

A CASE HISTORY

Chance Civil Construction Distributor:
Intech Anchoring Systems, Livonia, Michigan

Project:
Devos Residence
Renovation and Expansion
Grand Rapids, Michigan

Structural Engineer:
Soils and Structures
Muskegon, Michigan

Underpinning Contractor:
Kent Companies
Grand Rapids, Michigan

Background Information:

The owner of an upscale home embarked on a multi-million-dollar renovation project. It included not only normal remodeling but also removing the indoor pool, building a larger one and extending the house to enclose it. A service facility also was constructed under the pool and its deck.

The bottom elevation of the old pool was lowered and extended farther under the house (which included undercutting existing bearing footings) to accommodate a theatre room.

A 120-foot-long tunnel was constructed from the house to a detached garage.

Job Description:

The contractor learned early not to undercut a footing. They built a basement level room adjacent to the extended front entry, undercutting the footing. The footing settled, cracking the brickwork.

Kent Companies installed two CHANCE® helical piles on the foundation and lifted the area.

After that experience, the contractor was much more cautious. Renovations called for



Installing CHANCE® helical tieback anchors between Atlas Resistance® piers

exposing the footing of the garage during the tunnel construction. Kent Companies installed Atlas Resistance® piers to stabilize the footing, averting repetition of the previous problem.

At the back area, two sections of existing footings were to be undercut by as much as 9 feet. This construction required personnel to

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be working at the bottom of the 9-foot cut.

Shoring Design Plan:

The design of a shoring plan was overseen by Kent Companies, the concrete contractor, the owner and the site safety staff.

The shoring plan included:

1. Installing 4"-diameter Atlas Resistance® piers installed on 4-foot centers with required depths more than 9 feet.
2. Sleeving pier shafts with three sections to exceed 9 feet.
3. Grouting the pier tubes.
4. Installing a CHANCE® helical tieback between the resistance piers and a 6"-wide steel channel waler to add tieback stiffness to the resistance piers.
5. Hand excavating behind the pier shafts and inserting wood lagging as the excavation was extended to the 9-foot design depth.

Rods were extended from the shoring tieback anchors to provide lateral support required for the concrete contractor during construction of new basement walls in the area of the tiebacks.

The same procedure was followed as the excavation process exposed three footing sections, including one for an interior supporting foundation.

The result was "nothing happened" – no movement, no injuries, no jeopardizing of man, machine or structure.



Adding an extension to a helical tieback anchor



Tieback anchor rods extended to steel walers for lateral support during basement wall construction

Summary:

- 39 4"-diameter AtlasResistance® piers were installed to 38 feet for support.
- Three sleeves added per pier.
- Each pier was grouted.
- 38 CHANCE® 1½"-square shaft tieback anchors were installed to 15 feet with threaded rod extensions

as required to secure 6"-wide steel channel walers and stabilize newly poured basement walls during construction.

- 2" x 10" wood lagging inserted to shore the soil.

The project was a resounding success for Kent Companies.