



GEO-FOUNDATIONS Contractors Inc.

Ontario Science Centre – Hot Zone



Date: 2004

Technology: Micropiles

The new Hot Zone exhibit at the Ontario Science Centre is designed to be the hub of a \$12M expansion at the famous education-themed Toronto attraction. The renovation required to accommodate this expansion includes new structural steel framing within and above an existing interior space. The new framing is supported by micropiles, favoured over conventional deep foundations for a variety of reasons including the close proximity of new columns to existing walls, the requirement that new foundations resist significant uplift, and the need to maintain areas immediately adjacent to construction safely open to public access throughout construction.

Micropile installation took place during night-shift hours using electric driven drilling and grouting equipment. A sample micropile was tested in compression to 200% of its service load (test load = 725 kN) to confirm the adequacy of design and installation. Grout-flushed, hollow-bar micropiles were selected for their suitability to the overburden profile – the site is underlain by more than 10 metres of soft soil – and restricted headroom at the site. Approximately 30% of the micropiles were installed in just 3 metres of headroom.

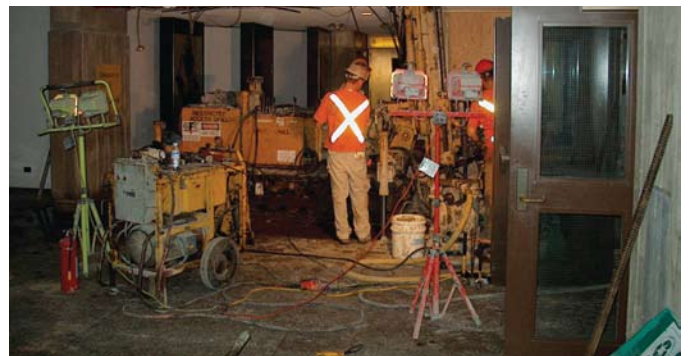
Due to the presence of a maze of in-slab utilities that included live electrical conduits and vital communications cables, several of the pile caps were constructed with utilities cast within them.



Installation of micropiles tight to the interior walls of the Science Centre



A pile cap excavation showing typical buried conduit conditions encountered



Night shift work in a hallway that had to be re-opened to the public every morning