

Surprise, No Footing

Apartment Building Restored with Helical Underpinning

Green, Ohio

RESIDENTIAL PROJECT OF THE YEAR FINALIST

Redwood Green Apartments informed Midwest Foundation Tech that one of their apartment buildings, #300, was out of level. The building, 1 of 26, consists of 10 single story slab-on-grade apartments with attached garages, built in the early 2010s. The apartment staff noted that over the years numerous cosmetic repairs were made to adjust for what they thought was ordinary settlement.

The owners hired a surveyor to measure the level of the building and they determined the foundation to be roughly a foot out of level over its entire 300 foot length, mostly along the rear of the building.



Subsequent soil testing revealed that the rear of the building was situated on fill atop soft peat and organic clay.

The owners contacted Midwest Foundation Tech for repair options. The recommendations that were considered ranged from stabilizing only the building at the then existing elevation and making cosmetic repairs to completely demolishing the building and reconstructing it with a deep foundation. Because of the constraints of working in an area that was within a larger complex of buildings, the owners decided to underpin the rear wall as well as the other necessary work.



During this evaluation it was determined that the common walls separating the units did not have footings as indicated on the plans. Based on that finding the owners decided to use slab jacking to raise the concrete floor under the common walls. The process of releveling the structure to an acceptable level required underpinning the foundation with helical piles, jacking the foundation and stabilizing it against further movement, cutting away much of existing framing to facilitate releveling, and slab jacking to bring the slab back up to level.

After all the residents were relocated and utilities removed from the rear of the building, Midwest Foundation Tech installed 28 helical piles next to the 3-foot deep trench footings. The helical piles utilized a 10"-12"-14" helical configuration, installed to an average depth of 24 feet using a Bobcat E-50 mini-excavator with a gearhead rated to 9,500 foot-lbs. After connecting the screw piles to the footing it was jacked up 4 inches and stabilized. Greene Concrete Leveling raised the floor and interior partition wall some more to achieve an acceptable level condition. The interior framing and finishing was reestablished by carpenters.



The impact of all the utilities was not unexpected but more pervasive than the MFT team originally planned for. Since the structure was slab-on-grade the utilities were restrained by the slab while settling with the soil. During the work many of the utilities broke and had to be replaced, requiring concrete cutting and hand digging in many locations. This significant complication was not fully anticipated leading up to the work. The entire process took a year but the apartments in building #300 are back on the rental market.