CHANCE® UNDERPINNING ANCHORING REPORT

A CASE HISTORY

Project:	**Geotechnical Investigation:**	**General Contractor:**
Wentworth Condominiums	Peto MacCallum Ltd.	EBS Engineering & Construction
Hamilton, Ontario	Kitchener, Ontario	Breslau, Ontario
	Consultant:	
	Kleinfeldt Consultants Ltd.	
	Kitchener, Ontario	

Job Description:

The Wentworth townhouse development was built in 1973 on a low-lying area that had been filled to facilitate the development. This fill, consisting of a mixture of clay, silt and sand with organics and topsoil inclusions, had been placed with little compaction effort. To further compound the problem, the original compressible topsoil layer was not stripped before the fill was placed. Underlying the surficial fill and original topsoil layer, the native soil comprised competent deposits of clay and clayey silt till.

The townhouse units were built with slab-on-grade construction (no basements) and footings 4 to 12 feet below grade. Many of the units were experiencing distress resulting from the long-term settlement of the fill layer. A total of 12½ units in four different buildings required underpinning to stabilize the townhouses against further anticipated settlement.

Repair:

With the water table at 5 feet, extensive shoring was required to expose the footing, located at depths up to 12 feet below grade. (Utility locations were unknown, requiring hand digging.) Water had to be pumped continuously from the deeper excavations.

The HELICAL PIER® Foundation Systems screw anchor size selected for underpinning was the two helix (8- and 10-inch diameters) Type SS5. All anchors were installed into the native soil layer with portable equipment. Installation torque was monitored to ensure anchor capacity. Anchor lengths varied up to a maximum of 25 feet below grade. Of the 220 anchors, approximately 25 per cent were installed in living areas. The remaining anchors were installed in garages or along the exterior of living areas. Substantial savings were realized over other methods.