

## The Problem

A single family dwelling was built along the shores of a lake. The soil profile at this site consisted of approximately 0.5 metres (2 ft) of loose sand fill, 3.0 metres (10 ft) of loose fine sand, 1.7 metres (5 ft) of a firm clayey silt, 1 metre (3 ft) of a hard silty clay till, and at 6.2 to 6.7 metres (20 to 22 ft) weathered shale layer to shale. A free groundwater table was encountered at 2.8 metres (9 ft) below grade. The underlying fill ruled out the use of conventional spread or strip footings. Excavation to the shale and placement of engineered fill was not feasible due to the depth and width of the excavation and the difficult groundwater conditions. Therefore a deep foundation was needed to support the proposed single family structure.



## The Solution

**CHANCE® HELICAL PIER®** Foundation System was determined to be the most economical and time saving solution to support the proposed structure. The site was excavated to the proposed footing elevation and the loose fine sand was removed. The helical pier size and configuration used was the SS-175 with 200mm (8 inch), 250mm (10inch), and 300mm (12 inch) diameter helices. A 150mm (6 inch) diameter Helical PULLDOWN™ Micro Pile (using EBS-301 grout) was used along the entire shaft of the helical pier to increase the lateral stability of the piers. Installation depths were consistent across the entire site at 7 metres (23ft), all the helical pier were bearing in the weathered native shale. Sixty-three (63) helical piers were installed in two days with a minimum allowable working load of 178 kN (40Kips) or a minimum ultimate load capacity of 356 kN (80Kips).



## Results

The structure was completed ahead of schedule and under budget as time and money were saved with the installation of the **CHANCE® HELICAL PIER®** Foundation System.