Complex bridge preservation practice

Americas transportation

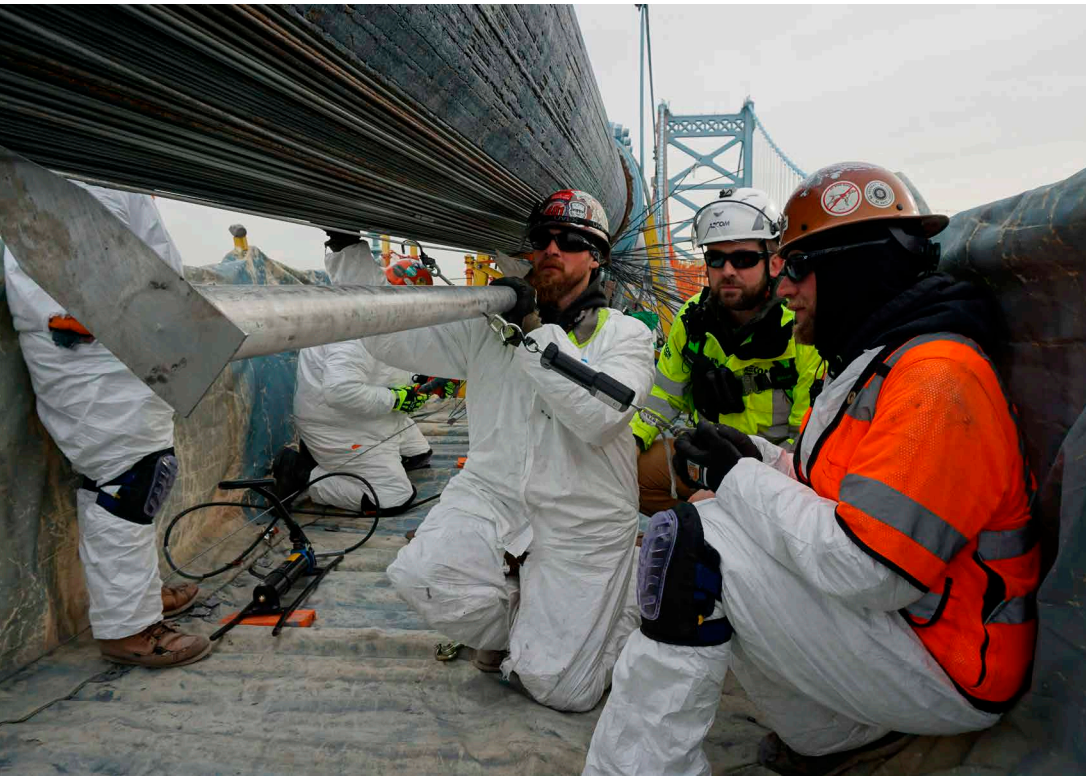
AECOM Delivering a better world

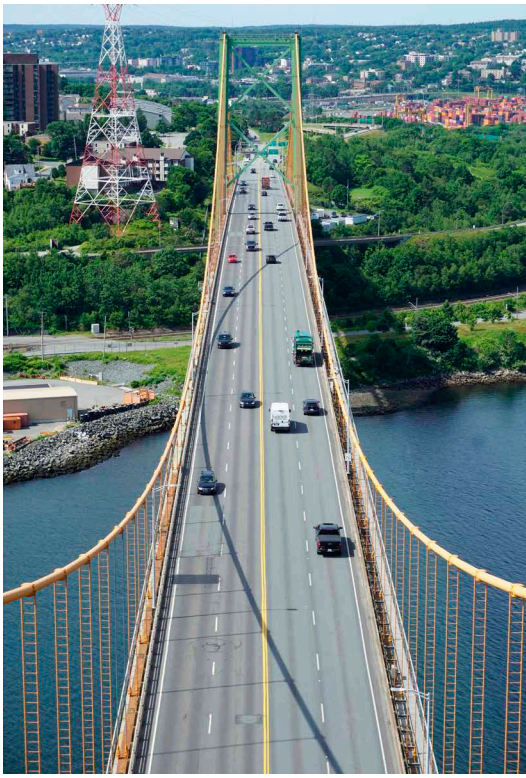
Notable complex bridge preservation and rehabilitation projects:

