

50th Street/I-235 MSE Wall West Des Moines, Iowa



Description: New construction of two interchange (entrance and exit) ramps along Interstate 235. Mechanically Stabilized Earth (MSE) walls and embankments up to 28 feet tall were used to facilitate grade changes.

Subsurface Conditions: Soft to medium stiff silty clay extended 18 feet below construction grades and were underlain by stiff glacial clay. SPT “n-values” ranged from 3 to 5 blows per foot in the upper clay soils.

Design Details: *Geopier*® soil reinforcing elements were selected as a cost-effective alternate to over-excavation and replacement. *Geopier* elements, installed 6 feet on center beneath the MSE walls, increased the factor of safety against global instability to 1.3 for undrained conditions and 1.5 for drained conditions. Geopier elements were also installed to meet stringent construction and post-construction settlement magnitude criteria. Using open-graded stone to facilitate radial drainage to the elements significantly decreased settlement durations. Peterson Contractors, Inc. installed a total of 837 elements in less than one month providing significant project time savings.

Geopier Designer & Installer: GFC – Midwest; Peterson Contractors, Inc.

General Contractor: Jensen Road Company

Geotechnical Engineer: Terracon Consultants

Structural Engineer: Snyder & Associates