

New Construction Helical Piles

Project: Holiday Inn Hotel and Water Park

Location: Omaha, NE

Challenge

The new Holiday Inn Hotel and Water Park was constructed just north of downtown Omaha, north of the CenturyLink Center and north of the TD Ameritrade Park built for the College World Series. The project site is located within the alluvial plane of the Missouri River and in an area of Omaha where multiple prior phases of site development and redevelopment were likely. The hotel is a three-story structure supported on auger cast pile foundations.

One of the waterslides for the park was designed to exit the building with multiple bends and turns and then re-enter. However, auger cast piles had not been placed to support the slide at the same time piles were installed for the building. Excessive differential settlement was a concern for shallow spread footings bearing within undocumented fill over weak alluvial soils. Access to the back of the building was limited, timing was critical and cost was a major factor in completion of the project.

Solution:

The design team recommended helical piles extending through the fill and weak native clays to bear within the deeper, dense alluvial sands. The two column foundations were each designed with four helical piles, each pile with a design working load of 20 kips. The helical pile configuration consisted of 2 7/8-inch OD by 0.276-inch wall hollow round shaft with an 8"-10" double-helix lead section. Standard extensions were used to advance the piles to an average depth of 35 feet. Installation torques for the piles correlated to ultimate pile capacities of at least 40 kips (FOS \geq 2). Helical piles were the ideal deep foundation alternative for this project. The total cost for the helical pile installation was less than the remobilization cost alone for the auger cast option. The helical piles were installed in one day.



Advancing helical piles



Pile installation complete



Concrete pile cap poured over helical piles

Project Summary

Structural Engineer:	Structural Design Group
Geotechnical Engineer:	Terracon Consultants
General Contractor:	Tackett Company
Pile Installer:	Thrasher Commercial Group
Products Installed:	(8) Supportworks® Model 288 Helical Piles, 8"-10" Lead Section, Average Installed Depth of 35 feet, 20 kip Design Load



Finished project