# Model 288 Helical Tiebacks

**Project:** Edwardsville Public Safety
**Location:** Edwardsville, IL
**Date:** May 2017

Installing HP288 helical tiebacks

## Challenge:

A curved concrete retaining wall was needed for a retention basin area at the new 51,000 square foot public safety building. The retaining wall project was a design-build and Foundation Supportworks by Woods was selected based on previous experience with similar projects. The proposed retaining wall was 10 feet high by 114 feet long with tiebacks for lateral support. The tiebacks would be installed prior to the construction of the wall, then embedded within the wall when the concrete was placed. A subsurface soil investigation showed that the proposed retaining wall tiebacks would bear in medium dense sand.

Tiebacks completed in retained soil area

## Solution:

Round shaft helical tiebacks were selected to provide the lateral support system for the wall. One row of fifteen (15) Model HP288 helical tiebacks were proposed with lateral spacings of about 7 feet and the connection to the wall at about 2 feet below the top of wall. The HP288 is manufactured with tight tolerances at the couplers which allowed the free length of the tiebacks to extend straight from the embankment to the wall. This allowed the tieback termination plate to be easily located and set within the wall. The helical tiebacks were designed for a downward installation angle of 15 degrees and a (horizontal) design working tension load of 20 kips. The tieback axial design load was 20.7 kips based on the 15-degree installation angle. A factor of safety of 2 was used to determine the required ultimate pile capacity of 41.4 kips and minimum termination torque of 4,600 ft-lb. The Model HP288 helical tiebacks were designed with 8”-10”-12” lead sections and were installed to lengths ranging from 28 to 35 feet from the wall facing. The tiebacks were installed and connected to the retaining wall structural steel in one day.

Helical tiebacks connected to wall structure

Removing forms from poured wall prior to backfill operations

# Project Summary

**Architect:** NDG Architects
**Structural Engineer:** Dickson-Schaefer Engineering
**Geotechnical Engineer:** Quality Testing and Engineering
**General Contractor:** Impact Strategies, Inc.
**Tieback Installer:** Foundation Supportworks® by Woods
**Products Installed:** (15) Supportworks® Model 288 Helical Tiebacks, 8”-10”-12” Lead Section, Installed Lengths of 28 to 35 feet, Design Working Tension Load of 20.7 kips

Completed and backfilled retaining wall