



GEO-FOUNDATIONS Contractors Inc.

Jane Street & Highway 7



Date: 2006

Technology: Compaction Grouting

The intersection of Jane & Highway 7 in Vaughan was closed from February to May of 2006 after a manhole within the intersection collapsed and caused a water main to break. The eventually vast scope of repairs at this site, which included multiple deep excavations and several completely reconstructed sewers, included compaction grouting by Geo-Foundations to restore density and stiffness to a disturbed soil layer beneath the intersection.

The manhole collapse was caused by long term migration of fine soil particles through a breach in a deep sewer pipe that passed through a sandy soil layer well below the water table. From the time of the sewer pipe breach until the manhole collapse, the sewer was effectively acting as a dewatering system. Fine soil particles were being carried by the water leaking into the pipe, then being flushed away downstream. The extent of soil disturbance was eventually determined using feedback from compaction grouting operations such as drill penetration rates and grout injection volumes.

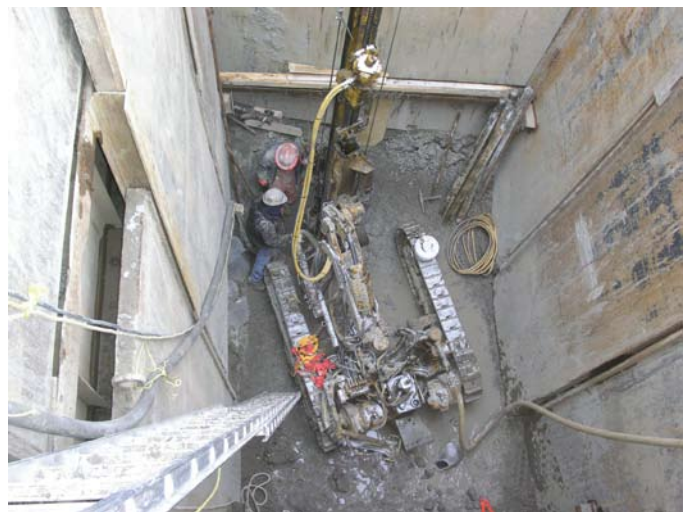
Within a 19 metre x 22 metre area, and targeting the disturbed sandy layer six to eight metres below depth, 120 cubic metres of low mobility compaction grout was injected. The primary holes – 71 in all – were spaced at 2 metre centre-to-centre spacing, and were drilled 10 metres deep. These primary holes consumed 90 cubic metres of grout. Thirty secondary holes were drilled and grouted, located strategically between primary holes where large volumes of grout had been injected. Drilling was completed using two drills running non-percussive, double-head duplex tooling. Grout was delivered to site by ready-mix truck.



Pumping of low mobility cement-based grout delivered by ready-mix truck



Compaction grouting pipes being installed by 2 drill rigs in the south-west quadrant of the intersection



Compaction grouting in progress inside a shored excavation at the north-east corner of the intersection