



TEMPORARY SHORING TO STABILIZE ADJACENT ROAD DURING CONSTRUCTION Aurora, Colorado



A new multi-housing unit was planned on this site. The plans called for an excavation for a new foundation to be adjacent to a public street. The engineer called for temporary shoring to stabilize the soil cut, and to support the road during construction. This project required installation of two different helical screw pile products. The Torque Anchor™ installations and shoring construction had to be accomplished in stages to prevent loss of soil support from beneath the road.



Project Summary	
Project:	Temporary Excavation Shoring, Aurora, Colorado
Engineer:	CTL Thompson, Inc., Denver, Colorado
Installing Contractor:	Park Range Construction, Inc. 2755 South Raritan Street, Englewood, Colorado
Products Installed:	TAF-288 Torque Anchor™ Piles – 2-7/8" Dia. Tube TAF-150 Torque Anchor™ Tiebacks – 1-1/2" Sq. Bar
Number of Placements:	10 Piles & 22 Tieback Anchors
Average Embedment:	15 ft
Ultimate Capacity:	30,000 lb
Average Working Load:	15,000 lb
Factor of Safety:	3.7 : 1 Ultimate To Working Load



ECP Model TAF-288 Tubular Torque Anchors™ were installed first as vertical piles with spacing of ten feet on center along the edge of the proposed excavation. The piles were used to support Vulcraft CSV Steel Decking. As construction progressed, two rows of Model TAF-150 ECP Square Bar Tiebacks were installed with center to center spacing of ten feet. This spacing coincided with the tubular piles. Horizontal support for the steel decking was accomplished by installing C12x30 steel channel beams as a waler system for the two rows of tieback anchors.

Photographs from Top: Site and finished shoring; Installation of tiebacks; Close up view of shoring construction.

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.

Construction of the Post Office Addition

Pile Cap Construction

