GEO-FOUNDATIONS
Contractors Inc.

Toronto Western Hospital

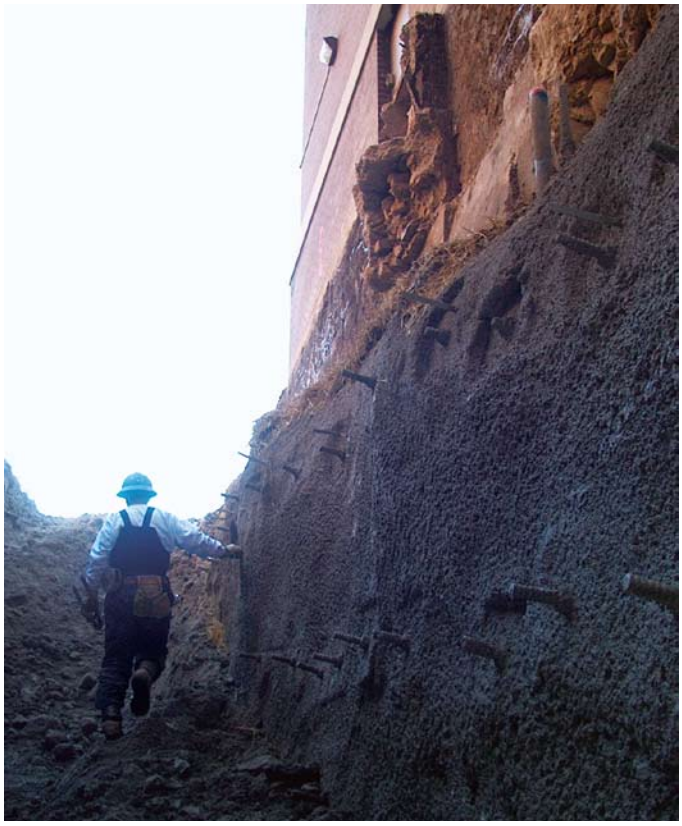
Date: 2003
Technology: Anchored Shotcrete

Toronto Western Hospital's complex at Bathurst and Dundas Streets includes a new 10-storey wing on a site recently occupied by a courtyard and subterranean service tunnel. Geo-Foundations constructed a 5-metre deep anchored shotcrete wall to underpin a gridline of spread footings supporting an existing 8-storey wing of the hospital and to shore the balance of the deep excavation required for the construction of a stairwell out from the original underground parking garage, up and into the new tower's ground floor.

Shoring of the existing 8-storey hospital wing was originally designed by the owner as a contiguous caisson wall with internal strut bracing. In addition to being the most cost effective solution, the anchored shotcrete alternative also provided value-added benefits such as the elimination of cumbersome internal bracing, and the ability to make a wider, more manageable excavation, as anchored shotcrete occupies a much narrower lateral envelope compared to contiguous caisson wall.

The excavation was shored sequentially in panels from its top downwards. Drilling of all of the soil anchors was completed inside an excavation just 3.5 metres wide. A customized screw-feed drill mast and pneumatic hammer assembly mounted on a mini-excavator were used to complete the drilling in this extremely confined space.

The line of excavation was less than half a metre away from the edge of footings supporting column loads of 2700 kN. Inclinometer measurements showed total movements into the completed excavation of less than 4 mm.



Anchored shotcrete wall system, underpinning heavily loaded spread footings, as seen from inside the 5m deep excavation

Drilling of fourth row soil anchors, using a customized, restricted access drill rig

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