

A CASE HISTORY

Chance Civil Construction Distributor:

Pacific Helix Distributing Inc., Campbell & Santa Fe Springs, CA

Project:

Seismic-Resistant Upgrade –
Museum of Natural History,
Los Angeles, California

Helical Pile Engineer:

Hadley Engineering
Yucaipa, California

Underpinning Contractor:

JRW Foundation-Systems
Redlands, California

Scope of Work:

For seismic upgrade, provide deepened foundation system for two concrete shear walls within the circa-1910 museum.

Challenging factors:

Soil Considerations:

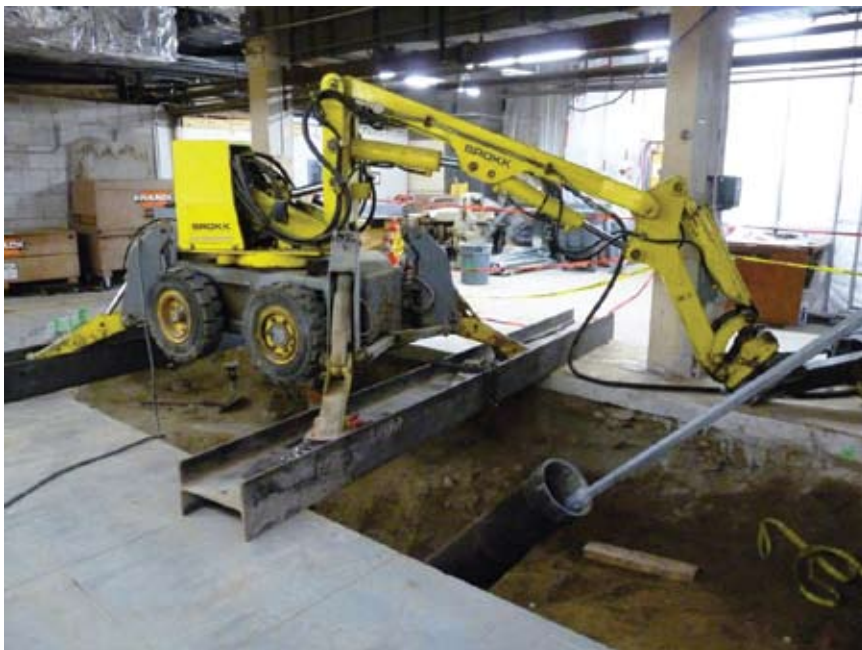
Soils consisted of dense cobbles preventing typical helical pier installation and open hole drilling.

Limiting Factors:

- Work was done while museum was open; diesel fumes were not permitted
- Access was limited to small equipment
- Vertical height limitations
- Work had to be done over already excavated footings
- Footings for helical piers were flanked with sub-basement tunnel on one side and circa-1910 sewer ejection system on the other.

Repair Work:

JRW Foundation-Systems devised a fully cased Chance® Helical Micropile utilizing 13.5"-diameter sectioned casing installed from 20' to 30', drilling through the casing with custom designed 12"-diameter auger and installing the CHANCE SS200 6"/8"/10"/12" lead and



Limited-access and difficult interior situation required special approach and equipment. Here, CHANCE® Micropiles were installed by an electric-powered BROKK 250 with a custom-designed boom and U-joint to accommodate the 20,000 ft-lb drill head.

extensions through the casing after drilling was completed. Once the Chance Micropile achieved 16,000 ft-lb of torque, the casing was used as a conduit for grout installation; the casing was removed while grouting, one section at a time.

To provide lateral capacity to the grade beam footing, 10 piles within the grade beam were installed at a 45 degree batter,

very challenging to predrill, advance casing and install Helical Micropile at this angle.

The machine used on this project was an electric BROKK 250 with custom-designed boom and U-joint to accommodate the 20,000 ft-lb drill head. Custom lifters were fabricated to attach to and advance/retract the casing

... continued ...

as well as anchor installation. The BROKK was placed on top of steel wide flange beams used to span and cross the already excavated grade beam footings.

Once all the work was complete, testing was conducted to proof the installation techniques; this was most difficult while testing the 45-degree battered piles to 117 Kips ($1\frac{1}{2}$ x Design Load) while spanning the footings.



Chance® Micropile installed in tight working conditions on this job. Note custom-designed continuous-flight auger and casing at right.



Above picture compares the relative ease of augering outdoors with the drill head on an excavator *versus* the special equipment and effort this job required for its indoor confines.



Proof testing the 45-degree battered piles to 117 Kips.



At left, the finished grade beam over the Chance® Micropiles.