



Honor Award: GZA GeoEnvironmental, Inc.

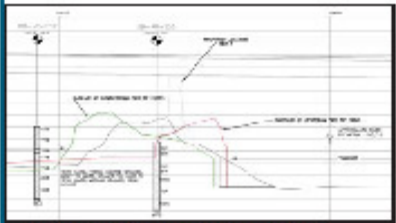
GZA GeoEnvironmental, Inc. received an Honor Award for its work as the geotechnical consultant for foundation design and rock stabilization for the State Route 125 Bridge Reconstruction project. The two-span structure that crosses the Androscoggin River had eroded the site down to bedrock with steep exposed ledges, undermined bedrock, and pinnacles. The primary design challenges were to stabilize the undermined rock to prevent additional rockfall that could jeopardize support of the new abutment, and to reinforce the bedrock pinnacle to prevent a sliding failure in the bedrock beneath the new foundation. After conducting test borings with geophysical logging and surface bedrock mapping, geologic field mapping of bedrock outcrops, and field investigation and analyses, GZA determined that the combination of adverse geology and prior river modifications made foundation support for this project unusual and more complex. GZA developed a unique concrete buttress which would fill the cavity and protect the abutment foundation from undermining, as well as vertical shear dowels to reinforce the rock mass.




Bedrock pinnacles at proposed pier



Completed cast-in-place concrete buttress in undermined rock area



New pier foundation on bedrock pinnacles




Dowels to stabilize bedrock upgrades

Rock Stabilization for Bridge Reconstruction


State Route 125 Lisbon-Durham, Maine

GZA's geotechnical design stabilized unfavorable bedrock conditions beneath new spread footings, including an undermined rock cavity and a midstream bedrock pinnacle.
Key aspects of GZA's work included:

- Test borings, borehole geophysics, and geologic mapping to characterize bedrock conditions
- Evaluate extents of Altered Schist and adverse jointing at undermined rock cavity beneath abutment and bedrock pinnacle supporting pier
- Design cast-in-place concrete buttress to support undermined rock
- Design reinforcing shear dowels through potential failure planes in bedrock pinnacle
- Develop simple yet robust stabilization concepts allowing construction of conventional foundations
- Reduce environmental impacts by avoiding in-water blasting



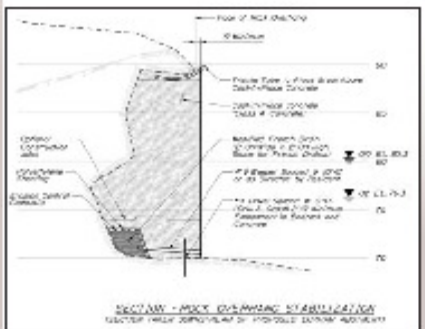
GZA using rope access to reach and map undermined rock area during field investigation



Entering Firm: GZA GeoEnvironmental, Inc.
Portland, Maine
Geotechnical Designer

Client: Stantec
Steris | Portland, Maine
Bridge Designer

Owner: MaineDOT | Augusta, Maine
MaineDOT



Design section showing cast-in-place concrete buttress supporting undermined rock area