

Helical Piles Support New Cooling Towers

Project

Rockwell Collins Cooling Tower Additions

Location

Cedar Rapids, IA

CHALLENGE ▼

Two cooling towers were planned within an open courtyard at the Rockwell Collins headquarters in Cedar Rapids, Iowa. The near-surface soils were determined to be inadequate to support the 52,000-pound cooling towers and their respective poured concrete foundations. A geotechnical investigation was not completed at the site; however, the owner and general contractor had a general knowledge of subsurface conditions based on previous construction of the existing buildings, utilities, and equipment. Deep foundations were therefore proposed for support of the cooling towers.

SOLUTION ▼

Helical piles were selected as the ideal deep foundation solution to support the relatively light loads. Helical piles can also be installed quickly using relatively small equipment within the limited working space of the courtyard. The foundation design included four helical piles at each tower location, one at each tower leg cast within an individual pile cap. The helical pile configuration consisted of Model 287 (2.875-inch OD by 0.203-inch wall) hollow round shaft with a 10"-12" double-helix lead section to support a design working load of 20 kips. The piles were advanced to an average depth of 14 feet below pile cap excavation to achieve a torque-correlated ultimate capacity of at least twice the design working load ($FOS \geq 2$). The piles were fitted with standard new construction brackets and cast into the pile caps. The helical pile installation was completed in just one day.



Cooling towers proposed within courtyard



Aligning drive head with lead section

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► Continued



Mini-excavator advancing helical piles



Fitting new construction bracket to installed pile



Coupling blank extension to lead section

PROJECT SUMMARY ▼

- Structural Engineer:** Select Structural Engineering
- General Contractor:** Ryan Companies US, Inc.
- Certified Pile Installer:** MidAmerica Basement Systems
- Products Installed:** (8) Foundation Supportworks® HP287 Helical Piles, 10"-12" Lead Section, Average Installed Depth of 14 feet, Design Working Load of 20 kips

For additional case study and technical information please visit Commercial.Supportworks.com.