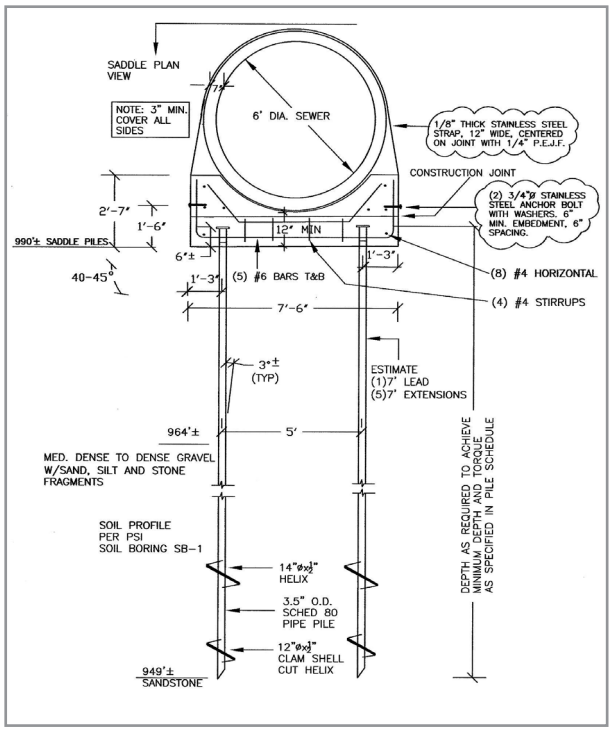
Midwest Foundation Tech

Case Study

Install Helical Screw Piling to support a portion of sanitary sewer and install helical tiebacks for a sheet pile wall.

About 200’ of a 6’ diameter concrete sanitary sewer line needed to be replaced because of settlement and lateral movement of the sewer line. The project was known as the “City of Canton Project No. GP 1114: Allenford Drive SE Stream Bank Restoration and Sewer Repair, Canton, Ohio”. The sewer line was failing due to a combination of steam bank erosion from the Tuscarawas River and soft clay soils of the river bank.

Installation of screw piling for sewer line support.



Section of sewer line.

The original plan called for soil nails but was deemed an unsuitable solution for the existing soil conditions. Midwest Foundation Tech and Timmerman Geotechnical (now GPD) provided the solution to the embankment support-150’ sheet piling wall with tiebacks and use helical screw piles to support the new sewer line. While the sewer line was being replaced the existing sewage had to be pumped around this 200’ section. The engineered plans for the project were prepared by Midwest Foundation Tech.

The sewer line portion of the project required 54 ECP 3.5” round shaft piles, 12”Cx14” helix leads, 1/2” thick plates to support twenty three concrete saddles and two new manholes. A pre-production pile load test was required to verify torque readings of 9500 ft-lbs as required by the plans. The challenge of installation was for the equipment operator to operate above excavation while the ground crewman had to be in the bottom of the excavation.

Sewer line with straps ready for backfill.

Installing sheet piles and tiebacks.

The average depth of installation was 40 feet. We used a Bobcat E50 mini-excavator with a Pro-Dig 12K5 torque motor to install the piles. The stream bank restoration part of the project required the installation of 150 feet of PZ 27 sheet piling, 40 feet long and 24 tiebacks. The tiebacks consisted of 1-3/4" ECP square shaft with 8C"x10"x12" helix lead, 1/2" plates, extensions and transition assembly. A pre-production test was also called for the tiebacks.

Post tensioning of tiebacks.

Typically, they were installed to 7500 ft-lbs and an average length of 66 feet using a Kubota track loader with a Pro-Dig 12K5 torque motor. The tiebacks were installed through a notch cut in the sheet pile wall and the transition assembly routed through an 8"x8"x9/16" angle whaler after the tiebacks were installed. The tiebacks were post-tensioned using a Skidmore-Wilhelm bolt tension calibrator.

Final configuration of sheet pile wall with tiebacks.

Project Overview

Engineer - Charlie Grant, P.E.

Geotechnical - Timmerman Geotechnical (GPD)

Installing Contractor - Midwest Foundation Tech, Inc

General Contractor - Lockhart Concrete

Helical Screw Piles/Tiebacks - Earth Contact Products

Helical Screw Piles - (56) HTAF-350-84-12C-14

Helical Tiebacks - (24) HTAF-175-84-8C-10-12

Transition Tie Rods - (24) TAT-175-HD

ECP®

MFT Midwest Foundation Tech

Midwest Foundation Tech, Inc
7897 Lutz Ave. NW
Massillon, OH 44646
Ph. 330-685-3525
Email: Charlie.grant.48@gmail.com