towers supporting the cable stayed bridge will rise to a height of approximately 600 feet above the Patapsco River. The remaining bridge spans will include piers both in the Patapsco River and on both the approaches over land. Both the bridge and the bridge pier protection are being designed in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Specifications.

The major construction elements of the project include:

- Removal of the existing bridge piers and a portion of the approach roadway from the north and south sides of the river,
- Construction of the replacement bridge,
- Construction of pier protection,
- Reconstruction of the portions of the existing roadway at the north and south approaches,
- Storm drain improvements, including new inlets, storm drain piping, and stormwater management facilities, including wet swales, grass swales, bioswales, micro-bioretention, and submerged gravel wetlands to meet Maryland Department of the Environment (MDE) and Chesapeake Bay Critical Area Commission requirements,
- Bridge roadway and aesthetic lighting, and
- Intelligent Transportation System (ITS), including virtual weigh stations, roadway weather information system, fog warning system and CCTV cameras.

In January 2025, the Design-Builder began subsurface geotechnical investigations in the river and on land. The information gathered from these efforts allows the Design-Builder to understand the subsurface conditions within the Patapsco River along the bridge alignment. As part of these investigation efforts, a pile load test program will be conducted at both main span pier foundations beginning in July 2025. The load test program will verify the load-bearing capacity and behavior of the foundation piles which support the bridge structure. To better understand and estimate the potential scour at the proposed bridge foundations, FHWA's Turner-Fairbank Highway Research Center, in cooperation with MDTA and Maryland State Highway Administration (SHA), is performing tests using physical and mathematical models of the proposed bridge at their Turner-Fairbanks Laboratory in Virginia.

The efforts described above are used to develop the Opinion of Probable Construction Cost (OPCC) and Binding Price Proposal (BPP). MDTA has procured the services of an Independent Cost Estimating Firm (ICE) to perform estimates of the project for comparison and BPP negotiations with the Design-Builder. Cost savings workshops are being conducted to identify design elements and construction means and methods that will help manage the project cost. In addition, MDTA and the Design-Builder are developing a joint project risk register to identify major project risks and to determine mitigation strategies.

Permitting:

Coordination with federal and state agencies is ongoing and will continue throughout the duration of the project. MDTA and the agencies meet regularly to collaborate on the best path forward to streamline the permitting process. The majority of state and federal permits for the project have been acquired, which authorize Design-Builder activities that include geotechnical investigations necessary to support engineering/design, demolition of the remaining structural components of the existing bridge, and construction of the new bridge.

A Categorical Exclusion was prepared for the project in compliance with the NEPA and was signed by FHWA on July 23, 2024. Federal permits were obtained in compliance with Section 404 of the Clean Water Act (US Army Corps of Engineers Regulatory), Section 408 of the Rivers and Harbors Appropriation Act (US Army Corps of Engineers Navigation), Section 401 of the Clean Water Act (Environmental Protection Agency's Water Quality Certification issued by MDE through delegated authority), Section 7 of the Endangered Species Act (US Fish and Wildlife Service), as well as Section 9 of the Rivers and Harbors Act (USCG 5th District Bridge Program). In addition, consultation with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) has occurred for potential impacts to essential fish habitat, marine mammals, and endangered species.

A Biological Assessment is being prepared under emergency consultation procedures with NOAA Fisheries for the Atlantic and Shortnose sturgeon and is to be submitted post-construction. Based on the size and type of pile supporting the foundations, an Incidental Harassment Authorization is likely to be required by NOAA Fisheries for 2026 and 2027 in accordance with the Marine Mammal Protection Act due to anticipated underwater noise and vibration associated with pile driving.

Permits have been issued (or are in the process of being issued) by the State of Maryland including Tidal Wetland Licenses from the Board of Public Works, a Letter of Authorization for nontidal wetland impacts from MDE Wetlands and Waterways Program, approval of Stormwater Management and Erosion and Sediment and Erosion Control Plans from MDE's Sediment and Stormwater Plan Review Division (SSPRD), National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Associated with Construction Activity from MDE's Wastewater Pollution Prevention and Reclamation Program, a Memorandum of Understanding with the Maryland Department of Natural Resources (MDNR) Critical Area Commission, and Reforestation Law approval from MDNR's Forest Service (in progress).

As the project progresses through design and construction, modifications to federal and state permits will be sought to address changes in activities and/or impacts to regulated resources.

Preconstruction:
The Design-Builder has performed the following activities in advance of construction:

Vibration Analysis:

- Completed Vibration Estimates and Impact Analysis to estimate vibration levels and effects from driving proposed steel pipe piles, the potential for other pile sizes, and blasting demolition activities that will be transmitting vibration to adjacent structures and utilities of concern.

Preconstruction Surveys:

- Completed pre-construction surveys of adjacent properties and structures within a one-mile radius of the project site to document their pre-construction condition. More than 1,100 structures were identified and surveyed on the exterior. A total of 57 property owners requested the inspection team to perform a survey of the inside of the structures.
- Roadway geometry survey work
- Identified Right-of-Way (ROW)
- Identified terrestrial features (storm drain and above ground utilities) and conducted aerial LiDAR scans for survey
- Performed high-resolution geophysical survey to provide information on location of marine utilities and debris within the riverbed
- Performed bathymetric survey of the river bottom within project limits to generate a terrain model of the river bottom surface
- Installed monitors for baseline noise and vibration levels
- Probing for subsurface obstructions

Geotechnical Investigations:

- Conducted land and marine soil borings for subsurface geotechnical investigations
- Collected soil samples and performed laboratory testing to determine the characteristics of the soil, for use in the design of the bridge foundations

Utility Coordination:

- Located all ground level and above ground level utility infrastructure including wire line and pole heights
- Ongoing coordination meetings with Baltimore City's Department of Public Works and the project design team to determine and mitigate impacts to the existing water line that is adjacent to the project
- Ongoing coordination meetings with Baltimore Gas and Electric and the project design team to determine and mitigate impacts to the existing gas line that is adjacent to the project

Construction:
No construction activities have been performed to date.

