



GEO-FOUNDATIONS Contractors Inc.

Credit Valley Hospital



Date: 2003

Technology: Micropiles

Credit Valley Hospital in Mississauga, Ontario will soon enjoy three new levels of parking built on top of the existing 3-level P1 elevated parking structure. The foundation reinforcing necessary for this vertical expansion was completed by Geo-Foundations during six weeks of work between 2003 and 2004.

Foundation upgrading consisted of construction of 92 micropiles – a total of 32 tension/compression micropiles to support 8 expanded grade beams, and 60 pre-loaded compression micropiles to augment the existing capacity of 13 column-supporting caissons. Geo-Foundations' scope for this project included the design of micropiles and pile caps, and construction of all micropiles, including a detailed pre-production load testing program.

The site is underlain by a filled-in glacial valley – micropiles at the west end of the garage are socketed entirely in shale, while micropiles at the east end of the garage are socketed entirely in till.

Production micropiling was completed in just six weeks, with some of the work occurring at night to accommodate garage traffic. After standing down to allow the general contractor time for pile cap construction, Geo-Foundations' forces returned to complete pre-loading and subsequent post-grouting of the 60 caisson-augmenting micropiles. Pre-loading was specified as a means of ensuring a more harmonious load share between the existing caissons (under stress from 2 floors of above-ground parking since 1987) and the new micropiles when the additional levels of parking are eventually built. The highest loaded micropile was designed for a working load in compression of 1200 kN. The magnitude of pre-loading varied from 104 kN to 225 kN per micropile.



Technicians preparing to pre-load micropiles sequentially, in increments of 25% of total pre-load, at Column C-12



Low headroom micropile construction at Column A-4



Pile cap reinforcement in place ready for concrete – each micropile is dressed with ducting and tension rods to enable pre-loading