- Verrazzano-Narrows Bridge
- Bronx-Whitestone Bridge
- Robert F Kennedy Bridge
- Throgs Neck Bridge
- Chesapeake Bay Bridge
- Delaware Memorial Bridge
- Benjamin Franklin Bridge
- George Washington Bridge
- Mount Hope Bridge
- Newport Pell Bridge
- Anthony Wayne Bridge
- A. Murray MacKay Bridge
- Angus MacDonald Bridge
- Hennepin Avenue Bridge
- Simon Kenton Bridge
- South Tenth Street Bridge
- GOWANUS Expressway
- Brooklyn-Queens Expressway (BQE)
- Brooklyn Bridge
- Tacoma Narrows Bridge
- Walt Whitman Bridge
- Commodore Barry Bridge
- Betsy Ross Bridge

Complex challenges

We understand the interrelated technical, social and environmental challenges associated with complex bridge preservation and rehabilitation.





Cover:
Design and Inspection, **Verrazzano-Narrows Bridge**, Staten Island to Brooklyn, New York, U.S.

Opposite page:
Construction management and design of deck replacement, **Walt Whitman Bridge** Gloucester, New Jersey to Philadelphia, Pennsylvania, U.S.

Above Left:
Internal cable inspection and construction management of **Benjamin Franklin Bridge** Rehabilitation of Suspension Spans and Anchorages, Philadelphia, Pennsylvania to Camden, New Jersey, U.S.

Above Right:
Consulting services for Halifax Harbour Bridges including internal main cable inspection, main cable and anchorage dehumidification design, cable band and cable saddle bent bolt replacement and suspender replacement for the **A. Murray MacKay Bridge**, Halifax, Nova Scotia, CA.

Improving safety and reliability

Preserving and rehabilitating the world's most complex and iconic bridges for future generations

Long span bridges are nationally recognized, iconic structures, critical to a nation's strategic transportation network, and vital to local communities. The successful development of capital and maintenance programs for these bridges requires an approach that considers and incorporates the neighborhoods that lie within their footprints. Our knowledge and understanding of the need for a holistic approach to bridge preservation informs all that we do, from detailing designs that minimize operational impacts and disturbance to the community, to the development of asset management strategies and long-term capital planning.

Our preservation practice includes engineers with unrivalled experience in inspecting and maintaining complex bridges as well as in designing and supervising rehabilitation schemes on many significant complex bridge preservation projects. Some of our engineers are former complex bridge owners and operators; this knowledge translates into an understanding of the need to preserve aging infrastructure within stringent budgetary constraints.

Our national complex bridge preservation practice collaborates with our local bridge engineering teams to leverage firsthand knowledge of local clients combined with state-of-the-art expertise. Together we provide visionary, reliable, economic and sustainable solutions for the unique challenges our long span bridge clients face.

Multi-preservation and rehabilitation projects of the **Commodore Barry Bridge** including concrete deck repair and replacement, steel repairs, field investigation, biennial and special inspections and painting including modeling for wind analysis, Chester, Pennsylvania to Bridgeport, New Jersey, U.S.

Wide-ranging preservation capabilities

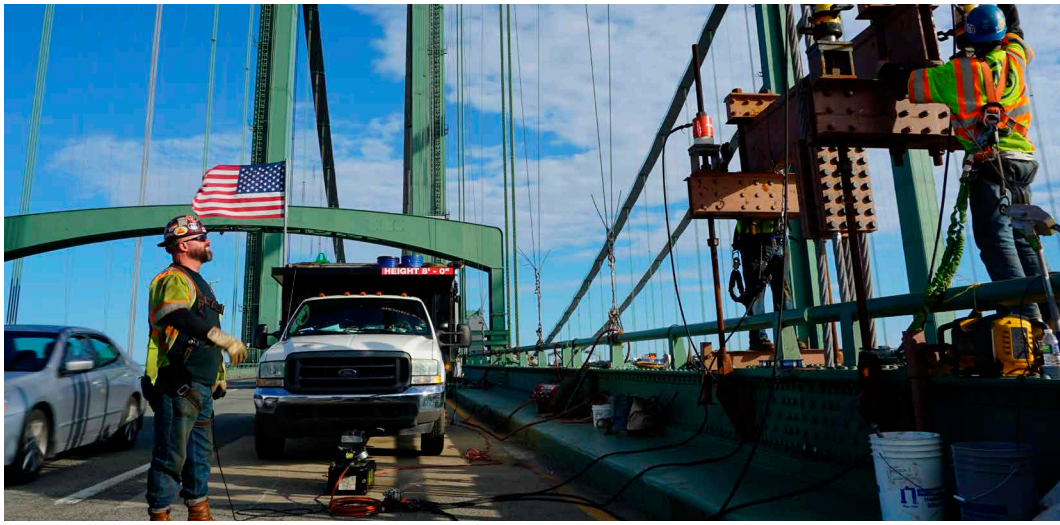
Reconstructing and restoring critical bridge elements

Our engineers have extensive experience in the preservation of all forms of long span and complex bridges, including cable-stayed, extradosed, post-tensioned and arch bridges, as well as movable bridges and suspension bridges.

