



*Above: The Light Rail System in operation at Exchange Place station.  
Right: Drilling and mixing equipment installing the soil cement columns in the Newport area of Jersey City, next to Hoboken and Long Slip channel. Behind the drilling equipment is the tanker where the injected cement is stored. The MRCE-designed abutment in the background supports a Wye shaped interchange with elevated steel bridge members.*



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## Hudson Bergen Light Rail, Bayonne/Hoboken Light Rail System

*Hudson County, NJ*

Mueser Rutledge Consulting Engineers (MRCE) provided geotechnical and foundation services for the preliminary Design Phases, and field inspection for construction of the embankment stabilization for New Jersey Transit's new Hudson Bergen Light Rail. In addition, MRCE provided geotechnical, foundation and seismic design services for connections to the PATH systems, as well as underground connections to PATH from the Light Rail Transit System.

In the Design Phase, MRCE provided geotechnical and preliminary foundation design services for the connections to the PATH systems, as well as underground connections to PATH from the Light Rail Transit System. We also provided geotechnical recommendations and final design for approach embankments using precast and cast-in-place retaining walls and abutments for the Newport City viaduct section as well as 6, 7, and 8 foot diameter caissons seated into deep rock for the elevated rail sections. MRCE provided geotechnical recommendations and final design for the cofferdams, piers, and retained areas for the Long Slip Channel crossing into Hoboken Station. A settlement and slope stability analysis found that certain portions of the Long Slip embankment had extremely low safety factors and over 1 foot of settlement. We designed the soil cement support for the embankment utilizing nearly 600 cement columns.

Currently the retaining walls over the soil cement column area are being constructed for a 20 foot high, 150 foot long and 34 foot wide embankment.

MRCE provided field inspection and field quality control of pressuremeter tests on production and test cement columns as well as dynamic cone testing to verify column uniformity. In addition, MRCE is providing final geotechnical recommendations for proof load testing of Hoboken Station areas and evaluation of final support for track and platform areas.