

## Model 288 Helical Piles

**Project:** Strip Mall Renovation

**Location:** Twin Oaks, MO

**Date:** August 2017

### Challenge:

The “Villages of Twin Oaks” development project was planned southeast of the Big Bend Road and Missouri State Route 141 interchange. The new development would include new buildings for residential apartments and retail sales and the renovation of the storefront of an existing strip mall. The renovation would include five wall bump outs extending nine feet north of the north wall line with lengths ranging from 37 to 85 feet. The façade in the remaining areas of the 386 feet of front wall would also be updated. This work would be completed while allowing uninterrupted access to the businesses occupying the strip mall.

Nine test borings were completed for the proposed new buildings northwest of the strip mall. Three borings closest to the strip mall indicated a general subsurface profile consisting of approximately three feet of clay fill over nine to 19 feet of medium stiff to stiff clay over very stiff clay (weathered bedrock) to the bottoms of the test borings.

Deep foundations were proposed to support the additional load that will be placed on or immediately adjacent to the footings along the existing north wall line. The new pile caps and grade beams would be doweled into the existing footings to prevent differential movement between the additions and existing building. The proposed columns nine feet north of the north wall line would be supported on spread footings.

### Solution:

Helical piles were considered the ideal deep foundation option given the soil conditions, required capacities, anticipated pile production rate, and the smaller installation equipment that could be used to access and maneuver within the tight working space. The helical pile design consisted of the Model 288 (2.875-inch OD by 0.276-inch wall) hollow round shaft with 8”-10” double-helix lead sections to support the design working compression load of 15 kips. Twelve piles were installed to depths of about 14 to 17 feet to exceed the target installation torque of 3,400 ft-lb. The torque-correlated ultimate capacities then exceeded the design working load by factors greater than 2.0 (FOS > 2). The piles were either advanced to depth to set the top of pile elevation, or the completed piles were cut off at the design elevation. New construction brackets were set on the tops of the piles to be cast into concrete. The 12 helical piles were installed within one day.

## Project Summary

**Architect:** Zwick & Gandt Architects

**Structural Engineer:** SSC Engineering

**Geotechnical Engineer:** Geotechnology

**General Contractor:** Simms Building Group

**Pile Installer:** Foundation Supportworks® by Woods

**Products Installed:** (12) Supportworks® Model 288 Helical Piles, Installed Depths of 14 to 17 feet; Design Working Compression Load of 15 kips



Connecting drive head to helical lead section



Tracked skid steer maneuvers easily within construction area



Advancing helical extension



Completed piles with new construction brackets



Completed piles with new construction brackets