

## Midwest Foundation Tech, Inc.

Registered Civil Engineering in Ohio & California;  
Foundation Design & Construction

# 450 Feet of Walking Bridge Supported On ECP Helical Torque Anchors™

Kent, Ohio



The new “Bike and Hike Trail” was extended to connect the main campus and the football stadium of a university. Two sections of the new trail crossed wetlands. The designers planned to use elevated boardwalks supported on helical screw piles as the most economical solution to cross these areas, in addition this design had minimal impact and disturbance to the environment. The designers chose helical screw piles for their ease of installation in remote locations.

There were two bridge sections constructed. One bridge was 140 feet long (shown left) and the other was 310

Project Summary	
Project:	450 Feet Boardwalk Foundation
General Contractor	Cavanaugh Building Corporation
Installing Contractor	Midwest Foundation Technologies, Inc. Massillon, OH ( <a href="http://www.midwestfoundationtech.com">www.midwestfoundationtech.com</a> )
Products Installed:	ECP TAF-288-84 10-12 Torque Anchors™ 2-7/8" Dia. x 0.262" Wall Tubular Shaft - 12" & 14" Dia Plates
Number of Placements:	105
Depth to Bearing:	12 to 17 ft
Ultimate Capacity:	20,000 lb
Average Working Load:	10,000 lb
Factor of Safety:	2.0 : 1 Ultimate To Working Load

feet long and included an observation deck.

The design project called for the helical screw piles to be spaced typically at twelve feet on center. The total project required 105 piles, which included the bridges, the abutments and observation deck.

The general contractor on the project, Cavanaugh Building Corporation, selected Midwest Foundation Technologies Inc, a certified installer of ECP Torque Anchor™ brand helical screw piles to supply and install the foundation supports.

The helical screw piles were installed into a layer of loose to medium dense silty sand located below an existing thin layer of peat and organic clay topsoil at the surface.

Helical pile installation was accomplished using a hydraulic torque motor attached to a mini-excavator. Shaft torsion was used to determine pile capacity. Torque was monitored by measuring the differential pressure across the hydraulic motor.





The lead section consisted of a seven foot long shaft that had a 12 inch and a 14 inch helical plate attached on the bottom. The lead section was followed by seven foot or ten foot extensions to achieve the installation depth requirement plus sufficient shaft height for attachment the bridge structure. The specifications required that all shaft connections occur below grade.

The piles were cut to final elevation after all of the piles were installed. The final length of exposed shafts was between two and four feet above grade to provide the required bridge elevation.



Timber brackets, fabricated from stainless steel, were used to attach the pile shafts to the bridge girder beams. Set screws on the bracket sleeves provided uplift restraint on the foundation piles.



The pile installation required only five working days. Cavanaugh Construction Corporation began the bridge construction immediately after the helical screw pile installations were complete.



*The completed 140 foot bridge.*



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**ECP Helical Torque Anchors**  
*"Designed and Engineered to Perform"*