Amount Expended for the Project

The project has expended $111.0 million in State Funds as of April 2025 of which approximately $15 million is ineligible for federal reimbursement. This includes costs incurred by both MDTA and SHA for the initial salvage and debris removal efforts, as well as for the permanent rebuilding of the Key Bridge. These costs are expected to be covered by insurance proceeds, offsetting revenue (material recycling) or federal funds, except for certain ineligible main channel debris removal costs. For federally eligible project costs that will ultimately be paid for with federal funds, non-federal funding sources, such as insurance proceeds, recycling revenues, and MDTA toll revenues, may be used to initially fund project expenses and manage cash flow requirements in the short-term until federal reimbursement for those costs is received.

Cost Component	Spent to Date	
Salvage & Debris Removal	$	77,341,329
PDB Contract - Phase I	$	25,215,187
General Engineering Consultant	$	6,163,978
Other Consultant & State Costs	$	1,551,348
MDTA & SHA Staffing Costs	$	772,938
Total	**$**	**111,044,779**

Current Availability and Projected Timeline for seeking Federal Reimbursement

MDTA is grateful for the federal government's commitment to funding this project so the State of Maryland and the larger Northeast and Mid-Atlantic regions can continue building critical infrastructure projects that move people and commerce safely.

The State of Maryland continues to pursue the DALI's owner and manager for all the damages caused by their negligence and incompetence – including the cost to reconstruct the Francis Scott Key Bridge – so that the parties responsible for this tragedy pay for the damages they caused. The American Relief Act, 2025, provides that if any additional funds are required to build the new bridge beyond the compensation paid by the DALI, the federal government will provide that funding.

To date, a total of $60 million in FHWA Quick Release Emergency Relief (ER) funds have been made available to the project, of which $20,698,899.59 has been used to reimburse project costs. The remaining $39,301,100.41 of Quick Release funds are anticipated to be reimbursed over the next six months.

Release of ER funds by FHWA requires MDTA to submit a Detailed Damage Inspection Report (DDIR) periodically to provide updates for funding needs. The most recent version of the DDIR was submitted to the FHWA Maryland Division office in April 2025, which requested Congress allocate an additional $707,292,065.00 of federal ER funds to the project. This request is based on the estimated project cash flow over the next 18 months. It is expected that these funds will be made available to the project over the next six months, however that is not certain and is at the discretion of Congress. MDTA and SHA teams have mapped out the expected workflow for

processing project invoices and reimbursement requests on a set frequency to ensure consistent and timely reimbursement of funds.

The next version of the DDIR, which may request additional funding, is scheduled to be submitted to FHWA in October 2025.

Material Changes to the Project Schedule and Cost

The lifecycle of a major highway bridge project begins with planning, environmental reviews and permitting followed by preliminary engineering. Risk-based cost estimation is performed during this preliminary design phase, and it typically utilizes FHWA's Cost and Schedule Risk Assessment process. This process incorporates probabilistic methods to establish cost confidence levels. Throughout the project lifecycle – from preliminary engineering to construction – cost, schedule, financial plans and project management plans guide project delivery, with continuous refinement and oversight.

Phase 1:
Phase 1 services include development of preliminary plans, design reports, performance requirements for Final Design, specifications for construction, development of inspection and maintenance procedures of the unique and complex bridge features, perform community outreach and solicit public input, complete necessary field explorations, surveys, and subsurface investigations, OPCC and BPP cost estimates, and establish parameters for the Phase 2 packages. Scope of Work for Phase I did not include pile load tests, since design information required for estimating the cost for this work was not available at the time of the proposal for Phase 1.

MDTA added additional funding authority to the Phase 1 contract to conduct static and lateral load testing for the bridge foundation which will use 96-inch diameter steel pipe piles for the main cable-stayed span foundations. Performing the pile load test to determine the axial and lateral load capacities for these piles allows MDTA to determine the optimum pile lengths and will add certainty to development of the overall cost for the Project. The additional cost for this work is $42,956,739.84.

With the additional scope of work, the total Phase 1 contract value was increased from $73,000,000 to $115,956,739.84. At this time, MDTA has not extended the contract duration.

Phase 2:
MDTA and the Design-Builder are currently working to identify Phase 2 Early Work Packages (EWP) to advance the project work and schedule. These EWPs may include demolition of remaining portions of the work, procurement and installation of piles for the cable-stay span foundations, procurement and installation of temporary access trestle, foundation footing procurement and installation, environmental mitigation, leasing properties to support the construction work, materials testing, environmental mitigation, and formwork for the cable-stay span foundations and towers.

MDTA continues to work through the cost estimation process for a design that incorporates current federal standards for marine shipping and roadways, as well as specific needs of the state.

Recent pre-construction activity and updated datapoints are being utilized to provide a better understanding of where the 50-70% design cost and schedule estimate will be later this year.