

Billboard Stabilization – Toronto, Ontario

July 1999

The Problem:

- To improve the streetscape and hide a metropolitan transformer station, it was decided to erect a 10.5 m (34 ft) high billboard 116 m (380 ft) in length
- The billboard frame consisted of a structural steel truss assembly supported by eight structural steel towers
- Wind loading would create large overturning moments, requiring very large spread footings which were not possible due to limited space
- Overhead and underground 150 KVA power lines restricted access for installation of concrete caissons
- Soils consisted of 1 m (3.3 ft) of fill overlying medium to dense silt till; at a depth of 9-11 m (30-36ft), the till became very dense



The Solution:

- The design consultants decided to construct reinforced concrete supported by **Chance® Helical Piers/Anchors**
- The helical piers had to support both compressive and tensile loads
- Small equipment was utilized due to access limitations
- The helical piers/anchors could be installed in close proximity to underground services
- Helical piers/anchors can be installed on an angle in line with diagonal braces on the towers
- Helical anchors needed to be installed 4 to 5 m (13 to 16 ft) into very dense till for anchorage

Product Used: (79) Chance® Helical Piers/Anchors at (10) footings

Four helix configuration having 150 mm (6") diameter grout filled **Chance® Helical Pulldown® Micropiles**

Depth: 8.8 to 11 m (29 to 36 ft) (well into hard till layer)

Loads: 180 KN (40 kips) allowable load in tension or compression (360 KN ultimate load)

Finishing: New construction bracket welded to piers and anchors capped with reinforced concrete pier cap

Geotechnical Engineer: Haddad Geotechnical Inc.
Structural Engineer: Yolles Partnership Inc.
Chance® Helical Pier Installer: EBS Engineering and Construction Limited

