

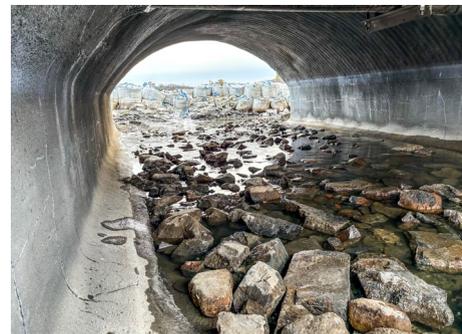
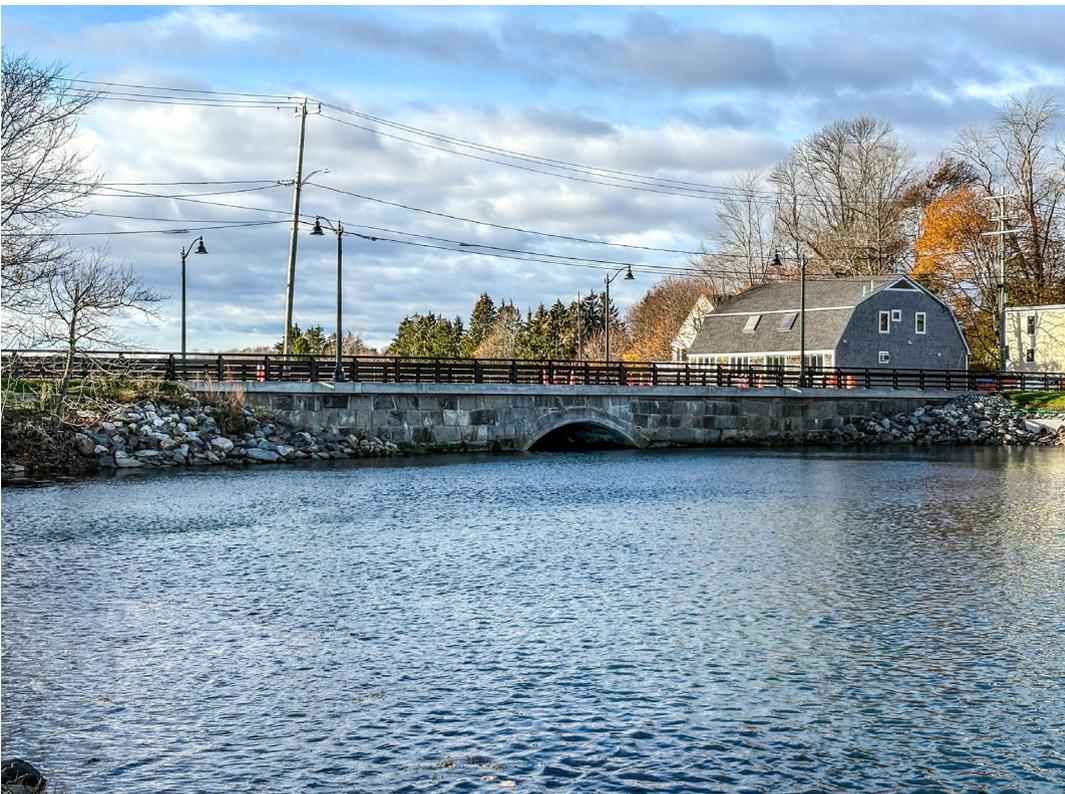


HOYLE
TANNER



MAPLEWOOD AVENUE BRIDGE REHABILITATION

The Mapewood Avenue Bridge Rehabilitation Project transformed a deteriorating yet vital historic transportation link in the City of Portsmouth, New Hampshire into a safer, more resilient structure. Originally constructed in 1896, the aging stone arch bridge suffered from advanced deterioration, reduced load capacity, and hydraulic and drainage limitations, compounded by environmental constraints, limited Right-of-Way, and the need to maintain traffic throughout construction. As prime consultant, Hoyle Tanner led the evaluation, design, permitting, and construction support, delivering an innovative, preservation-focused rehabilitation that extended the bridge's service life, restored full structural capacity, minimized environmental impacts, and reduced long-term maintenance needs. GZA GeoEnvironmental supported the effort as the geotechnical engineer, and Headwaters Consulting performed hydraulic analyses and supported permitting coordination. Through close collaboration with the City of Portsmouth and regulatory agencies, the project was delivered efficiently, resulting in a durable, sustainable, and publicly valued infrastructure improvement.



Innovative Rehabilitation Strategy

Rehabilitated an 1896 stone arch bridge—one of only two tidal stone arches in New Hampshire—while preserving its historic character and eligibility for the National Register of Historic Places. Restored full vehicular load capacity using a thin, spray-applied geopolymer liner that strengthened the bridge without altering the historic masonry arch.

Complex Problem, Integrated Solution

Developed a controlled water diversion system that allowed the bridge to be fully dewatered for construction while maintaining tidal exchange with North Mill Pond.

Sustainable Infrastructure Investment

Extended the bridge's service life by decades, reduced material use, avoided full replacement, and eliminated the need for environmental mitigation.

Public & Client Value

Kept a critical pedestrian link open throughout construction, preserving access between residential neighborhoods and downtown Portsmouth.

Collaborative Project Delivery

Led by Hoyle Tanner for the City of Portsmouth, with geotechnical support from GZA GeoEnvironmental and hydraulic analysis by Headwaters Consulting.