Portageville Bridge

New York, United States

New bridge foundations in challenging New York terrain

The project

Norfolk Southern Railway replaced its aging iron truss bridge spanning the scenic Genesee River Gorge with a new $75 million spandrel-braced, steel arch, single-track structure that allows the owner to run fully-loaded freight cars over the gorge.

The challenge

The new bridge crosses the Genesee River within Letchworth State Park and is just 75ft south of the old bridge, which was required to remain open during the work. The steeply sloping terrain supports a variety of wildlife, including nesting bald eagles sensitive to disturbance; therefore, noise and construction hours were limited. Other challenges included accessing work areas with equipment in the variable terrain and multiple unanticipated changes to top of rock elevations.

The solution

Keller designed and installed a temporary soldier pile and lagging wall to support the existing railway during construction of the new bridge and 12-inch-diameter rock-socketed micropiles, each with a 118.5-ton capacity, for the new bridge foundations. Of the 212 micropiles installed, 86 were battered to carry the lateral loads. Prior to production work, six axial load tests were performed (one at each foundation) with a lateral load test at each pier. Two deadman anchor blocks each consisting of 24, 240-kip capacity rock-socketed tieback anchors were installed at each abutment to support the arches during bridge assembly.

Project facts

Owner(s)
Norfolk Southern Railway

Keller business unit(s)
Keller

Main contractor(s)
American Bridge Company

Solutions
Heavy foundations
Excavation support

Markets
Infrastructure

Techniques
Anchors - single bond length
Micropiles