



Belews Creek Waste Water Treatment Plant

Stokesdale, North Carolina

With the highly variable bedrock profile, the Geopier Impact® system was used to provide positive total and differential settlement controls of the heavily loaded mat

Description: Construction of the Belews Creek Steam Station Waste Water Treatment Plant that included support of mat foundations for clarifiers and a bio-reactor. Design pressures for the 50-foot square clarifier foundation were on the order of 2.75 ksf, while pressures beneath the 69 ft. by 163 ft. bio-reactor were 2.5 ksf.

Subsurface Conditions: Subsurface conditions consisted of firm to stiff silt fill extending to depths up to 17 feet, underlain by soft to very stiff residual silt and sandy silt. Bedrock was encountered at depths ranging from approximately 25 to 55 feet below grade.

Geopier Solution: Variable depths to bedrock created concern of differential settlement across the large, heavily-loaded mat foundations. As a cost-effective alternative to drilled shafts, the Geopier Impact® system was utilized to reinforce the existing fill and residual silt soil to create a reinforced, engineered crust for uniform foundation support. Nearly 700 Rammed Aggregate Pier® (RAP) elements were installed to depths of up to



28 feet to reinforce the soils. Modulus testing confirmed the RAP design with less than 0.5 inches of deflection at a top-of-pier stress level of greater than 21 ksf.

PROJECT TEAM

Owner:

Duke Energy

Geotechnical Engineer:

SGME, Inc.

Structural Engineer:

Penta Engineering, P.A.

General Contractor:

Crowder Construction Company

Geopier Installer:

GeoConstructors, Inc.

Geopier Designer:

GeoStructures, Inc.