



E3 BioFuels Facility

Mead, Nebraska

With poor soils to depths of 30 feet, the Geopier GP3® system proved to be a very site-friendly and cost-effective soil stabilization strategy

Description: Construction of a 20 Mgy ethanol production facility containing massive fermentation tanks, beer well tank, methane digester tanks, grain silo and utility corridor. Bearing pressures of between 1,000 and 5,000 psf were required for support of the various structures.

Subsurface Conditions: 15 to 20 feet of soft-to-medium-stiff loessial clay over medium-dense-to-dense sand.

Geopier Solution: A Geopier soft soil reinforcing solution was developed for the installation of 1,300 Rammed Aggregate Pier® (RAP) elements to depths of 15 to 19 feet. Site testing showed less than 0.5 inch of deflection at design stresses of up to 19,350 psf on all three compressive tests performed. The results confirmed the levels of strength and stiffness assumed in the design approach. Tank settlements were also measured under a full load when filled with water. Data indicated the tanks moved less than 1 inch overall, which is significantly less than the 4 inch maximum settlement criteria.



PROJECT TEAM

Owner:

Nebraska BioClean, LLC.

Geotechnical Engineer:

Thiele Geotech, Inc.

Structural Engineer:

SLM Associates

General Contractor:

Katzen International Inc. and Dilling Mechanical Inc.

Geopier Installer:

Peterson Contractors, Inc.

Geopier Designer:

GFC-Midwest