

Client: Eco Foundations / Volker Stevin
Site: Flood Elevation Scheme
Location: Carlisle, Cumbria

Project Description

GTL Partnership were appointed by Eco Foundations to design, supply and install helical (screw) piles as part of the ongoing flood alleviation works just outside the centre of Carlisle.

The client required a foundation system that could be installed without loading an existing gabion wall.



Geotechnical Ground Conditions

The soils investigation indicated 2.0 m of made ground and superficial deposits overlying dense to medium dense sands and gravels with cobbles (Diamiction), over (Triassic) sandstone formation.

Helical Pile Design

GTL designed the helical piles for various pile loads up to 100kN in compression.

GTL carried out a static analysis using end bearing 450 diameter helical plates to generate the required pile capacity. All piles were designed at 5.5 m long from site formation level. The top of the piles were embedded into a 300 thick concrete raft slab.

During the installation it was clear from pile refusal that the rock head level varied substantially along the length of supported flood wall. GTL assessed the soils information in combination with onsite feedback from the installation crew and proposed a mitigation strategy of identifying the level of the rock head through hit miss pile installation.



Once refusal depths were determined all piles were driven to refusal to ensure end bearing on the rock head. The pile sections were then cut down and new top plates welded on as per the original design.