CASE HISTORY

ECP HELICAL TORQUE ANCHORS™

Helical Torque Anchor™ Piles Support Post Office Expansion Denver, Colorado

Gray Construction was awarded the contract to construct the 162,000 square foot U.S. Post Office expansion project in Denver. Park Range Construction was selected as the certified installer of helical piles supplied by Earth Contact Products. The helical piles were arranged in clusters of three to four piles at each of the 91 concrete pile caps. The column loads on the pile caps ranged from 130,000 pounds to 174,000 pounds. During pile installation Park Range Construction provided three teams to place the helical piles per plans. The job proved to be challenging due to difficult drilling through dense soil conditions to reach the claystone bedrock at 45 to 50 feet.

Project Summary	
Project:	U.S. Post Office Expansion, Denver, Colorado
Pile Design Engineer:	CTL Thompson, Inc. Denver, CO
Geotechnical Engineer:	Ground Engineering, Inc, Denver, CO
Installing Contractor:	Park Range Construction, Inc. 2755 South Raritan Street, Englewood, Colorado
Products Installed:	1-3/4" Sq. Bar with 8" & 10" Diameter Helical Plates 1-3/4" Sq. Bar with 10" & 12" Diameter Helical Plates
Number of Placements:	285
Depth to Bearing:	45 to 50 ft
Ultimate Capacity:	87,000 lb
Average Working Load:	43,500 lb
Factor of Safety:	2.0 : 1 Ultimate To Working Load

Pile Installation

Load Testing

The ECP Model TAF-175 Torque Anchor™ solid square shaft helical pile was installed at each placement to a minimum depth requirement of 45 feet below grade. The pile configurations varied due to soil borings encountering very dense soils at 10 to 15 feet deep on a portion of the site. At these placement locations, the smaller plate configuration was used to allow the pile to reach the target depth before experiencing excessive shaft torsion. The target shaft torsion to provide the service load requirement of 43,500 pounds, plus a factor of safety of 2.0, was 8,700 foot-pounds.

As part of the verification process, two static load tests were performed prior to installing the piles and two load tests during production. These tests were directed and supervised by CTL Thompson Engineering and monitored by the USPS inspector. The test procedure was conducted in close conformance with ASTM D-1143. All of the load tests were successful.

This challenging project was completed in six weeks despite the difficulty in drilling through the very dense soil that was encountered between 10 and 15 feet below grade. The project ran smoothly and was completed on time and within budget.

Pile Cap Construction

Construction of the Post Office Addition