



Cargill Facility Expansion

Kansas City, Missouri

The Geopier GP3® system was installed to limit settlement of the heavy structural loads supported over the thick deposits of compressible alluvial soils in lieu of more costly conventional deep foundations.

Description: This project consisted of a “Soybean Crush Facility Expansion.” The crush facility will supply soybean oil and feed for local biodiesel production, the food market, and for livestock feed. Construction included a new Meal Tank, two Hull Tanks, a Truck Loadout Shed, a Rail Loadout Shed and Pit, several slab-on-grade buildings such as the Extraction and Prep/MCC buildings, and other small structures such as towers and conveyors. Structural foundation loads for the slab-on-grade building areas range up to 770 kips. Bearing stresses for the meal tank range up to 4,500 psf.

Subsurface Conditions: Geotechnical investigation revealed up to 20 feet of relatively weak consistency lean clay and silt alluvium overlying deep deposits of loose to medium dense silty sand and sand. Bedrock was encountered at a depth of 80 feet below grade.



Geopier Solution: To limit settlement of the heavy structural loads supported over the thick deposits of compressible alluvial soils, the buildings and tanks were supported over Rammed Aggregate Pier® (RAP) elements in lieu of more costly conventional deep foundations. The GP3® solution incorporated 30-inch diameter RAP elements supporting up to 70 kips each. The foundations were designed as conventional spread footings utilizing an efficient allowable bearing pressure of 5,000 psf.

PROJECT TEAM

Owner:

Cargill, Inc.

Geotechnical Engineer:

Alpha Omega Geotech

Structural Engineer:

AMEC Americas

Geopier Installer:

Foundation Service Corp.

Geopier Designer:

GFC-Midwest