Our complex bridge rehabilitation design work is planned to fit within the existing community footprint, considering traffic, navigational, environmental and other operational constraints, and adhering to all regulatory requirements and local and regional standards.

We are a leader in the field of main cable dehumidification and are the first to bring this technology to the U.S. Our integrated team of structural, mechanical and electrical engineers includes experts with extensive experience in cable inspection and strength evaluation, detailed design and construction engineering.

Our deck replacement schemes for long span bridges reduce weight, improve structural performance and reduce life cycle maintenance costs. We have designed and supervised the construction of major deck widening schemes on a number of cable-supported bridges.



Suspender rope replacement and top chord strengthening of the **Delaware Memorial Bridge**, New Castle, Delaware to Pennsville, New Jersey, U.S.

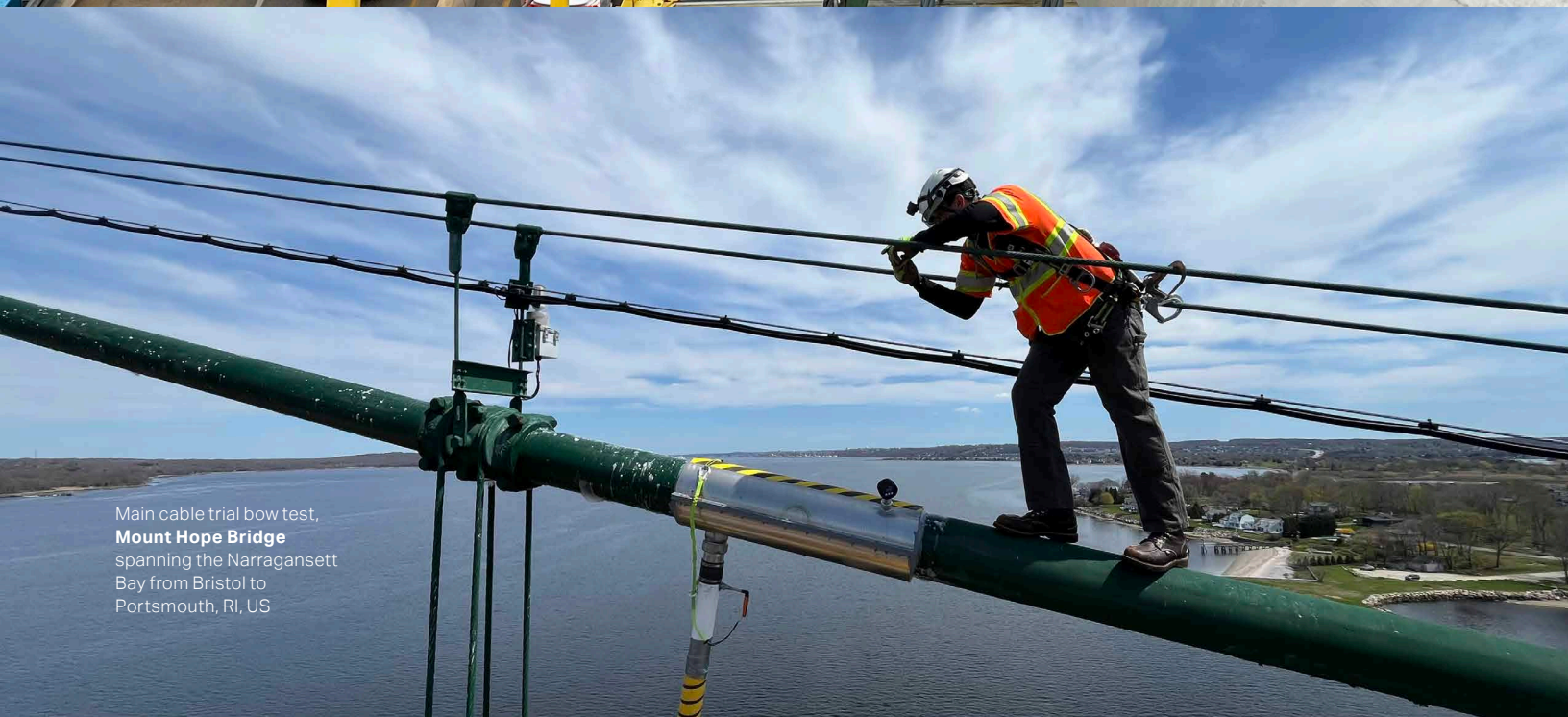
Our experience with coatings includes developing specifications for removal and replacement of existing coating systems, including lead based systems, in sensitive environmental sites involving difficult access and full containment.

