

Model 288 Helical Piers

Project: Abraham Lincoln High School Additions

Location: Council Bluffs, IA

Challenge

The Abraham Lincoln High School was built in 1960 with construction consisting of poured concrete foundations, steel framing and masonry block walls. A renovation and three additions were planned with excavations made around and below four existing exterior column footings for utility installation and placement of new wall footings. These columns would therefore require temporary support during construction to prevent settlement/movement of the columns and damage to the existing structure.

Test borings completed for the project extended to depths of 15 to 25 feet and encountered lean clay fill to depths of 4 to 19 feet over native lean clay and silt (Peoria loess). The consistency of the native soils was described as firm to hard. Groundwater was not encountered in the test borings.

Solution:

Helical piers were selected to provide temporary support for the four columns. The design included 16 vertical piers, four on each column, and each pier to support a design working load of 20 kips. The helical pier configuration consisted of the Model 288 (2.875-inch OD by 0.276-inch wall) hollow round shaft with 10"-12"-14" triple-helix lead sections. With their past experience installing helical piers within and through the silty Peoria loess, Thrasher anticipated pier depths greater than the depths of the soil borings. The piers were advanced to an average depth of 33 feet in order to generate installation torques correlating to ultimate pier capacities of at least 40 kips ($FOS \geq 2$). Retrofit brackets were set and the design loads were uniformly applied to the piers with hydraulic cylinders.

Project Summary

Architect:	BCDM
Structural Engineer:	Nielsen-Baumert Engineering
Geotechnical Engineer:	Thiele Geotech, Inc
General Contractor:	Prairie Construction
Pier Installer:	Thrasher Commercial Group
Products Installed:	(16) Supportworks® Model 288 Helical Piers, 10"-12"-14" Lead Section, Installed to an average depth of 33 feet, 20 kip Design Load



Limited working space. Four columns requiring temporary support



Advancing helical piers adjacent to existing column footings



Advancing helical piers adjacent to existing column footings



Hydraulic cylinders to apply load to the piers