

Model 288 Helical Piles

Project: Newhall WWTF Improvement
Location: Newhall, IA
Date: April 2015

Challenge:

A new blower building was planned at a wastewater treatment facility. The area chosen for the proposed structure was previously used as a lagoon for the treatment plant. The lagoon would be drained and partially filled for the new construction. Deep foundations were specified to support continuous grade beams for the building and three isolated pile caps for the blower equipment. A geotechnical investigation identified a general subsurface profile which included 18 feet of medium stiff clay fill over medium dense sand to a depth of 33 feet below grade. The sand was underlain by stiff to very stiff clay to the explored depth of 50 feet.

Solution:

Helical piles were selected as the ideal deep foundation solution. The helical pile configuration consisted of Model 288 (2.875-inch OD by 0.276-inch wall) hollow round shaft with a 10"-12"-14"-14" helix plate configuration to support design working loads ranging from 22 to 26 kips. Standard extensions advanced the piles to depths from 19 to 33 feet to achieve torque-correlated ultimate capacities of at least 2.5 times the design working loads (FOS \geq 2.5). A safety factor higher than the industry standard of 2.0 was applied to limit pile deflection. The helical piles were fitted with standard new construction brackets to be cast into the grade beams and pile caps. Despite encountering 21 inches of rainfall during construction, all 75 helical piles were installed within the allotted working time.

Project Summary

Architect/Structural Engineer: HR Green, Inc.
Geotechnical Engineer: Terracon Consultants, Inc.
General Contractor: Ricklefs Construction, Inc.
Certified Pile Installer: MidAmerica Basement Systems
Products Installed: (75) Foundation Supportworks HP288 Helical Piles, 10"-12"-14"-14" Helix Plate Configuration, Installed Depths from 19 to 33 feet, Design Working Loads from 22 to 26 kips



Installing helical piles with mini excavator



Advancing lead section



Lining up drive head with extension



Blower equipment foundation supported by helical piles