Bridge pavement is not usually the most structurally critical element of a bridge; however, in the event of a failure, pavement damage can be disruptive to users and costly to repair. Our bridge preservation team has unmatched experience in the design and rehabilitation of pavement as well as deck waterproofing and surfacing materials used in new and remedial works.

Our experience also encompasses the development of schemes to replace or augment the main cables on a long span suspension bridge while keeping the structure operational.

When total reconstruction is required, our complex bridge engineers bring design expertise in all forms of bridge construction, from cable-supported to precast and cast-in-place segmental construction.

Main cable and anchorage dehumidification system commissioning of the **Anthony Wayne Bridge** spanning the Maumee River in Toledo, OH, U.S.



Main cable trial bow test, **Mount Hope Bridge** spanning the Narragansett Bay from Bristol to Portsmouth, RI, US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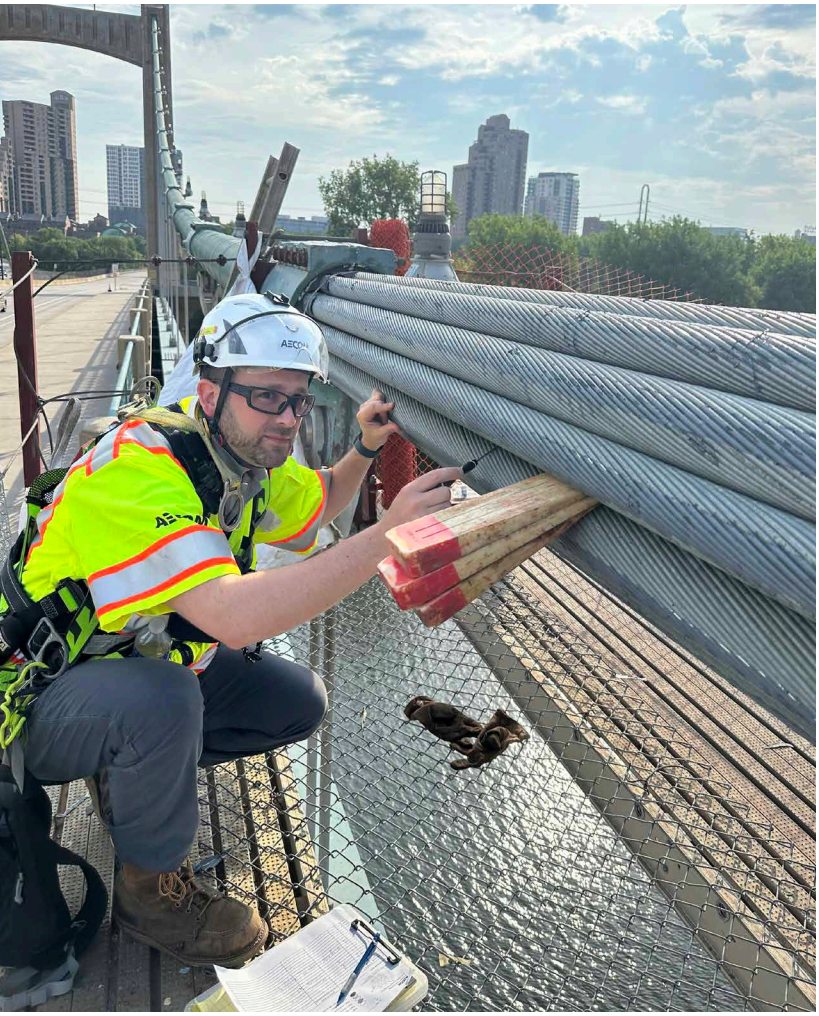
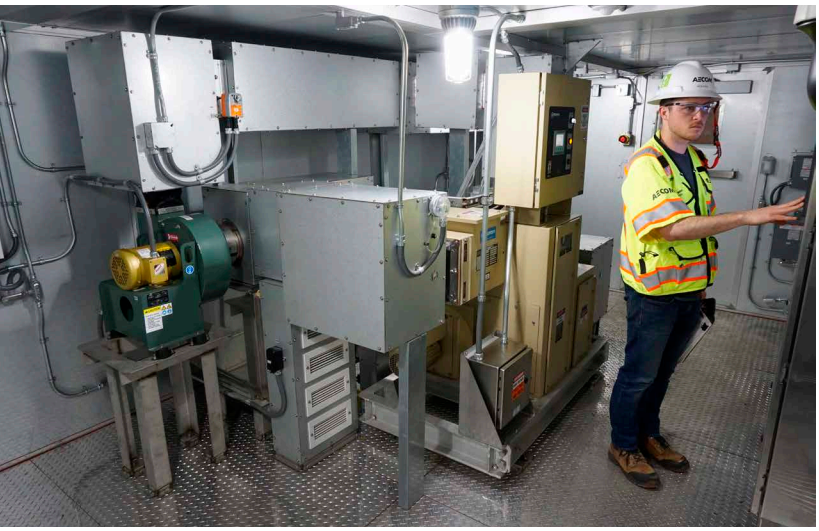
Comprehensive inspection and monitoring experience

