

SITE PREPARATION

»» NEW CONSTRUCTION

REMEDIAL REPAIR

HELICAL PULLDOWN® MICROPILE

ATLAS RESISTANCE® PIERS

HELICAL UNDERPINNING

»» EARTH RETENTION

RETAINING WALLS

HELICAL TIEBACK

SOIL SCREW®

PIPELINE STABILIZATION

TELECOM/SUBSTATION

UTILITY/SOLAR

CHANCE® DISTRIBUTOR

**WALDER FOUNDATION PRODUCTS LLC**  
Ashland, VA

CERTIFIED CHANCE® INSTALLER

**STABLE FOUNDATIONS LLC**  
Ashland, VA

PROJECT ENGINEER

**STRUCTURAL ENGINEERING CONCEPTS**  
Midlothian, VA

GENERAL CONTRACTOR

**TAYLOR & PARRISH**  
Richmond, VA

Hubbell Power Systems, Inc. is the world's leading helical pile/anchor manufacturer. The CHANCE® brand offers a technically advanced, cost effective solution for the Civil Construction and Electric Utility and Telecommunications markets.

# Richmond Train Station



**PROJECT:**

Renovation of the historic train station.

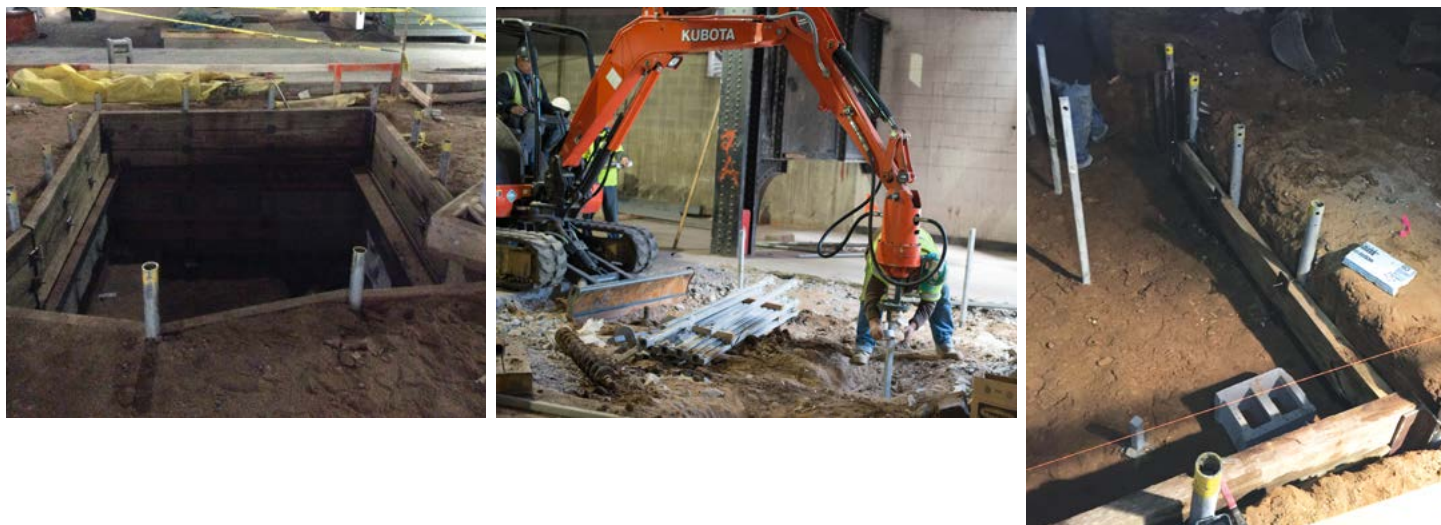
**BACKGROUND:**

Built in 1901, the historic train station is located in Downtown Richmond. The city is revitalizing their city center to attract new shops and foot traffic. The train station will provide passenger traffic, increasing the accessibility of the area.

**THE PROBLEM:**

The train station had not been active for several years. It was in need of pile foundations to support new structural loads as well as the installation of an elevator, requiring earth retention. However, it was going to be difficult to install high capacity piles and earth retention in an old, existing building with low head room conditions. Furthermore, the original soil under the train station consisted of 20 ft. of fill. The engineer determined that the site needed a high capacity pile to penetrate the weathered rock and reach a capacity of 90 kips ultimate capacity.

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**THE SOLUTION:**

The structural design team specified CHANCE® Helical Pulldown® Micropiles for the job. The Helical Pulldown Micropiles would penetrate the fill in low head room conditions and obtain the 90 kips ultimate capacity. After running the HeliCAP® Helical Capacity Design Software, it was determined that a SS175 8/10 leads with a 5 in. grout column approximately 30 ft. would yield the required 90 kips ultimate. During the installation process, the CHANCE Certified installer, Stable Foundations, pre-drilled the top 20 ft. for the helical piles to penetrate the weathered rock bearing. All 48 piles were installed successfully to an average 30 ft. depth.

Following the installation of the original 48 piles, the engineer planned to add an elevator 10 ft. x 12 ft. x 7 ft. deep at the first floor level, supported on CHANCE piles. Earth retention in low headroom conditions presents a problem because you can't get larger "soldier" beams or h-piles into the soil for perimeter earth support economically.

Large equipment was not an option for conventional shoring - consisting of h-piles driven around the perimeter - or soil nailing since the area was so small. Therefore, Stable Foundations devised a system utilizing CHANCE RS2875.276 wall pipe filled with grout as the perimeter piles. They also used the CHANCE ROCK-IT™ lead section that has a carbide tooth welded on the lead point. The new ROCK-IT lead allowed them to install the 12 perimeter piles around the 10 ft. x 12 ft. pit without pre-drilling.

Threaded studs were welded on the outside of the Helical Pulldown Micropiles to hold the wood lagging to retain the earth. Internal whales were added to the system so the pit could extend 7 ft. below ground, which allowed the elevator shaft to be built. Once the pit was excavated to grade, six CHANCE Helical Pulldown Micropiles were specified to support the elevator pit. They used the new ROCK-IT leads to install the piles to bearing without having to pre-drill. CHANCE continues to find new ways to improve their products which, in this installation, removed the pre-drilling process saving a day's worth of work.

