Supportworks

COMMERCIAL **CASE STUDY**

Model 288 Helical Piles

Project: County Bridge Construction

Location: Gessie, IN

Challenge

When the original, two-lane, trestle bridge experienced washout, it was replaced with multiple culverts covered with rock and soil. However, these culverts did not allow adequate flow of the creek during heavy rains, causing unsafe conditions, and traffic had to be diverted during those occurrences. The County Roads Department planned to install a permanent bridge with a 30-foot span to allow for unobstructed flow of the creek. The bridge would consist of pre-engineered decking placed on concrete abutments, which would be supported by deep foundations. A geotechnical investigation revealed a general soil profile consisting of up to 18 feet of soft clays over hard glacial till.

Solution:

Helical piles were selected over other deep foundation alternatives since they could be installed with smaller equipment and without high mobilization costs. A mini-excavator was used to safely install the helical piles from above the deep trench excavations made for the bridge abutments. Each abutment would be supported by an evenly-spaced row of four helical piles. 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” triple-helix lead section to support a design working load of 30 kips. Standard extensions advanced the piles to approximate depths from 21 to 24 feet below the excavations to achieve torque-correlated ultimate capacities of at least twice the design working load (FOS ≥ 2). The piles were advanced through standing water as the bottom of the abutment excavations were below the creek bed elevation. The helical piles were hot-dip galvanized for corrosion protection. Once the helical piles were installed and fitted with eight-inch square new construction brackets, the excavations were dewatered and the concrete abutments were formed and poured.

Installing lead section from above excavation

Piles installed through standing water

Pile installed to specified elevation

Abutments poured and bridge decking placed

Project Summary

Structural Engineer:	County Roads Department
Geotechnical Engineer	Earth Exploration, Inc.
General Contractor:	Swingle Excavating, Inc.
Certified Anchor Installer:	Foundation Supportworks by Woods
Products Installed:	(8) Supportworks HP288 Helical Piles, 10”-12”-14” Lead Sections, Installed Depths from 21 to 24 feet, Design Working Load of 30 kips