



Loop 363 South Interchange

Temple, Texas

The Geopier GP3® solution improved bearing and stability of the tall MSE walls and controlled settlement with pier stiffness values twice as high as the design requirement

Description: This project involved reconstruction of portions of Loop 363 to create a new highway interchange along Interstate 35, as well as widening nearby portions of Loop 363 to accommodate the traffic demand.

Subsurface Conditions: The soil conditions consisted of newly placed clay fill, in some areas extending to depths of 8 feet, underlain by very soft to stiff clay. The clay ranged from low to high plasticity with moisture contents ranging from 15 to 38 percent. The clay was underlain by bedrock at depths as shallow as 13 feet in some locations and 30 feet in other locations.

Geopier Solution: The conventional foundation support approach left the project team concerned about depth and lateral extent of excavations, required for stability, bearing and settlement control, as well as construction time and costs. This led to the consideration of alternative options. The Geopier GP3® system provided the level of improvement required to



satisfy factors of safety for both bearing and global stability and also provided a cost-effective approach to soil reinforcement. A total of 905 Rammed Aggregate Pier® (RAP) elements with spacings that ranged from 4.75 to 8.5 feet on-center were installed beneath wall heights of 16 feet or greater. The factors of safety for bearing capacity and global stability were increased to greater than 2.0 and 1.3, respectively. The modulus test results showed a total movement of 0.69 inches at a stress of more than 22,000 psf, indicating a pier stiffness greater than twice the assumed design value.

PROJECT TEAM

Owner:

Texas Department of Transportation

Geotechnical Engineer:

HVJ Associates

Civil Engineer:

PBS & J

General Contractor:

H. B. Zachry Construction Corp.

Geopier Installer:

Peterson Contractors, Inc.

Geopier Designer:

GFC-Houston