FOUNDATION SUPPORTWORKS®

CASE STUDY

Commercial

Model 288 Helical Piles

Project: University of Iowa – Flood Recovery
Location: Iowa City, IA
Date: June 2014

Challenge:

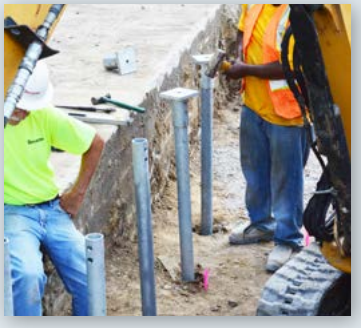
After the 2008 flood events in eastern Iowa, the Federal Emergency Management Agency (FEMA) reevaluated the 100 and 500 year floodplains for the affected area. As a result, the University of Iowa was required to provide additional protection for the Memorial Union Building, which is located within the new 500 year floodplain of the adjacent Iowa River. The university subsequently proposed a flood protection system which would include a two-tiered floodwall constructed along the west side of the existing building.

A geotechnical investigation identified a subsurface profile generally consisting of eight to 11 feet of soft to medium stiff clay fill over very soft to medium stiff native clay to approximate depths of 16 to 24 feet below grade. At some of the boring locations, loose to very dense sand was observed below the clay to approximate depths of 44 to 49 feet. The alluvial soils were underlain by weathered limestone bedrock, evident by auger refusal depths from 25 to 49 feet. Groundwater was observed at depths from 12 to 16 feet during drilling, but is expected to fluctuate with the water level of the adjacent river.

Solution:

Thirty eight (38) Model 288 (2.875-inch OD by 0.276-inch wall) hollow round shaft helical piles were installed to support a design working compression load of 25 kips. The piles utilized an 8”-10” lead section with a V-style cut on the leading edge of the first helix plate to help the piles better penetrate into the dense sand or weathered bedrock. Standard extensions advanced the piles to depths up to 36 feet and to torque-correlated ultimate capacities of at least twice the design working load (FOS ≥ 2), or to spin-off on competent bedrock. The piles were fitted with standard new construction brackets to be cast within the grade beams and pile caps of the floodwall structure.

Installing helical piles



Piles installed to specified elevation and fitted with new construction brackets

Installed piles

Project Summary

Architect: Rohrbach Associates, Inc.
Structural Engineer: Shive-Hattery
Geotechnical Engineer: Terracon Consultants, Inc.
General Contractor: Miron Construction Co., Inc.
Certified Pile Installer: MidAmerica Basement Systems
Products Installed: (38) Foundation Supportworks® HP288 Helical Piles, 8”-10” Lead Section, Installed Depths up to 36 feet, Design Working Load of 25 kips

Completed floodwall