

## Model 288 Retrofit Helical Piers

**Project:** Royal Estates Apartment Complex  
**Location:** Jacksonville, FL  
**Date:** June 2013

### Challenge:

Six apartment buildings within the Royal Estates Apartment Complex were experiencing differential settlement, with measured movements as much as four to seven inches. The considerable movement was evident by cracking and damage in the interior and exterior walls as well as many doors and windows within the units being inoperable. Twelve individual units could not be rented due to the magnitude of differential settlement and the associated distress.

A geotechnical investigation was completed at the site to determine the cause of settlement. Test borings encountered highly compressible organic laden soils, classified as peat, from approximately 14 to 24 feet below the ground surface. Settlement was likely caused by consolidation of the identified peat layer. The subsurface investigation also identified dense sand below the peat.

### Solution:

The owner wished to stabilize the buildings only, rather than attempt to lift back toward original elevations. Some repair work had been done in previous years and lifting the structures could potentially reopen cracks or cause additional damage. Retrofit helical piers were chosen to underpin the buildings due to their ability to be installed in areas of limited access. Design working loads up to 18 kips per pier were estimated for a pier spacing up to 5 feet. One-hundred seventy-seven (177) Model 288 (2.875-inch O.D. by 0.276-inch wall) round shaft helical piers with a 12"-14" double-helix lead section were installed along the exterior foundation walls and the footings of the interior load bearing walls. The helical piers were advanced to depths of 28 to 35 feet to bear within the dense sand. Installation torque was at least 4,000 ft-lb to correlate to ultimate pier capacities of at least 36 kips (FOS  $\geq$  2). A mini-excavator was used to install the exterior piers, but for the interior piers where working space was limited, hand-held equipment had to be utilized. Following installation, each pier was fitted with a retrofit bracket and a 30-inch long external pier sleeve and then loaded to the design working load. The pier components were hot-dipped galvanized to provide additional corrosion resistance.

## Project Summary

**Certified Pile Installer:** Alpha Foundation Specialists, Inc.  
**Products Installed:** (177) Foundation Supportworks® HP288 Helical Piers, 12"-14" Lead Section, Installed to Depths of 28 to 35 feet, Design Working Load of 18 kips



One of the six buildings to be stabilized



Preparing work area for pier installations



Advancing lead section



Pier installation complete



Pier installation complete