FOUNDATION SUPPORTWORKS®

CASE STUDY

Commercial

Models 287 and 288 Helical Piles

Project: Sivyer Steel Company
Location: Bettendorf, IA
Date: January 2013

Challenge:

Two overhead cranes and 12 heavy equipment additions were planned within two 120 feet by 205 feet, slab-on-grade buildings at a steel foundry. Soil conditions at the site consisted of sandy clay extending to bedrock at approximately 14 to 20 feet. Drilled concrete piers were originally considered to support the crane and equipment loads; however, high estimates of mobilization and overall costs, along with questions regarding the feasibility of the indoor installation, prompted consideration of other deep foundation options.

Solution:

Helical piles were selected over the drilled piers. Helical piles can be installed quickly using relatively small equipment within limited access and low headroom conditions. Helical pile installation does not require casing where high groundwater is present, and does not create spoils to be hauled off site.

Each of the crane columns would be supported by a pile cap with three helical piles. Helical pile configurations consisted of both the Model 287 (2.875-inch OD by 0.203-inch wall) and the Model 288 (2.875-inch OD by 0.276-inch wall) hollow round shafts with 8”-10” double-helix lead sections to support design working loads of 13.5 and 27 kips, respectively. The heavy equipment foundations consisted of poured concrete mats supported by four to ten Model 288 helical piles (same plate configuration as described above) with various design working loads up to 27 kips. Standard extensions advanced the piles to depths from 14 to 20 feet below floor slab elevation to bear on or within the underlying bedrock. The piles were advanced to torque correlated ultimate capacities of at least twice the design working loads (FOS ≥ 2) or until spin-off on competent bedrock occurred. The piles were fitted with standard new construction brackets and cast into the poured concrete foundations. A total of 176 helical piles were installed at the site in 12 working days.

Helical pile installation for equipment mat foundation

Advancing helical pile lead section

Crane column pile caps poured flush with slab

Erected crane columns

Project Summary

Structural Engineer: Select Structural
General Contractor: General Constructors, Inc.
Certified Pile Installer: MidAmerica Basement Systems
Products Installed: (93) Foundation Supportworks® HP287 and (83) Foundation Supportworks® HP288 Helical Piles, 8"-10" Lead Sections, Installed Depths from 14 to 20 feet, Design Working Loads from 13.5 to 27 kips