



IDEAL Foundation Systems Teams with Engineered Solutions of Georgia to Install (943) Helical Piles for Fuel Dispensary in Chattanooga, TN

Spring, 2017



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Project Name & Location:	Lincoln Energy Solutions Fuel Dispensary - Chattanooga, TN
Project Date:	Spring 2017
Project Type:	Helical Pile Deep Foundations
Helical Pile Installation Contractor:	Engineered Solutions of Georgia - http://www.esogrepair.com/
Geotechnical Engineer:	S&ME - http://www.smeinc.com/
Helical Piles Specifications:	(943) 3.50" x 3.00" wall with 8",10",12" Helix Bearing Plates and 5.50" x 0.361 Wall with 10",12",14" Helix Bearing Plates; Non-Galvanized; 8" Corrugated Grout Column Top 10 ft.
Soils & Loads:	Clay with Bedrock Ranging from 10-60 ft. Across the Site; 50-80 KIPS Compression Depending Upon Tank Size
Project Timeline:	(2) Months - While Dealing with 16" of Rainfall
Helical Pile Manufacturer:	IDEAL Foundation Systems - Webster, NY

Project Overview

Lincoln Energy Solutions is increasing their fuel capacity at their fuel dispensary in Chattanooga, Tennessee. Biodiesel is one of the most common fuels they provide and when the project is complete, their capacity will increase from 500,000 gallons per week to 1.5 million gallons per week. The largest of the five new tanks weigh 12,526 TONS. The installation schedule was tight and the company considered several deep foundations including H piles.

CHALLENGE:

Sinkhole activity on the site is the reason deep foundations were required to reach bedrock. All the piles would have to be driven to bedrock to ensure the tanks would remain in place with zero movement should the soils below them disappear. This site is an active fuel dispensary so safety dikes had to be in place for the duration of the project. What holds fuel also holds water. Over 16" of rainfall throughout the duration of the install created some interesting site conditions and challenges. The high standards of the energy industry are monitored at a federal level and required daily permits for every contractor on site to ensure strict safety measures were in place at all times.

SOLUTION:

Engineered Solutions of Georgia (ESOG) provided the entire solution from concept and design engineering to installation. ESOG designed a hybrid pile which met the requirements and reduced cost and installation times. This hybrid pile consisted of 3.50" and 5.50" standard helical piles with dual displacement heads. The displacement heads created an 8" grout column at the top 10' of every pile in order to resist lateral forces. The piles were installed to the bedrock which ranged from 10' to 60' across the site. ESOG was allowed 3 months to perform the installation. Despite the excessive rain and related delays, the experienced installation team at ESOG installed all 943 piles for 5 separate foundations in 2 months. This site was a green site and ESOG recycled materials and used natural resources where possible. All pile cutoffs were recycled. The installation team used rainwater to pump more than 1200 cubic feet of grout and only used approximately 300 gallons of city water during the installation.

