



Retaining Wall and Railroad Line

North Kingstown, Rhode Island

The Geopier Impact® system provided improvements to stability and bearing, while also reducing the potential for settlement of the retaining wall

Description: Along AMTRAK's main corridor, improvements to the Wickford Junction station included construction of a new 1,200 foot long gravity retaining wall system for a safety platform and third track located adjacent to the existing elevated embankment supporting AMTRAK's primary line. Wall heights ranged from 8 to 13.6 feet above the working grade. Grades at the wall toe sloped into the adjacent wetland at approximately 2:1 (Horizontal:Vertical).

Subsurface Conditions: Ground conditions consisted of 9 to 20 feet of granular fill followed by a weak peat layer underlain by sand and gravel. Groundwater was at the level of the adjacent wetland approximately 5 feet below grade.

Geopier Solution: The presence of the loose fill and weak peat combined with the sloping grades at the toe of the wall created a challenge for the design team to achieve adequate global stability and bearing support for the wall while also maintaining long-term settlement of $\frac{3}{4}$ -inch or less. The Geopier ground improvement solution featured Geopier Impact® piers



Photo courtesy of GZA GeoEnvironmental, Inc.

that penetrated the fill and organics. Acceptable levels of global stability and bearing were achieved with piers spaced as closely as 4 feet on-center. Modulus testing at the site confirmed adequate pier stiffness to provide long-term settlement to meet the project requirements.

PROJECT TEAM

Geotechnical Engineer:

GZA GeoEnvironmental, Inc.

Structural Engineer:

The Neel Company

General Contractor:

Manafort Brothers, Inc.

Geopier Installer:

Helical Drilling, Inc.

Geopier Designer:

Design/Build Geotechnical, LLC