Spanning all types of complex bridge structures





Opposite page: Fracture critical inspection, **Simon Kenton Bridge** spanning the Ohio River from Aberdeen, OH to Maysville, KY, U.S.

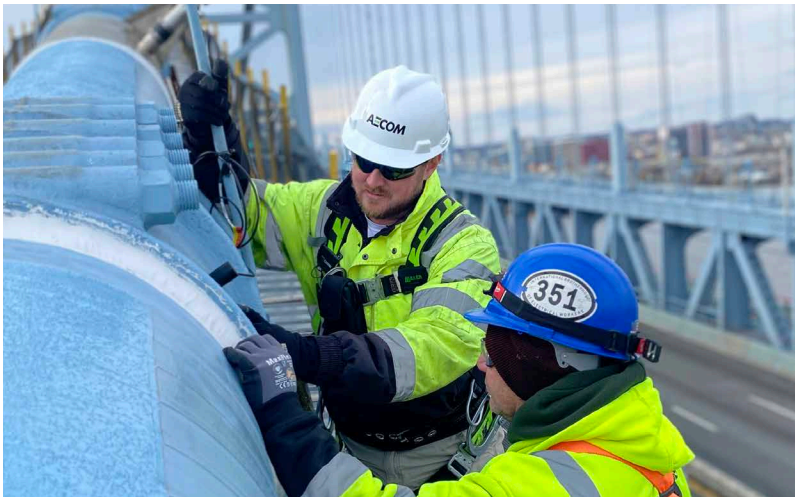
Top Left: Internal cable inspection, **Hennepin Avenue Bridge,** spanning the Mississippi River in Minneapolis, MN at Nicollet Island, U.S.

Bottom Left: Maintenance and Monitoring of the Main Cable Dehumidificaiton System on the **Delaware Memorial Bridge**, New Castle, Delaware to Pennsville, New Jersey, U.S

Bottom Right: Acoustic (Wire Break) Monitoring Instrumentation, **Benjamin Franklin Bridge,** Philadelphia, PA to Camden, NJ, U.S.

Rope access inspection has been an integral part of our bridge inspection practice for nearly 20 years and is particularly advantageous for the inspection of complex bridges. Our rope access team includes six registered professional engineers and National Bridge Inspection Standards qualified engineers and inspectors. All are experienced in bridge and structural inspections and certified as rope access technicians by the Society for Professional Rope Access Technicians. Complementing their inspection experience is expertise in structural rehabilitation and bridge design, protective coatings, fatigue and fracture critical members, load ratings, non-destructive and destructive testing and construction.

AECOM provides specialty services in bridge instrumentation and evaluation for long span and complex bridges. Our engineers are nationally recognized experts in the evaluation of bridge structures through special inspections, non-destructive evaluation, load testing, remote monitoring and comprehensive finite element modeling and analysis.



About AECOM

AECOM is the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy, and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical and digital expertise, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of $14.4 billion in fiscal year 2023. See how we are delivering sustainable legacies for generations to come at aecom.com and @AECOM.

Back cover image: Cable band bolt replacement on the **Benjamin Franklin Bridge** Rehabilitation of Suspension Spans and Anchorages Project, Philadelphia, Pennsylvania to Camden, New Jersey, U.S.

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