

Model 237 Helical Piles

Project: Dollar Bank

Location: Gibsonia, PA

Date: April 2014

Challenge:

A new single-story, slab-on-grade building was planned adjacent to the existing bank. When completed, banking operations would move to the new building and the old building would be demolished. Customers were to receive uninterrupted service between the two facilities.

A geotechnical investigation identified six to ten feet of fill and weak residual clay soils over very stiff to hard weathered shale bedrock. The geotechnical engineer recommended that the proposed structure be supported on helical piles to avoid deep excavations adjacent to the existing building. Helical piles were then proposed for the entire structure to provide uniform deep foundation support. Helical piles can also be installed with little to no vibration “felt” by surrounding structures. Vibrations caused during the proposed construction could activate the bank vault’s sensitive alarm system.

Solution:

The foundation design included one hundred thirty-seven (137) Model 237 (2.375-inch O.D. by 0.154-inch wall) round shaft helical piles with a 14-inch diameter, single-helix plate on the lead section to support a design working load of 10 kips per pile. The helical piles were advanced to depths up to 17 feet to achieve torque-correlated ultimate capacities of at least twice the design working load ($FOS \geq 2$). The piles were generally taken to their torsional rating of 2,500 ft-lb. The tops of the piles were cut to design elevations and fitted with new construction brackets to be cast into the concrete grade beams and pile caps. A tight construction schedule dictated that equipment be mobilized quickly and pile installation be completed in five days. The 137 helical piles were installed in just four days despite the wet and soft ground surface conditions.

Project Summary

Architect: KA, Inc.

Structural Engineer: Shenberger and Associates

Geotechnical Engineer: Civil & Environmental Consultants, Inc.

General Contractor: MBM Contracting, Inc.

Certified Pile Installer: Baker's Waterproofing & Foundation Repair

Products Installed: (137) Foundation Supportworks® HP237 Helical Piles, 14” Single-Helix Lead Section, Installed Depths up to 17 feet, Design Working Load of 10 kips



Project site with grade beams and pile caps excavated



Connecting product adaptor to helical pile



Advancing HP237 with mini-excavator



Helical piles installed. Ready to cut to design elevation