



GEO-FOUNDATIONS Contractors Inc.

Transformation AGO



Date: 2005 - 2006

Technology: Micropiles

The Art Gallery of Ontario's various galleries, collection vaults, and administrative offices are housed within a mix of structures dating from the 1910's, 1920's, 1970's and 1990's. The AGO's most recent major renovation, Transformation AGO, designed by famed architect Frank Gehry, required structural modifications to and within structures from each of the AGO's past periods of construction. Micropiles, designed and constructed by Geo-Foundations, met the assorted challenges provided by having to construct foundations capable of resisting high loads within very little space and low headroom.

A total of 138 permanent micropiles were constructed, in seven different areas of the property, ranging from the open-air Dundas boulevard space with its buried 6-metre deep sewers, to the 1970's sub-basement accessible only by elevator, to the 2.8 metre headroom 1920's ground floor space beneath the new South Tower. The depth from ground surface to top of rock averaged 18 metres. Each micropile was constructed by advancing a permanent casing through the predominantly clay till overburden and socketing it a metre or more into rock, then drilling a 5-metre deep rock socket beneath the casing before grouting into place a single or bundle of 655 MPa threaded bars.

A pile cap supported by a pair of 194mm diameter test micropiles was successfully load tested in static compression to 8050 kN. A single 273 mm diameter test micropile was successfully load tested in static compression to 7100 kN.

Geo-Foundations also constructed rock anchors and tied-back underpinning as part of our contract with the project's constructor, EllisDon Corporation.



Construction of 273Ø micropile foundations for the new South Tower in open headroom within the former 1990's atrium footprint



Construction of 273Ø micropile foundations for the new South Tower in low headroom inside the 1920's era ground floor space



Static compression load testing to 8050 kN on a pile cap supported by a pair of 194Ø micropiles